



Department Decision

**Air Quality Synthetic Minor Construction Permit
Permit No. 1240-0133-CC**

**Enviva Pellets Greenwood, LLC
200 Enviva Way
Greenwood, South Carolina 29649**

November 10, 2020

In accordance with the 1976 Code of Laws of South Carolina, as amended, including SC Code Section 44-1-60(D), a Department Decision has been made to issue Air Quality Synthetic Minor Construction Permit No. 1240-0133-CC to the above-named permittee. This permit was previously placed on public notice and open for public comment from July 20, 2020, through August 27, 2020. A virtual public hearing was held by SC DHEC's Bureau of Air Quality on August 20, 2020, to receive oral and written comments on the proposed project. Adverse public comments were received by SC DHEC during the comment period. Comments received during the formal comment period regarding air quality issues have been addressed in SC DHEC's *Responses to Comments on Air Quality* document attached to this Department Decision. SC DHEC's decision to issue this permit has been made after consideration and a complete review of the following: the air permit application, applicable state and federal air quality regulations, comments and concerns made at the virtual public hearing and all other comments received within the required time frame, the public hearing transcript, and all other pertinent information.

This Department Decision regarding Air Quality Synthetic Minor Construction Permit No. 1240-0133-CC includes the following; a) the issued permit ([Attachment A](#)) which meets the requirements of all applicable air quality regulations; b) a summary of the project, permit, and applicable regulations as outlined in the Statement of Basis ([Attachment B](#)); and c) a summary of the comments made by concerned citizens regarding air quality issues and responses by the Bureau of Air Quality, as outlined in the *Responses to Comments on Air Quality Permit No. 1240-0133-CC* ([Attachment C](#)). This Department Decision (including attachments) will be included in SC DHEC's administrative record for this permit decision.

**Steve McCaslin, P. E., Director
Air Permitting Division
Bureau of Air Quality**

Attachment A

**Air Quality Synthetic Minor Construction Permit
Permit No. 1240-0133-CC**



Bureau of Air Quality Synthetic Minor Construction Permit

**Enviva Pellets Greenwood, LLC.
200 Enviva Way
Greenwood, South Carolina 29649
Greenwood County**

In accordance with the provisions of the Pollution Control Act, Sections 48-1-50(5), 48-1-100(A), and 48-1-110(a), the 1976 Code of Laws of South Carolina, as amended, and South Carolina Regulation 61-62, Air Pollution Control Regulations and Standards, the Bureau of Air Quality authorizes the construction of this facility and the equipment specified herein in accordance with the plans, specifications, and other information submitted in the construction permit application received on February 10, 2020, as amended. All official correspondence, plans, permit applications, and written statements are an integral part of the permit. Any false information or misrepresentation in the application for a construction permit may be grounds for permit revocation.

The construction and subsequent operation of this facility is subject to and conditioned upon the terms, limitations, standards, and schedules contained herein or as specified by this permit and its accompanying attachments.

Permit Number: 1240-0133-CC
Issue Date: November 10, 2020

**Steve McCaslin, P. E., Director
Air Permitting Division
Bureau of Air Quality**

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RECORD OF REVISIONS	
Date	Description of Changes

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A. PROJECT DESCRIPTION

Permission is hereby granted to increase the wood pellet production rate by adding additional equipment, adding particulate matter control devices, by controlling the volatile organic compounds (VOC) emissions from the Dry Hammermills, and by increasing the firing capacity of the existing VOC control devices. The facility will be limited to a wood pellet production limit of 660,000 oven dried short tons (ODT)/year. Federally enforceable synthetic minor limits for particulate matter (PM), particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (PM₁₀), particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers (PM_{2.5}), and volatile organic compounds (VOC) to avoid Prevention of Significant Deterioration (PSD) and hazardous air pollutant (HAP) emission limits to avoid HAP major source status, were established in 1240-0133-CA and were carried over in 1240-0133-CB, 1240-0133-CB-R1 and 1240-0133-CB-R2. These synthetic minor limits shall remain in-place with this project to maintain the facility's status as a non-major PSD source and an area source of HAP. This project consists of the following modifications:

- Increase the wood pellet plant production limit to 660,000 ODT/year.
- Increase Woodyard throughput rate from 541,500 ODT per year to 876,000 ODT per year for the Debarker (E1) and 766,500 ODT per year for the other woodyard operations.
- Increase the amount of softwood processed from a maximum of 90% to 100%.
- Replace the existing five (5) Horizontal Dry Hammermills (DHMs) with thirty-six (36) new Vertical DHMs. Emissions will be controlled by the existing Wet Electrostatic Precipitator (WESP) (CD2) and Regenerative Thermal Oxidizer RTO1 (CD3) and, a new Bin Vent Filter (CD24).
- Add one (1) new Green Hammermill, three (3) new Pelletizers, one (1) new Pellet Cooler, one (1) new Baghouse and update the as-built configuration of the Dust Silo control devices to a single Cyclofilter (CD23).
- Update the firing capacity of (RTO1) (CD3) to four (4) burners each rated at 8 MMBtu / hr, update the firing capacity of RTO2/RCO1 (CD15) to 5.2 MM Btu/hr (single burner), and update the firing capacity of RTO3/RCO2 (CD19) to two (2) burners each rated at 5.2 MMBtu/hr.
- Add the following new exempt sources: Truck Dump 2, one (1) Electric Powered Radial Log Crane, and one (1) Air-to-Air Chiller. Note: the Electric Powered Radial Log Crane, and Air-to-Air Chiller are not sources of air emissions.
- Up-date the facility emissions to include emissions from existing sources including the Dryer Duct Burner, Furnace Bypass Stack (S15), and Fugitive Particulate Matter emissions from an existing truck dump and from vehicle traffic on unpaved and paved roads.

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B.1 EQUIPMENT

Equipment ID	Equipment Description	Control Device ID	Emission Point ID
E1-E3	Debarking, Green Wood Chipping, Screening	None	S0
E5	Legacy Piles 1 through 4	None	S0
E4-E5	Fuel Storage Pile 1	None	S0
E5	Fuel Storage Feeder Bin	None	S0
E4-E5	Stacker/Reclaimer Pile	None	S0
E5	Chip Bin Pile	None	S0
E6-E9, E58	Green Hammermills 1 – 4 New Green Hammermill 5	CD2-CD3	S1
E10	Green Chip Silo	CD2-CD3	S1
E11	one (1) 200 million Btu/hr furnace, fueled by bark & wood chips	CD2-CD3	S1, S15- Furnace Bypass Stack
E12	one (1) Rotary Dryer, direct heat input from the Furnace (E11) (exhaust to a Cyclone Pack (Multiclone) (CD1) for the purpose of product recovery)	CD2-CD3	S1, Dryer Bypass Stack
E48	5 MM Btu/hr, natural gas fired Dryer Duct Burner	None	S16
E13	Dry Chip Silo	CD4	S2
E14-E18	Horizontal Dry Hammermills 1 – 5 (existing sources which will be replaced by new Vertical Dry Hammermills 1-36 (E59-E94))	CD5-CD9	S3 (existing emission point but S3 will be eliminated)
E59-E94	New Vertical Dry Hammermills 1 – 36	CD2, CD3, CD24	S1
E19	Pelletizer Feed Silo	CD10	S4
E20-E22, E24-E26, E28-E30, E23, E27, E31	Pelletizers 1 - 3 Pelletizers 4 - 6 Pelletizers 7 - 9 Pellet Coolers 1 - 3	CD14a, CD14b, CD14c CD15	S5
E32-E34, E36-E38, E49-E51, E35, E39, E52	Pelletizers 10-12 Pelletizers 13-15 New Pelletizers 16-18 Pellet Cooler 4, Pellet Cooler 5, New Pellet Cooler 6	CD18a, CD18b, CD18c, CD19	S6
E40-E41	Pellet Silos 1 - 2	CD20	S7
E42	Loadout Dust Silo	CD21, CD22	S8
E43	(Input lines: Hammermill Dust, Pelletizing Fines, Pelletizing Dust, Loadout Fines)	CD23	S9
E56	Unpaved Roads	None	S0

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B.1 EQUIPMENT

Equipment ID	Equipment Description	Control Device ID	Emission Point ID
E57	Paved Roads	None	S0
Exempt Sources			
E44-E45	Engine 1 – 865 Hp Generator Engine 2 – 305 Hp Fire Pump	None	S13 S14
E53- E55	2,000 gallon diesel storage tank, 359 gallon diesel storage tank, 660 gallon diesel storage tank,	None	E53 – E55
E46	Truck Dump 1	None	S0
E47	Truck Dump 2 (New)	None	S0

B.2 CONTROL DEVICES

Control Device ID	Control Device Description	Pollutant(s) Controlled
CD2	Wet Electrostatic Precipitator (WESP)	PM, PM ₁₀ , PM _{2.5}
CD3	(Modified) Regenerative Thermal Oxidizer (RTO1) (four (4) burners heat input capacity of 8 MM Btu/hr per burner, natural gas fired)	VOCs, HAPs
CD4	Bin Vent 1	PM, PM ₁₀ , PM _{2.5}
CD5-CD9	Existing Cyclofilters 1 – 5 (will be removed upon start-up of new vertical dry hammermills)	PM, PM ₁₀ , PM _{2.5}
CD10	Bin Vent 2	PM, PM ₁₀ , PM _{2.5}
CD14a, CD14b, CD14c	Baghouse 1a, Baghouse 1b, Baghouse 1c with integrated cyclones (Cyclofilters)	PM, PM ₁₀ , PM _{2.5}
CD15	(Modified) Regenerative Thermal Oxidizer (RTO2) / Regenerative Catalytic Oxidizer (RCO1) equipped with (one (1) burner heat input capacity of 5.2 MM Btu/hr, natural gas fired)	VOCs, HAPs
CD18a, CD18b	Baghouse 2a, Baghouse 2b with integrated cyclones (Cyclofilters)	PM, PM ₁₀ , PM _{2.5}
CD18c	New Baghouse 4	PM, PM ₁₀ , PM _{2.5}
CD19	(Modified) Regenerative Thermal Oxidizer (RTO3) / Regenerative Catalytic Oxidizer (RCO2) equipped with (two (2) burners heat input capacity of 5.2 MM Btu/hr per burner, natural gas fired)	VOCs, HAPs
CD20	Cyclofilter 6	PM, PM ₁₀ , PM _{2.5}
CD21	Cyclone 6	PM, PM ₁₀ , PM _{2.5}
CD23	Cyclofilter 7	PM, PM ₁₀ , PM _{2.5}
CD22	Baghouse 3	PM, PM ₁₀ , PM _{2.5}
CD24	New Bin Vent Filter 3	PM, PM ₁₀ , PM _{2.5}

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C. LIMITATIONS, MONITORING AND REPORTING CONDITIONS

Condition Number	Conditions
C.1	<p>Equipment ID: All Control Device ID: All</p> <p>(S.C. Regulation 61-62.1, Section II(J)(1)(g)) A copy of the Department issued construction and/or operating permit must be kept readily available at the facility at all times. The owner or operator shall maintain such operational records; make reports; install, use, and maintain monitoring equipment or methods; sample and analyze emissions or discharges in accordance with prescribed methods at locations, intervals, and procedures as the Department shall prescribe; and provide such other information as the Department reasonably may require. All records required to demonstrate compliance with the limits established under this permit shall be maintained on site for a period of at least five (5) years from the date the record was generated and shall be made available to a Department representative upon request.</p>
C.2	<p>Equipment ID: E6-E43, E49-E52, E58-E94 Control Device ID: All</p> <p>The owner/operator shall inspect, calibrate, adjust, and maintain continuous monitoring systems, monitoring devices, and gauges in accordance with manufacturer’s specifications or good engineering practices. The owner/operator shall maintain on file all measurements including continuous monitoring system or monitoring device performance measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required in a permanent form suitable for inspection by Department personnel.</p> <p>(S.C. Regulation 61-62.1, Section II(J)(1)(d)) Sources required to have continuous emission monitors shall submit reports as specified in applicable parts of the permit, law, regulations, or standards.</p>
C.3	<p>Equipment ID: E6-E43, E49-E52, E58-E94 Control Device ID: All</p> <p>All gauges shall be readily accessible and easily read by operating personnel and Department personnel (i.e. on ground level or easily accessible roof level). Monitoring parameter readings (i.e., pressure drop readings, etc.) and inspection checks shall be maintained in logs (written or electronic), along with any corrective action taken when deviations occur. Each incidence of operation outside the operational ranges, including date and time, cause, and corrective action taken, shall be recorded and kept on site. Exceedance of operational range shall not be considered a violation of an emission limit of this permit, unless the exceedance is also accompanied by other information demonstrating that a violation of an emission limit has taken place. Reports of these incidences shall be submitted semiannually. If no incidences occurred during the reporting period then a letter shall be submitted to indicate such.</p>

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C. LIMITATIONS, MONITORING AND REPORTING CONDITIONS

Condition Number	Conditions
	Any alternative method for monitoring control device performance must be preapproved by the Department and shall be incorporated into the permit as set forth in S.C. Regulation 61-62.70.7.
C.4	<p>Equipment ID: E6-E43, E48-E52, E58-E94 Control Device ID: All</p> <p>All emissions points, duct work and other locations that are required to be tested, shall be designed and constructed in a manner to facilitate testing in accordance with applicable EPA approved source testing methods; including, but not be limited to, methods specifying test port location and sizing criteria.</p> <p>For any source test required under an applicable standard or permit condition, the owner, operator, or representative shall comply with S.C. Regulation 61-62.1, Section IV - Source Tests.</p> <p>Unless approved otherwise by the Department, the owner, operator, or representative shall ensure that source tests are conducted while the source is operating at the maximum expected production rate or other production rate or operating parameter which would result in the highest emissions for the pollutants being tested. Some sources may have to spike fuels or raw materials to avoid being subjected to a more restrictive feed or process rate. Any source test performed at a production rate less than the rated capacity may result in permit limits on emission rates, including limits on production if necessary.</p> <p>When conducting source tests subject to this section, the owner, operator, or representative shall provide the following:</p> <ul style="list-style-type: none"> • Department access to the facility to observe source tests; • Sampling ports adequate for test methods; • Safe sampling site(s); • Safe access to sampling site(s); • Utilities for sampling and testing equipment; and • Equipment and supplies necessary for safe testing of a source. <p>The owner or operator shall comply with any limits that result from conducting a source test at less than rated capacity. A copy of the most recent Department issued source test summary letter, whether it imposes a limit or not, shall be maintained with the operating permit, for each source that is required to conduct a source test.</p> <p>Site-specific test plans and amendments, notifications, and source test reports shall be submitted to the Manager of the Source Evaluation Section, Bureau of Air Quality.</p>
C.5	<p>Equipment ID: Facility Wide Control Device ID: All</p> <p>With the issuance of this Synthetic Minor Construction Permit, the following construction permits</p>

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C. LIMITATIONS, MONITORING AND REPORTING CONDITIONS

Condition Number	Conditions
	1240-0133-CA, 1240-0133-CB, 1240-0133-CB-R1, and 1240-0133-CB-R2 will be superseded by Synthetic Minor Construction Permit 1240-0133-CC.
C.6	<p>Equipment ID: Facility-Wide Control Device ID: All</p> <p>(S.C. Regulation 61-62.1, Section II.E) This facility has established federally enforceable operating limitations to limit its potential to emit to less than 250.0 tons per year for volatile organic compounds (VOCs), less than 250.0 tons per year for particulate matter (PM), less than 250.0 tons per year for particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (PM₁₀), and less than 250.0 tons per year for particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers (PM_{2.5}), to avoid Prevention of Significant Deterioration (PSD).</p> <p>The owner/operator shall maintain production rate, material throughput in the appropriate units of measurements such as (ODT/hr), (ODT/month) (ODT/year), (lb/hr), (tons/year), fuel usage, etc. records and any other records necessary to determine compliance with facility wide synthetic minor limits for VOC, PM, PM₁₀, and PM_{2.5} emissions. VOC, PM, PM₁₀, and PM_{2.5} emissions shall be calculated by using the approved emission factors and shall be calculated on a monthly basis, and a twelve-month rolling sum shall be calculated for total VOC, PM, PM₁₀, and PM_{2.5} emissions. Facility-wide emission totals must include emissions from insignificant activities. The twelve month rolling sum shall be less than 250.0 tons for total VOC, shall be less than 250.0 tons for PM, shall be less than 250.0 tons for PM₁₀, and shall be less than 250.0 tons for PM_{2.5}. Reports of the calculated values and the twelve-month rolling sum, calculated for each month in the reporting period, and operating parameters and algorithms in the permit Attachment - Algorithms shall be submitted semiannually.</p>
C.7	<p>Equipment ID: Facility-Wide Control Device ID: All</p> <p>(S.C. Regulation 61-62.1, Section II(E)) This facility has established federally enforceable operating limitations to limit its potential to emit to less than 10.0 tons per year for any single HAP emission and 25.0 tons per year for any combination of HAP emissions to Avoid Major Source HAP status.</p> <p>The owner/operator shall maintain production rate, material throughput, fuel usage, etc. records and any other records necessary to determine facility wide HAP emissions for Acetaldehyde, Acrolein, Formaldehyde, Methanol, Phenol and Propionaldehyde. HAP emissions shall be calculated by using approved emission factors and shall be calculated on a monthly basis, and a twelve-month rolling sum shall be calculated for individual HAP, and total HAP emissions. Facility-wide emission totals must include emissions from insignificant activities. The twelve-month rolling sum shall be less than 10.0 tons for any single HAP and shall be less than 25.0 tons for total combined HAPs. Reports of the calculated values and the twelve-month rolling sum, calculated for each month in the reporting period, and operating parameters and algorithms in the permit Attachment - algorithms shall be submitted semiannually.</p>

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C. LIMITATIONS, MONITORING AND REPORTING CONDITIONS

Condition Number	Conditions
C.8	<p>Equipment ID: Facility-Wide Control Device ID: All</p> <p>(S.C. Regulation 61-62.1, Section II.E) The wood pellet manufacturing process is limited to a maximum production rate of 660,000 ODT/year. The owner/operator must record the actual dried wood pellet throughput on a monthly basis and a twelve month rolling sum shall be calculated for total dried wood pellet throughput. The twelve-month rolling sum shall not exceed 660,000 ODT/year. Reports of the monthly throughput and the twelve-month rolling sum calculated for each month in the reporting period, shall be submitted semi-annually.</p> <p>Production rates shall be adjusted anytime as necessary to stay below all facility wide limits if source testing results in higher emission factors.</p>
C.9	<p>Equipment ID: Facility-Wide Control Device ID: All</p> <p>Bypassing of any stack is not permitted except during emergencies or mechanical failures or malfunctions. Exceptions include periods of Furnace Cold Start-Up and Furnace Idle in which case the Furnace Bypass Stack S15 may be utilized. All occurrences in which a stack is bypassed shall be corrected in a timely manner. Any occurrence shall be documented in written logs or electronically and maintained on-site in a permanent format suitable for inspection by Department personnel. The documentation shall include date, duration, cause and corrective action of the occurrence. Emissions during Furnace Cold Start-Up and Furnace idle Mode shall be calculated and included in the monthly and facility-wide 12-month rolling sum emissions totals. The type and quantity of emissions which occur during any occurrence shall be included in the emissions reports which are submitted semi-annually. If there are no occurrences during the reporting period the semi-annual emissions report shall indicate such.</p>
C.10	<p>Equipment ID: Facility-Wide Control Device ID: All</p> <p>(S.C. Regulation 61-62.5, Standard No. 4, Section X; S.C. Regulation 61-62.6) The owner/operator shall continue to implement the current Best Management Practices Plan (BMP) for dust control at the site. Any revisions to the plan shall be reviewed and re-assessed periodically or any time the Department requests. The re-assessed plan shall be submitted to the Director of the Air Permitting Division, for review and approval. The BMP shall address and/or contain at a minimum the following:</p> <ol style="list-style-type: none"> 1. Within 90 days the facility shall install and maintain an onsite weather station that will continuously record wind speed and direction and rainfall. The weather station will assist in investigating fugitive dust events and dust complaints, if any. 2. Dust control methods for roadways, railcar and truck operations. Frequency of observations for storage piles shall be included. 3. Dust sources and dust control methods for each specific material handled and stored.

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C. LIMITATIONS, MONITORING AND REPORTING CONDITIONS

Condition Number	Conditions
	<p>Frequency of control should be included where appropriate.</p> <ol style="list-style-type: none">4. A maintenance schedule for all dust control equipment as well as a minimum inventory of spare parts.5. Best Management Practices for dust control to include the following:<ul style="list-style-type: none">• Written procedures for all dust control equipment and systems. These procedures shall be based on the manufacturer's recommendations when available.• Enviva will perform per shift fugitive dust observations on all fugitive dust control equipment and systems to mitigate fugitive dust. The facility will record fugitive dust observation results and corrective action, if any, in each shift production report.6. Training plans for dust control methods, equipment, and systems, including:<ul style="list-style-type: none">• New hire orientation dust management.• Annual dust management training for all plant personnel• Training roster to be maintained electronically and provided to SCDHEC upon request.7. Dust Complaint Information<ul style="list-style-type: none">• If any dust complaint is received by the facility, the facility will investigate to determine root cause, and attempt to contact the complainant to inform them of cause and solution• The facility will log dust complaints in a log including wind speed and direction.• If fugitive dust is observed beyond the property boundaries, the facility will implement corrective action, and record the event and corrective action in the appropriate shift production report.8. Modifications and/or contingency plans required for changing weather conditions, failure of equipment, electrical power failure, and any other factors that may influence the effectiveness of control methods.9. Steps to mitigate fugitive particulate matter generated on site from moving beyond facility property boundaries.10. Method to document plan requirement execution.<ul style="list-style-type: none">• All records required by the permit and the dust plan shall be maintained on site (electronically or hardcopy) for a period of five (5) years and provided to the Department upon request.11. Schedule for periodic review and update of the plan. <p>The facility shall update the Best Management Practices Plan if requested by the Department or if the facility determines additional control measures are needed or current dust control measures need modification. A log of any updates made to the plan as well as the updated plan shall be submitted semiannually to the Director of the Air Permitting Division for Department approval. The log shall include the basis for each update made to the plan. If no changes to the plan occurred during the reporting period, then a letter indicating such shall be submitted to the Director of the Air Permitting Division. The plan, logs demonstrating execution of the plan, and any updates made to</p>

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C. LIMITATIONS, MONITORING AND REPORTING CONDITIONS

Condition Number	Conditions																
	the plan shall be recorded in a suitable permanent form, maintained on-site, and made available for inspection by Department personnel upon request.																
C.11	<p>Equipment ID: E6-E9, E58, E10; E11-E12; E59-E94; E20-E39, E49-E52 Control Device ID: All</p> <p>(S.C. Regulation 61-62.1, Section II.E); (S.C. Regulation 61-62.1, Section IV - Source Tests)</p> <p>To verify PM, PM₁₀, PM_{2.5}, VOC, CO, NO_x, Acetaldehyde, Acrolein, Formaldehyde, Methanol, Phenol, and Propionaldehyde emissions, and to ensure continuing compliance with the existing facility-wide synthetic minor emission limits for PSD Avoidance (PM, PM₁₀, PM_{2.5}, and VOC < 250.0 tpy each pollutant) and major HAP source Avoidance (facility-wide HAPs < 10.0/25.0 tpy), a source test shall be conducted within 180 days after project completion and the startup of new and modified equipment. With the exception of CO and NO_x, subsequent source tests shall be conducted annually and be completed no later than twelve (12) months after the previous source test. Subsequent source tests for CO and NO_x shall be conducted every five (5) years and completed no later than sixty (60) months after the previous source test. The source test requirement is applicable to the following process equipment, emission points and pollutants:</p> <table border="1" data-bbox="285 1060 1516 1570"> <thead> <tr> <th data-bbox="285 1060 440 1205">EU ID</th> <th data-bbox="440 1060 808 1205">Source</th> <th data-bbox="808 1060 954 1205">Testing Location (Emission Point ID)</th> <th data-bbox="954 1060 1516 1205">Pollutants</th> </tr> </thead> <tbody> <tr> <td data-bbox="285 1205 440 1350">E6-E9, E58, E10, E11, E12, E59-E94</td> <td data-bbox="440 1205 808 1350">Green Hammermills, Green Chip Silo, Furnace, Dryers, Dry Hammermills</td> <td data-bbox="808 1205 954 1350">S1</td> <td data-bbox="954 1205 1516 1350">PM, PM₁₀, PM_{2.5}, VOC, CO, NO_x, Acetaldehyde, Acrolein, Formaldehyde, Methanol, Phenol, and Propionaldehyde</td> </tr> <tr> <td data-bbox="285 1350 440 1461">E20-E31</td> <td data-bbox="440 1350 808 1461">Pelletizers 1 – 9, Pellet Coolers 1 - 3</td> <td data-bbox="808 1350 954 1461">S5</td> <td data-bbox="954 1350 1516 1461">PM, PM₁₀, PM_{2.5}, VOC, CO, NO_x, Acetaldehyde, Acrolein, Formaldehyde, Methanol, Phenol, and Propionaldehyde</td> </tr> <tr> <td data-bbox="285 1461 440 1570">E32 – E39, E49 – E52</td> <td data-bbox="440 1461 808 1570">Pelletizers 10 – 18, Pellet Coolers 4 – 6</td> <td data-bbox="808 1461 954 1570">S6</td> <td data-bbox="954 1461 1516 1570">PM, PM₁₀, PM_{2.5}, VOC, CO, NO_x, Acetaldehyde, Acrolein, Formaldehyde, Methanol, Phenol, and Propionaldehyde</td> </tr> </tbody> </table> <p>The facility may request that the source tests be conducted less often than annually for a given pollutant if the source tests for at least three (3) consecutive tests indicate facility wide emissions will be less than 85% of the synthetic minor limits. If the request is granted, the facility shall conduct a source test no more than 36 months after the previous source test for the given pollutant. If a subsequent source test indicates facility wide emissions will be greater than 85% of the synthetic minor limits, the facility shall return to conducting annual source tests (no later than 12 months after the previous source test) for that pollutant.</p>	EU ID	Source	Testing Location (Emission Point ID)	Pollutants	E6-E9, E58, E10, E11, E12, E59-E94	Green Hammermills, Green Chip Silo, Furnace, Dryers, Dry Hammermills	S1	PM, PM ₁₀ , PM _{2.5} , VOC, CO, NO _x , Acetaldehyde, Acrolein, Formaldehyde, Methanol, Phenol, and Propionaldehyde	E20-E31	Pelletizers 1 – 9, Pellet Coolers 1 - 3	S5	PM, PM ₁₀ , PM _{2.5} , VOC, CO, NO _x , Acetaldehyde, Acrolein, Formaldehyde, Methanol, Phenol, and Propionaldehyde	E32 – E39, E49 – E52	Pelletizers 10 – 18, Pellet Coolers 4 – 6	S6	PM, PM ₁₀ , PM _{2.5} , VOC, CO, NO _x , Acetaldehyde, Acrolein, Formaldehyde, Methanol, Phenol, and Propionaldehyde
EU ID	Source	Testing Location (Emission Point ID)	Pollutants														
E6-E9, E58, E10, E11, E12, E59-E94	Green Hammermills, Green Chip Silo, Furnace, Dryers, Dry Hammermills	S1	PM, PM ₁₀ , PM _{2.5} , VOC, CO, NO _x , Acetaldehyde, Acrolein, Formaldehyde, Methanol, Phenol, and Propionaldehyde														
E20-E31	Pelletizers 1 – 9, Pellet Coolers 1 - 3	S5	PM, PM ₁₀ , PM _{2.5} , VOC, CO, NO _x , Acetaldehyde, Acrolein, Formaldehyde, Methanol, Phenol, and Propionaldehyde														
E32 – E39, E49 – E52	Pelletizers 10 – 18, Pellet Coolers 4 – 6	S6	PM, PM ₁₀ , PM _{2.5} , VOC, CO, NO _x , Acetaldehyde, Acrolein, Formaldehyde, Methanol, Phenol, and Propionaldehyde														

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Condition Number	Conditions
	<p>The source test will be used to verify emission rates, to establish and/or re-establish site specific emission factors and, for recording keeping and reporting requirements. Results from the source tests shall be reported in units of pounds per hour (lb/hr), Results from the source test to establish and/or re-establish site-specific emission factors shall be reported in units of pound per oven-dry short ton (lb/ODT) and also in units of (lb/hr).</p> <p>The owner/operator shall include as a source test monitoring parameter a record of the material throughput ODT/hr of process equipment. For the Baghouses, Cyclofilters, Bin Vent Filters and Dust Silos the facility shall also monitor and record the pressure drop across the control device to establish or re-establish pressure drop ranges needed to ensure compliance with PM, PM₁₀, and PM_{2.5} emission limits. For the Wet Electrostatic Precipitator the facility shall also monitor and record the secondary voltage in kilovolts and current in milliamps for each grid to establish or re-establish operating voltage and current ranges needed to ensure compliance with PM, PM₁₀, and PM_{2.5} emission limits. For the Regenerative Thermal Oxidizer and Regenerative Thermal Oxidizers/Catalytic Oxidizers the facility shall also monitor and record the combustion zone temperature to re-establish operating temperatures needed to ensure compliance with VOC emission limits.</p> <p>An emission factor for each pollutant tested shall be derived from the source test results as follows:</p> <p>EF in lb/ODT (short tons) = the average measured emission rate (lb/hr) for each pollutant / average wood material throughput (ODT/hr)</p> <p>The owner/operator shall use the initial emission factors identified in the Statement of Basis for this permit, until new emission factors that are developed from subsequent source testing have been approved to use.</p> <p>The owner/operator may request approval to re-establish emission factors based on stack test results. However, if any source testing subsequent to this approval results in a higher emission factor than the approved emission factor, the owner/operator shall recalculate facility wide emissions dating back to the calendar year the emission factor was approved. Recalculated emissions shall be submitted to the Department within 30 days after receipt of test results.</p>
C.12	<p>Equipment ID: E40, E41 Control Device ID: CD20</p> <p>(S.C. Regulation 61-62.1, Section II.E); (S.C. Regulation 61-62.1, Section IV - Source Tests)</p> <p>To verify potential HAP emissions estimated in the application, a total of four (4) source tests shall be conducted on the Wood Pellet Storage Silos, with one test per quarter within a 12-month period from the initial test to determine if there is any variability in emissions due to changes in weather during the year and changes in softwood percentage. The facility may test emissions of volatile organic</p>

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	<p>compounds (VOCs) as a surrogate to determine the total potential HAP emissions by applying the HAP ratios used in the application. The initial source test shall be conducted within 180 days after project completion and the startup of new and modified equipment. There shall be at least a 60 day separation between each test. The facility must submit a source test plan to Manager of Source Evaluation for approval prior to performance of the source tests.</p> <p>To verify potential CO emissions estimated in the application, a total of four (4) source tests shall be conducted on the Wood Pellet Storage Silos, with one test per quarter within a 12-month period from the initial test to determine if there is any variability in emissions due to changes in weather during the year and changes in softwood percentage. The initial source test shall be conducted within 180 days after project completion and the startup of new and modified equipment. There shall be at least a 60 day separation between each test. The facility must submit a source test plan to Manager of Source Evaluation for approval prior to performance of the source tests.</p>
C.13	<p>Equipment ID: E6-E9, E58, E10; E11-E12; E59-E94; E20-E39, E49-E52 Control Device ID: All</p> <p>(S.C. Regulation 61-62.1, Section II.E) The owner/operator shall calculate VOC emissions including formaldehyde and methanol emissions using the EPA OTM-26 (also referred to as Wood Products Protocol WPP1) algorithm below for sources subject to source testing requirements:</p> <p>VOC = [Method 25A VOC as propane + Methanol as methanol + Formaldehyde as formaldehyde] - [(0.65)Methanol as propane]</p>
C.14	<p>Equipment ID: Dryer Duct Burner (E48) Control Device ID: None</p> <p>(S.C. Regulation 61-62.5, Standard No. 1, Section I) The fuel burning source(s) shall not discharge into the ambient air smoke which exceeds opacity of 20%. The owner/operator shall, to the extent practicable, maintain and operate any source including associated air pollution control equipment in a manner consistent with good air pollution control practices for minimizing emissions. Because this source is limited to combusting natural gas, compliance is assured.</p> <p>(S.C. Regulation 61-62.5, Standard No. 1, Section II) The maximum allowable discharge of particulate matter resulting from this source is 0.6 pounds per million BTU input.</p> <p>(S.C. Regulation 61-62.5, Standard No. 1, Section III) The maximum allowable discharge of sulfur dioxide (SO₂) resulting from this source is 2.3 pounds per million BTU input.</p> <p>This source is permitted to burn only natural gas as fuel. The use of any other substances as fuel is prohibited without prior written approval from the Department.</p>

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C.15	<p>Equipment ID: E6-E12, E58, E59-E94, E20-E39, E49-E52 Control Device ID: CD3, CD15, CD19</p> <p>(S.C. Regulation 61-62.5, Standard No. 3, Section III.I.1) Emissions from CD3, CD15, and CD19 shall not exhibit an opacity greater than 20% (each).</p> <p>(S.C. Regulation 61-62.5, Standard No.3, Section III.I.2) Particulate matter emissions from CD3, CD15, and CD19 shall not exceed 0.5 lb/10⁶ Btu total heat input. The total heat input value from waste and virgin fuel used for production shall not exceed the Btus used to affect the combustion of the waste and shall not include any Btu input from auxiliary burners located outside of the primary combustion chamber such as those found in secondary combustion chambers, tertiary combustion chambers or afterburners unless those auxiliary burners are fired with waste. In the case where waste is fired in the auxiliary burners located outside of the primary combustion chamber, only the Btu value of the fuel for the auxiliary burner which is from waste shall be added to the total heat input value.</p> <p>The permittee shall perform a visual inspection on a weekly basis. Visual Inspection means a qualitative observation of opacity during daylight hours where the inspector records results in a log, noting color, duration, density (heavy or light), cause and corrective action taken for any abnormal emissions. The observer does not need to be certified to conduct valid visual inspections. However, at a minimum, the observer should be trained and knowledgeable about the effects on visibility of emissions caused by background contrast, ambient lighting, and observer position relative to lighting, wind, and the presence of uncombined water. Logs shall be kept to record all visual inspections, including cause and corrective action taken for any abnormal emissions and visual inspections from date of recording. The owner/operator shall submit reports of these logs. If there are no incidences, a letter should be submitted semi-annually stating such.</p> <p>The CD3, CD15 and CD19 control devices are permitted to burn only natural gas as fuel. The use of any other substances as fuel is prohibited without prior written approval from the Department.</p>
C.16	<p>Equipment ID: Furnace (E11) Control Device ID: WESP (CD2); RTO1 (CD3)</p> <p>Except as specified for a Furnace Cold Start-Up, the 200 million Btu/hr furnace is permitted to burn only clean untreated bark/hog fuel (i.e. wood chips, fines, sawdust), as fuel. In accordance with SC Regulation 61-62.1 Clean Wood is defined as untreated wood or untreated wood products including clean untreated lumber, tree stumps (whole or chipped), and tree limbs (whole or chipped). Clean wood does not include yard waste, which is defined elsewhere in SC Regulation 61-62.1, or construction, renovation, and demolition waste (including but not limited to railroad ties and telephone poles). The use of any other substances as fuel is prohibited without prior written approval from the Department.</p>

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Condition Number	Conditions
C.17	<p>Equipment ID: Furnace (E11), Dryer (E12), Vertical Dry Hammermills (E59-E94) Control Device ID: WESP (CD2); RTO1 (CD3); Bin Vent 3 (CD24)</p> <p>Within 180 days after the issuance of this construction permit the owner/operator shall submit to the Director of the Air Permitting Division a written notification specifying which operational design will be constructed for the Vertical Dryer Hammermills according to i. or ii. or iii. as follows:</p> <ul style="list-style-type: none"> i. Exhaust stream proceeds to the new bin vent filter [Bin Vent Filter 3 (CD24)] followed by new safety water quench duct and then proceeding to the existing dryer furnace (E11) and then proceeding to the existing WESP (CD2) and RTO1 (CD3) or; ii. Exhaust stream proceeds to the new safety water quench duct and then proceeding to the existing WESP (CD2) and then proceeding to the existing RTO1 (CD3) or; iii. Exhaust stream consisting of a combination of the two routing options (i and ii).
C.18	<p>Equipment ID: Furnace (E11), Rotary Dryer (E12) Control Device ID: WESP (CD2); RTO1 (CD3)</p> <p>The owner/operator shall develop and implement written Best Management Practices Procedures which address startup, shutdown, malfunction and Furnace Idle Mode periods. The procedures shall describe, in detail, procedures for operating and maintaining the sources during periods of startup, shutdown, malfunction and Idle Mode and a program of corrective action for malfunctioning processes, air pollution control equipment, and monitoring equipment used to comply with the applicable requirements contained within this permit. The work practice procedures shall be submitted to the Director of the Air Permitting Division for review and approval within 180 days of issuance of this permit. A log of any updates made to the procedures as well as the updated procedures shall be submitted semi-annually to the Director of the Air Permitting Division for approval. The log shall include the basis for each update made to the procedure. If no changes to the procedure occurred during the reporting period, then a letter shall indicate such. The procedures, logs demonstrating execution of the procedures, and any updates made to the procedure shall be recorded in a suitable permanent form, maintained on-site, and made available for inspection by Department personnel upon request.</p>
C.19	<p>Equipment ID: Furnace (E11) Control Device ID: WESP (CD2); RTO1 (CD3)</p> <p>(S.C. Regulation 61-62.5, Standard No. 4, Section IX) Where construction or modification began after December 31, 1985, emissions from this source (including fugitive emissions) shall not exhibit an opacity greater than 20%.</p> <p><u>Furnace Bypass Stack (S15) - Cold Start-Ups</u> Use of the furnace bypass stack during a furnace cold start-up period, shall not exceed eight (8) hours per cold start-up and fifty (50) hours per year, total. A cold startup period shall be defined as the time in which the furnace is initially started up (from a cold shut-down) and continues until the furnace's</p>

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	<p>secondary combustion zone temperature reaches 600 °F or eight (8) hours, whichever is less time. During cold start-ups, the heat input rate of the furnace shall not exceed 15% of the maximum heat input rate of the furnace (shall not exceed 30 MM Btu /hr).</p> <p>Diesel fuel may be used as an accelerant for cold start-ups. The quantity of diesel fuel utilized shall not exceed (15-30) gallons for each Furnace Cold Start-Up and shall not exceed (100-200) gallons per year.</p> <p>The owner/operator shall record the following:</p> <ol style="list-style-type: none"> I. Date, start and end time of each Furnace Cold Start-Up. II. Yearly total hours of Furnace Cold Start-Ups based on a 12-month rolling sum basis. III. Fuel consumption for each Furnace Cold Start-Up. IV. Monthly and Yearly total fuel consumption based on a 12-month rolling sum basis. <p>Records of the recorded values, calculated values, monthly and the twelve-month rolling sum, calculated for each month in the reporting period, shall be submitted semi-annually. If no cold start-ups occurred during the reporting period, the submittal shall state, thusly. Emissions from the Furnace Bypass stack during Furnace Cold Start-Up shall be calculated and included in the monthly and facility-wide 12-month rolling sum emissions totals.</p> <p>The owner/operator shall utilize Best Management Practices to minimize emissions to the maximum extent possible until the Furnace reaches standard operational status. Best Management Practice (BMP) means a practice, or combination of practices, that is determined to be an effective and practicable (including technological, economic, and institutional considerations) means of preventing or reducing the amount of air pollution generated.</p>
C.20	<p>Equipment ID: Furnace (E11) Control Device ID: WESP (CD2); RTO1 (CD3)</p> <p>(S.C. Regulation 61-62.5, Standard No. 4, Section IX) Where construction or modification began after December 31, 1985, emissions from this source (including fugitive emissions) shall not exhibit an opacity greater than 20%.</p> <p><u>Furnace Bypass stack (S15)- Idle Mode</u> The Furnace Idle Mode shall not exceed five-hundred (500) hours per year total, based on a 12-month rolling sum basis. Idle Mode is defined as furnace operation up to a maximum heat input rate of 12 MM Btu/hr when the WESP (CD2) an RTO1 (CD3) are undergoing maintenance or cleaning or when the dryer (E12) system is being repaired or other downstream equipment such as the Dry Hammermill or Pellet Mill Systems(s) are shut down for maintenance or repairs. During this time, emissions may exhaust out of the furnace bypass stack (S15).</p> <p>The owner/operator shall record the following:</p>

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	<p>I. Date, start and end time of each Furnace idle Mode period.</p> <p>II. Cause of the Idle Mode and corrective or maintenance actions taken during the Idle Mode period.</p> <p>III. Total duration of Furnace Idle mode period in hours per year based on a 12-month rolling sum basis.</p> <p>IV. Fuel consumption during the Furnace Idle Mode period.</p> <p>Records of the recorded values, calculated values, monthly and the twelve-month rolling sum, calculated for each month in the reporting period, shall be submitted semi-annually. If no Idle Mode periods occurred during the reporting period, the submittal shall state, thusly. Emissions from the Furnace Bypass stack during Furnace Idle Mode shall be calculated and included in the monthly and facility-wide 12-month rolling sum emissions totals.</p> <p>The owner/operator shall utilize Best Management Practices to minimize emissions to the maximum extent possible until the Furnace reaches standard operational status. Best Management Practice (BMP) means a practice, or combination of practices, that is determined to be an effective and practicable (including technological, economic, and institutional considerations) means of preventing or reducing the amount of air pollution generated.</p>
C.21	<p>Equipment ID: Rotary Dryer (E12) Control Device ID: WESP (CD2); RTO1 (CD3)</p> <p>(S.C. Regulation 61-62.5, Standard No. 4, Section IX) Where construction or modification began after December 31, 1985, emissions from this source (including fugitive emissions) shall not exhibit an opacity greater than 20%.</p> <p><u>Rotary Dryer Bypass Stack</u> Use of the Rotary Dryer Bypass stack shall be limited to emergencies or mechanical failures or malfunctions.</p> <p>The owner/operator shall maintain an on-site log of any time the bypass stack is opened for any reason. The log shall include start time, end time and reason for opening.</p> <p>The owner/operator shall utilize Best Management Practices to minimize emissions to the maximum extent possible during periods of emergencies or mechanical failures or malfunctions. Best Management Practice (BMP) means a practice, or combination of practices, that is determined to be an effective and practicable (including technological, economic, and institutional considerations) means of preventing or reducing the amount of air pollution generated.</p>
C.22	<p>Equipment ID: Rotary Dryer (E12) Control Device ID: WESP (CD2); RTO1 (CD3)</p> <p>(S.C. Regulation 61-62.1, Section II.E)</p>

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	<p>Dryer wood chip moisture content shall be within a target range of no less than 6% moisture on a daily average basis. The wood chip moisture content shall be monitored daily (or more frequently as appropriate for the process) and shall be recorded in a written log or electronically. Deviations from the acceptable range, including cause and corrective action taken, shall be submitted semi-annually. If there are no incidences, a letter should be submitted semi-annually stating such.</p> <p>The owner/operator shall install, calibrate, operate and maintain monitoring and recording devices to record equipment process rates, material production rates, material (initial and final) moisture content, equipment drying zone temperatures, and any other parameters necessary which demonstrate that the Dryer and associated equipment are operating in accordance with manufacturer's specification. Records shall be maintained on site and made available to a Department representative upon request.</p>
C.23	<p>Equipment ID: E1-E94 Control Device ID: All</p> <p>(S.C. Regulation 61-62.5, Standard No. 4, Section IX) Where construction or modification began after December 31, 1985, emissions from these sources (including fugitive emissions) shall not exhibit an opacity greater than 20%, each.</p> <p>The owner/operator shall perform a visual inspection on a weekly basis of stack emissions from S1, S2, S3, S4, S5, S6, S7, S8, and S9 during source operation. The owner/operator shall perform a visual inspection of the stack emissions from S15 daily anytime the bypass stack is used for more than one (1) consecutive hour. Logs shall be kept to record all visual inspections, noting color, duration, density (heavy or light), cause, and corrective action taken for any abnormal emissions. If a source did not operate during the required visual inspection time frame, the log shall indicate such. The owner/operator shall submit semi-annually reports. The report shall include records of abnormal emissions, if any, and corrective actions taken.</p> <p>Visual inspection means a qualitative observation of opacity during daylight hours. The observer does not need to be certified to conduct valid visual inspections. However, at a minimum, the observer should be trained and knowledgeable about the effects on visibility of emissions caused by background contrast, ambient lighting, and observer position relative to lighting, wind, and the presence of uncombined water.</p>
C.24	<p>Equipment ID: E1-E5, E46, E47; E6-E9, E58, E10; E11-E13; E59-E94; E20-E39, E49-E52; E40-E43 Control Device ID: All</p> <p>(S.C. Regulation 61-62.5, Standard No. 4, Section VIII) Particulate matter emissions shall be limited to the rate specified by use of the following equations:</p> <p style="padding-left: 40px;">For process weight rates less than or equal to 30 tons per hour $E = (F) 4.10P^{0.67}$ and</p> <p style="padding-left: 40px;">For process weight rates greater than 30 tons per hour</p>

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	<p align="center"> $E = (F) 55.0P^{0.11} - 40$ Where E = the allowable emission rate in pounds per hour P = process weight rate in tons per hour F = effect factor from Table B in S.C. Regulation 61-62.5, Standard No. 4 </p> <p>For the purposes of compliance with this condition, the process boundaries are defined as follows:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="background-color: #d3d3d3;">Process/Equipment IDs</th> <th style="background-color: #d3d3d3;">Max Process Weight Rate (ton/hr)</th> </tr> </thead> <tbody> <tr><td>P0/E1-Debarker</td><td align="center">230</td></tr> <tr><td>P0/E2-Electric Powered Chipper</td><td align="center">175</td></tr> <tr><td>P0/E3-Green Wood Screening</td><td align="center">175</td></tr> <tr><td>P0/E4-Pile Drop</td><td align="center">350</td></tr> <tr><td>P0/E5-Storage Pile Wind Erosion</td><td align="center">350</td></tr> <tr><td>P0/E46-Truck Dump 1</td><td align="center">175</td></tr> <tr><td>P0/E47-Truck Dump 2</td><td align="center">175</td></tr> <tr><td>P1/E6-E9, E58, E10 -Green Hammermills, Green Chip Silo, P2/E11-Furnace, P2/E12-Dryer</td><td align="center">435 (total)</td></tr> <tr><td>P2/E11-Furnace Bypass</td><td align="center">85</td></tr> <tr><td>P2/E13-Dry Chip Silo</td><td align="center">85</td></tr> <tr><td>P3/E59-E94-Vertical Dry Hammermill 1 through 36</td><td align="center">96</td></tr> <tr><td>P3/E19-Pelletizer Feed Silo</td><td align="center">96</td></tr> <tr><td>P4/E20-E31 Pelletizers, Pellet Coolers 1-3</td><td align="center">48 (total)</td></tr> <tr><td>P4/E32-E52 Pelletizers, Pellet Coolers 4-6</td><td align="center">48 (total)</td></tr> <tr><td>P5/E40-E41 Pellet Silo 1-2</td><td align="center">96</td></tr> <tr><td>P5/E42-Loadout</td><td align="center">150</td></tr> <tr><td>P5/E43-Dust Silo</td><td align="center">5</td></tr> </tbody> </table> <p>Wet Electrostatic Precipitator</p> <p>The owner/operator shall install, (continue to) operate and maintain secondary voltage and current meters for each field. Each parameter shall be recorded each shift during source operation. The WESPs shall be in place and operational whenever processes controlled by the WESPs are running, except during periods of WESP malfunction or mechanical failure.</p> <p>Operational ranges for the monitored parameters shall be reviewed and re-established (if</p>	Process/Equipment IDs	Max Process Weight Rate (ton/hr)	P0/E1-Debarker	230	P0/E2-Electric Powered Chipper	175	P0/E3-Green Wood Screening	175	P0/E4-Pile Drop	350	P0/E5-Storage Pile Wind Erosion	350	P0/E46-Truck Dump 1	175	P0/E47-Truck Dump 2	175	P1/E6-E9, E58, E10 -Green Hammermills, Green Chip Silo, P2/E11-Furnace, P2/E12-Dryer	435 (total)	P2/E11-Furnace Bypass	85	P2/E13-Dry Chip Silo	85	P3/E59-E94-Vertical Dry Hammermill 1 through 36	96	P3/E19-Pelletizer Feed Silo	96	P4/E20-E31 Pelletizers, Pellet Coolers 1-3	48 (total)	P4/E32-E52 Pelletizers, Pellet Coolers 4-6	48 (total)	P5/E40-E41 Pellet Silo 1-2	96	P5/E42-Loadout	150	P5/E43-Dust Silo	5
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	<p>appropriate) to ensure proper operation of the pollution control equipment. These operational ranges for the monitored parameters shall be derived from stack test data, vendor certification, and/or operational history and visual inspections, which demonstrate the proper operation of the equipment. If ranges need to be re-established, these ranges and supporting documentation (certification from manufacturer, stack test results, 30 days of normal readings, opacity readings, etc.) shall be submitted to the Director of the Air Permitting Division and operating ranges may be updated after submittal to, and approval by, the Department.</p> <p>New Baghouse (CD18c), New Bin Vent 3 (CD24)</p> <p>Operational ranges for the monitored parameters shall be established to ensure proper operation of the pollution control equipment. These operational ranges for the monitored parameters shall be derived from stack test data, vendor certification, and/or operational history and visual inspections, which demonstrate the proper operation of the equipment. Prior to the first source test, the facility shall use manufacturer’s recommendations for operational ranges. The manufacturer’s recommendations must be maintained on site. These ranges and supporting documentation (certification from manufacturer, stack test results, 30 days of normal readings, opacity readings, etc.) shall be submitted to the Director of the Air Permitting Division within 180 days of when the final test report due. Operating ranges may be updated following submittal to, and approval by, the Department.</p> <p>Baghouses/Cyclofilters/Multiclones/Bin Vents</p> <p>The owner/operator shall install, (continue to) operate, and maintain pressure drop gauges on each module of the Baghouses/Cyclofilters/Multiclones/Bin Vents. Pressure drop readings for these devices shall be recorded each shift during source operation. Operation and maintenance checks shall be made on at least a monthly basis for cleaning systems, dust collection hoppers and conveying systems for proper operation. The Baghouses/Cyclofilters/Multiclones/Bin Vents shall be in place and operational whenever processes controlled by these devices are running, except during periods of device malfunction or mechanical failure.</p> <p>Operational ranges for the monitored parameters shall be reviewed and re-established (if appropriate) to ensure proper operation of the pollution control equipment. These operational ranges for the monitored parameters shall be derived from stack test data, vendor certification, and/or operational history and visual inspections, which demonstrate the proper operation of the equipment. If ranges need to be re-established, these ranges and supporting documentation (certification from manufacturer, stack test results, 30 days of normal readings, opacity readings, etc.) shall be submitted to the Director of the Air Permitting Division and operating ranges may be updated following submittal to, and approval by, the Department.</p> <p>Cyclone 6 (CD21)</p>

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	<p>The cyclone shall be in place and operational whenever processes controlled by the cyclone are running, except during periods of cyclone malfunction or mechanical failure. The following operation and maintenance checks will be made on at least a weekly basis for the cyclone:</p> <ul style="list-style-type: none"> i. Check the cyclone and ductwork system for damaged or worn sheet metal or other interferences with proper operation. ii. Check dust collection hoppers and conveying systems for proper operation. iii. The results from the operation and maintenance checks shall be maintained in logs (written or electronic), along with any corrective action taken.
C.25	<p>Equipment ID: E6-E12, E59-E94, E20-E39, E49-E52 Control Device ID: CD3, CD15, CD19</p> <p>Regenerative Thermal Oxidizers</p> <p>The owner/operator shall install, continue to operate, and maintain combustion zone temperature indicators on each Regenerative Thermal Oxidizer. The owner/operator shall maintain the 3-hour block average combustion chamber temperature above the minimum temperature established during the performance test. Temperature readings shall be recorded at least every fifteen (15) minutes during source operation for each Regenerative Thermal Oxidizer. Maintenance checks for proper temperature indicator operation shall be made on at least a monthly basis. Each Regenerative Thermal Oxidizer shall be in place and operational whenever processes controlled by it are running, except during periods of Regenerative Thermal Oxidizer malfunction or mechanical failure.</p> <p>Operational ranges for the monitored parameters shall be reviewed and re-established (if appropriate) to ensure proper operation of the pollution control equipment. These operational ranges for the monitored parameters shall be derived from stack test data, vendor certification, and/or operational history and visual inspections, which demonstrate the proper operation of the equipment. If ranges need to be re-established, these ranges and supporting documentation (certification from manufacturer, stack test results, 30 days of normal readings, opacity readings, etc.) shall be submitted to the Director of the Air Permitting Division and operating ranges may be updated following submittal to, and approval by, the Department.</p> <p>Regenerative Catalytic Oxidizers</p> <p>The owner/operator shall install and continue to operate and maintain temperature indicators across each combustion chamber on each incinerator during source operation. Temperature readings shall be recorded at least every 15 minutes and maintained on site. The owner/operator shall also check the activity level of a representative sample of the catalyst at least every 16 months. Each catalytic incinerator shall be in place and operational whenever processes controlled by it are running, except during periods of catalytic incinerator malfunction or mechanical failure.</p>

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Condition Number	Conditions
	<p>Operational ranges for the monitored parameters shall be reviewed and re-established (if appropriate) to ensure proper operation of the pollution control equipment. These operational ranges for the monitored parameters shall be derived from stack test data, vendor certification, and/or operational history and visual inspections, which demonstrate the proper operation of the equipment. If ranges need to be re-established, these ranges and supporting documentation (certification from manufacturer, stack test results, 30 days of normal readings, opacity readings, etc.) shall be submitted to the Director of the Air Permitting Division and operating ranges may be updated following submittal to, and approval by, the Department.</p>
C.26	<p>Equipment ID: E6-E9, E58, E10; E11-E13; E59-E94; E20-E39, E49-E52; E40-E43 Control Device ID: CD2, CD3, CD14a-c, CD15, CD18a-c, CD19, CD 21, CD22, CD23, CD24</p> <p>(S.C. Regulation 61-62.1, Section II.E)</p> <p>To ensure continued compliance, the owner/operator shall perform inspections and maintenance on the above specified control devices (WESP, RTO1, RTO/RCO's, Baghouses, Bin Vent, Cyclone 6, Cyclofilter), as recommended by the manufacturer. If there are no manufacturer's inspection and maintenance recommendations, as a minimum, the inspection and maintenance requirements shall include the following:</p> <p><u>Baghouses, Cyclofilters, Bin Vent</u></p> <ul style="list-style-type: none"> i. Monthly visual inspection of the system ductwork and material collection units for leaks; ii. The owner/operator shall perform an annual internal inspection of the Baghouses, Cyclofilters, and Bin Vent structural integrity. Annual internal inspections shall be completed no later than sixteen (16) months from the previous inspection. <p><u>Wet Electrostatic Precipitator, Regenerative Thermal Oxidizer, Regenerative Thermal Oxidizer (RTO) / Regenerative Catalytic Oxidizer (RCO)</u></p> <ul style="list-style-type: none"> i. Monthly visual inspection of the system ductwork and material collection units for leaks; ii. The owner/operator shall perform an Annual internal inspection of the heat transfer medium, or catalyst as applicable to the RCO's and associated inlet/outlet valves. Annual inspections shall be completed no later than sixteen (16) months from the previous inspection. This inspection must include (but is not limited to) the following: <ul style="list-style-type: none"> a) Visual checks of critical components b) Checks for any equipment that does not alarm when de-energized, to ensure it is operational c) Checks for signs of plugging in the hopper and gas distribution equipment, and replacement of broken equipment as required. <p>The results of inspection and maintenance shall be maintained in a logbook (written or electronic</p>

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C. LIMITATIONS, MONITORING AND REPORTING CONDITIONS

Condition Number	Conditions
	<p>format) on-site and made available to a Department representative upon request. The logbook shall record the following:</p> <ul style="list-style-type: none"> a) The date and time of each recorded action b) The results of each inspection c) The results of any maintenance performed on the control device d) Any variance from manufacturer's recommendations, if any, and corrections made. <p>The owner/operator shall maintain the inspection and maintenance records on-site and the records shall be made available to Department representatives upon request.</p> <p>All instances of deviations from the requirements of this permit must be clearly identified and recorded. The owner/operator shall submit semi-annually reports of any deviations from the inspection and maintenance activities which have been herein specified.</p>
C.27	<p>Equipment ID: E1-E5; E46-E47 Control Device ID: None</p> <p>In accordance with S.C. Regulation 61-62.5, Standard No. 4 - Emissions from Process Industries, Section X - Non-Enclosed Operations:</p> <ul style="list-style-type: none"> (a) All non-enclosed operations shall be conducted in such a manner that a minimum of particulate matter becomes airborne. In no case shall established ambient air quality standards be exceeded at or beyond the property line. (b) The owner/operator of all such operations shall maintain dust control of the premises and any roadway owned or controlled by the owner/operator by paving, or other suitable measures. Oil treatment is prohibited. (c) All crushing, drying, classification and like operations shall employ a suitable control device acceptable to the Department, and shall discharge no more particulate matter than that specified in Section VIII of this Standard. <p>In accordance with S.C. Regulation 61-62.6 - Control of Fugitive Particulate Matter, Section III - Control of Fugitive Particulate Matter Statewide:</p> <ul style="list-style-type: none"> (a) Emissions of fugitive particulate matter shall be controlled in such a manner and to the degree that it does not create an undesirable level of air pollution. (b) Restrictions and requirements may be contained in operating permits on a case-by-case basis that are deemed appropriate and necessary to control fugitive particulate matter in accordance with reasonably available control technology.
C.28	<p>Equipment ID: Furnace (E11) Control Device ID: WESP (CD2); RTO1 (CD3)</p> <p>(S.C. Regulation 61-62.5, Standard No. 5.2, Section V) The allowable discharge of NO_x resulting from</p>

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C. LIMITATIONS, MONITORING AND REPORTING CONDITIONS

Condition Number	Conditions
	<p>this source is low NOX burners or equivalent technology capable of achieving 30% reduction from uncontrolled levels (30% reduction from uncontrolled levels = 31.57 lb/hr).</p> <p>(S.C. Regulation 61-62.5, Standard No. 5.2, Section VII)</p> <p>The owner or operator shall perform tune-ups every twenty-four (24) months in accordance with manufacturer's specifications or with good engineering practices. The first tune-up shall be conducted no more than twenty-four (24) months from replacement of a burner assembly for affected existing sources. Each subsequent tune-up shall be conducted no more than twenty-four (24) months after the previous tune-up.</p> <p>All tune-up records are required to be maintained on site and available for inspection by the Department for a period of five (5) years from the date generated.</p> <p>The owner or operator shall develop and retain a tune-up plan on file.</p> <p>The owner or operator shall record monthly the amounts and types of each fuel combusted by the affected sources and maintain these records on site.</p> <p>The owner or operator shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected source; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.</p>
C.29	<p>Equipment ID: E19-E43; E49-E52 Control Device ID: CD14a-c; CD15; CD18a-c; CD19</p> <p>Pelletizers and Pellet Coolers, Loadout - Good Operating and Maintenance Practices</p> <p>An Operation and Maintenance (O & M) plan shall be implemented and submitted to the Director of the Air Permitting Division for review and approval within 180 days of issuance of this permit. A log of any updates made to the O & M procedures as well as the updated procedures shall be submitted semi-annually to the Director of the Air Permitting Division for approval. The log shall include the basis for each update made to the procedure. If no changes to the procedure occurred during the reporting period, then a letter shall indicate such. The procedures, logs demonstrating execution of the procedures, and any updates made to the procedure shall be recorded in a suitable permanent form, maintained on-site, and made available for inspection by Department personnel upon request. At a minimum the (O & M) plan shall include the following:</p> <ul style="list-style-type: none"> i. A schedule for the proper maintenance, operation, calibration of monitoring, recording, computer controllers, and associated devices to ensure proper process rate/ process throughput, proper process control and, proper reporting.

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C. LIMITATIONS, MONITORING AND REPORTING CONDITIONS

Condition Number	Conditions
	<ul style="list-style-type: none"> ii. Logs containing scheduled repairs and maintenance performed to ensure proper operation. iii. Methods to ensure proper operating speed, production rate, product moisture content, air flow, etc. to ensure emissions are minimized. iv. Methods to ensure the equipment is operating in accordance with manufacturer specifications. v. Methods for minimizing fugitive emissions through proper maintenance procedures. vi. Methods for minimizing emissions during start-up, shutdown and malfunctions. vii. Inspection checks of collection hoppers and conveying systems, ductwork systems for damaged or worn parts or other interferences with proper operation. viii. Inspection checks of air-venting motors, for leaks at fittings, coil units, hand valves, control valves, traps, check valves, strainers, bearing bolts on fans motor/fan drive belts.
C.30	<p>Equipment ID: E44; E45 Control Device ID: None</p> <p>These sources are subject to New Source Performance Standards (NSPS), 40 CFR 60 Subpart A, General Provisions and Subpart IIII, Standards Of Performance For Stationary Compression Ignition Internal Combustion Engines, and S.C. Regulation 61-62.60 Subparts A and IIII, Standards Of Performance For Stationary Compression Ignition Internal Combustion Engines, as applicable. These source(s) shall comply with all applicable requirements of Subparts A and IIII.</p>
C.31	<p>The facility shall be limited to the current permitted production rate of 521,000 ODT/year until all control device upgrades and additions as allowed under this construction permit have been completed. The facility shall notify the Bureau upon completion and prior to increasing the production rate.</p>

D. NESHAP PERIODIC REPORTING SCHEDULE SUMMARY

NESHAP Part	NESHAP Subpart	Compliance Monitoring Report Submittal Frequency	Reporting Period	Report Due Date
63	ZZZZ (Emergency Engines see note 3 and 4)	N/A	N/A	N/A

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|---|
| <ol style="list-style-type: none"> 1. This table summarizes only the periodic compliance reporting schedule. Additional reports may be required. See specific NESHAP Subpart for additional reporting requirements and associated schedule. 2. This reporting schedule does not supersede any other reporting requirements including but not limited to 40 CFR Part 60, 40 CFR Part 61, 40 CFR Part 63, and/or Title V. The MACT reporting schedule may be adjusted to coincide with the Title V reporting schedule with prior approval from the Department in accordance with 40 CFR 63.10(a)(5). This request may be made 1 year after the compliance date for the associated MACT standard. 3. Facilities with emergency engines are not required to submit reports. Only facilities with non-certified, non-emergency engines are required to submit semiannual reports. 4. Facilities with emergency engines shall comply with the operations limits specified in 40 CFR 63.6640(f). |
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E. NESHAP - CONDITIONS

Condition Number	Conditions
E.1	All NESHAP notifications and reports shall be sent to the Manager of the Air Toxics Section, South Carolina Department of Health and Environmental Control - Bureau of Air Quality.
E.2	<p>All NESHAP notifications and the cover letter to periodic reports shall be sent to the United States Environmental Protection Agency (US EPA) at the following address or electronically as required by the specific subpart:</p> <p align="center">US EPA, Region 4 Air, Pesticides and Toxics Management Division 61 Forsyth Street SW Atlanta, GA 30303</p>
E.3	<p>Emergency power generators less than or equal to 150 kilowatt (kW) rated capacity or greater than 150 kW rated capacity designated for emergency use only and operated a total of 500 hours per year or less for testing and maintenance with a method to record the actual hours of use such as an hour meter have been determined to be exempt from construction permitting requirements in accordance with South Carolina Regulation 61-62.1. These sources shall still comply with the requirements of all applicable regulations including but not limited to the following:</p> <p>New Source Performance Standards (NSPS) 40 CFR 60 Subpart A (General Provisions); NSPS 40 CFR 60 Subpart IIII (Stationary Compression Ignition Internal Combustion Engines); NSPS 40 CFR 60 Subpart JJJJ (Stationary Spark Ignition Internal Combustion Engines); National Emission Standards for Hazardous Air Pollutants (NESHAP) 40 CFR 63 Subpart A (General Provisions); and NESHAP 40 CFR 63 Subpart ZZZZ (Stationary Reciprocating Internal Combustion Engines).</p>

F. AMBIENT AIR STANDARDS REQUIREMENTS

Condition Number	Conditions
F.1	Air dispersion modeling (or other method) has demonstrated that this facility's operation will not

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F. AMBIENT AIR STANDARDS REQUIREMENTS

Condition Number	Conditions
	<p>interfere with the attainment and maintenance of any state or federal ambient air standard. Any changes in the parameters used in this demonstration may require a review by the facility to determine continuing compliance with these standards. These potential changes include any decrease in stack height, decrease in stack velocity, increase in stack diameter, decrease in stack exit temperature, increase in building height or building additions, increase in emission rates, decrease in distance between stack and property line, changes in vertical stack orientation, and installation of a rain cap that impedes vertical flow. Parameters that are not required in the determination will not invalidate the demonstration if they are modified. The emission rates used in the determination are listed in Attachment - Emission Rates for Ambient Air Standards of this permit. Higher emission rates may be administratively incorporated into Attachment - Emission Rates for Ambient Air Standards of this permit provided a demonstration using these higher emission rates shows the attainment and maintenance of any state or federal ambient air quality standard or with any other applicable requirement. Variations from the input parameters in the demonstration shall not constitute a violation unless the maximum allowable ambient concentrations identified in the standard are exceeded.</p> <p>The owner/operator shall maintain this facility at or below the emission rates as listed in Attachment - Emission Rates for Ambient Air Standards, not to exceed the pollutant limitations of this permit. Should the facility wish to increase the emission rates listed in Attachment - Emission Rates for Ambient Air Standards, not to exceed the pollutant limitations in the body of this permit, it may do so by the administrative process specified above. This is a State Only enforceable requirement.</p>

G. PERIODIC REPORTING SCHEDULE

Compliance Monitoring Report Submittal Frequency	Reporting Period (Begins on the startup date of the source)	Report Due Date
Quarterly	January-March April-June July-September October-December	April 30 July 30 October 30 January 30
Semiannual	January-June April-September July-December October-March	July 30 October 30 January 30 April 30
Annual	January-December April-March July-June October-September	January 30 April 30 July 30 October 30

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G. PERIODIC REPORTING SCHEDULE

Compliance Monitoring Report Submittal Frequency	Reporting Period (Begins on the startup date of the source)	Report Due Date
<p>Note: This reporting schedule does not supersede any federal reporting requirements including but not limited to 40 CFR Part 60, 40 CFR Part 61, and 40 CFR Part 63. All federal reports must meet the reporting time frames specified in the federal standard unless the Department or EPA approves a change.</p>		

H. REPORTING CONDITIONS

Condition Number	Conditions
H.1	Reporting required in this permit shall be submitted in a timely manner as directed in the Periodic Reporting Schedule of this permit.
H.2	<p>All reports and notifications required under this permit shall be submitted to the person indicated in the specific condition at the following address:</p> <p align="center">2600 Bull Street Columbia, SC 29201</p> <p>The contact information for the local Environmental Affairs Regional office can be found at: http://www.scdhec.gov</p>
H.3	The owner/operator shall submit written notification to the Director of Air Permitting of the date construction is commenced, postmarked within 30 days after such date.
H.4	Unless elsewhere specified within this permit, all reports required under this permit shall be submitted to the Manager of the Technical Management Section, Bureau of Air Quality.
H.5	<p>(S.C. Regulation 61-62.1, Section II(J)(1)(c)) For sources not required to have continuous emission monitors, any malfunction of air pollution control equipment or system, process upset, or other equipment failure which results in discharges of air contaminants lasting for one (1) hour or more and which are greater than those discharges described for normal operation in the permit application, shall be reported to the Department within twenty-four (24) hours after the beginning of the occurrence and a written report shall be submitted to the Department within thirty (30) days. The written report shall include, at a minimum, the following:</p> <ol style="list-style-type: none"> 1. The identity of the stack and/or emission point where the excess emissions occurred; 2. The magnitude of excess emissions expressed in the units of the applicable emission limitation and the operating data and calculations used in determining the excess emissions; 3. The time and duration of excess emissions; 4. The identity of the equipment causing the excess emissions; 5. The nature and cause of such excess emissions; 6. The steps taken to remedy the malfunction and the steps taken or planned to prevent the recurrence of such malfunction; 7. The steps taken to limit the excess emissions; and, 8. Documentation that the air pollution control equipment, process equipment, or processes were at all times maintained and operated, to the maximum extent practicable, in a manner

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H. REPORTING CONDITIONS

Condition Number	Conditions
	<p>consistent with good practice for minimizing emissions.</p> <p>The initial twenty-four (24) hour notification should be made to the Department's local Environmental Affairs Regional office.</p> <p>The written report should be sent to the Manager of the Technical Management Section, Bureau of Air Quality and the local Environmental Affairs Regional office.</p>

I. PERMIT EXPIRATION AND EXTENSION

Condition Number	Conditions
I.1	<p>(S.C. Regulation 61-62.1, Section II(A)(4) and (5) and S.C. Regulation 61-62.1, Section II(J)(1)(f)) Approval to construct shall become invalid if construction:</p> <ul style="list-style-type: none">a. is not commenced within 18 months after receipt of such approval;b. is discontinued for a period of 18 months or more; orc. is not completed within a reasonable time as deemed by the Department. <p>The Department may extend the construction permit for an additional 18-month period upon a satisfactory showing that an extension is justified. This request must be made prior to the permit expiration.</p> <p>This provision does not apply to the time period between construction of the approved phases of a phased construction project; each phase must commence construction within eighteen (18) months of the projected and approved commencement date.</p>

J. PERMIT TO OPERATE

Condition Number	Conditions
J.1	<p>(S.C. Regulation 61-62.1 Section II(F)(2)) When a Department issued construction permit includes only emission limits, monitoring, reporting, and/or other requirements that do not establish engineering or construction specifications for the project, the owner or operator may operate the source in compliance with the terms and conditions of the construction permit until the operating permit is issued by the Department.</p>
J.2	<p>(S.C. Regulation 61-62.1 Section II(F)(3)) When a Department issued construction permit includes engineering and/or construction specifications, the owner/operator or professional engineer in charge of the project shall certify that, to the best of his/her knowledge and belief and as a result of periodic observation during construction, the construction under application has been completed in</p>

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J. PERMIT TO OPERATE

Condition Number	Conditions
	accordance with the specifications agreed upon in the construction permit issued by the Department. If construction is certified as provided above, the owner or operator may operate the source in compliance with the terms and conditions of the construction permit until the operating permit is issued by the Department. If construction is not built as specified in the permit application and associated construction permit(s), the owner/operator must submit to the Department a complete description of modifications that are at variance with the documentation of the construction permitting determination prior to commencing operation. Construction variances that would trigger additional requirements that have not been addressed prior to start of operation shall be considered construction without a permit.
J.3	(S.C. Regulation 61-62.1, Section II(F)(4)(b)) The owner or operator shall submit a written request to the Director of Air Permitting for a new or revised operating permit to cover any new or altered source postmarked within fifteen (15) days after the actual date of initial startup of each new or altered source.
J.4	(S.C. Regulation 61-62.1, Section II(F)(4)(a)) If the facility is covered by an effective Title V operating permit, the modification request required by Regulation 61 62.70 shall serve as the request to operate for the purposes of S.C. Regulation 61-62.1, Section II(F). The request should be made using the appropriate Title V modification form.
J.5	(S.C. Regulation 61-62.1, Section II(F)(4)(c)) The written request for a new or revised operating permit must include, at a minimum, the following information: i. A list of sources that were placed into operation; and ii. The actual date of initial startup of each new or altered source.

K. GENERAL CONDITIONS

Condition Number	Conditions
K.1	The permittee shall pay permit fees to the Department in accordance with the requirements of S.C. Regulation 61-30, Environmental Protection Fees.

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K. GENERAL CONDITIONS

Condition Number	Conditions
K.2	<p>In the event of an emergency, as defined in S.C. Regulation 61-62.1, Section II(L), the owner or operator may document an emergency situation through properly signed, contemporaneous operating logs, and other relevant evidence that verify:</p> <ol style="list-style-type: none">1. An emergency occurred, and the owner or operator can identify the cause(s) of the emergency;2. The permitted source was at the time the emergency occurred being properly operated;3. During the period of the emergency, the owner or operator took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit; and4. The owner or operator gave a verbal notification of the emergency to the Department within 24 hours of the time when emission limitations were exceeded, followed by a written report within 30 days. The written report shall include, at a minimum, the information required by S.C. Regulation 61-62.1, Section II(J)(1)(c)(i) through (J)(1)(c)(viii). The written report shall contain a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken. <p>This provision is in addition to any emergency or upset provision contained in any applicable requirement.</p>
K.3	<p>(S.C. Regulation 61-62.1, Section II(O)) Upon presentation of credentials and other documents as may be required by law, the owner or operator shall allow the Department or an authorized representative to perform the following:</p> <ol style="list-style-type: none">1. Enter the facility where emissions-related activity is conducted, or where records must be kept under the conditions of the permit.2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit.3. Inspect any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit.4. As authorized by the Federal Clean Air Act and/or the S.C. Pollution Control Act, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit or applicable requirements.
K.4	<p>(S.C. Regulation 61-62.1, Section II(J)(1)(a)) No applicable law, regulation, or standard will be contravened.</p>
K.5	<p>(S.C. Regulation 61-62.1, Section II(J)(1)(e)) Any owner or operator who constructs or operates a source or modification not in accordance with the application submitted pursuant to this regulation or with the terms of any approval to construct, or who commences construction after the effective date of these regulations without applying for and receiving approval hereunder, shall be subject to enforcement action.</p>

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L. EMISSIONS INVENTORY REPORTS

Condition Number	Conditions
L.1	<p>Any existing sources that are newly identified as Title V sources and/or Non-attainment Area Sources shall complete and submit an emissions inventory consistent with the schedule approved pursuant to S.C. Regulation 61-62.1, Section III. These Emissions Inventory Reports shall be submitted to the Manager of the Emissions Inventory Section, Bureau of Air Quality.</p> <p>This requirement notwithstanding, an emissions inventory may be required at any time in order to determine the compliance status of any facility.</p>

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The emission rates listed herein are not considered enforceable limitations but are used to evaluate ambient air quality impact. Until the Department makes a determination that a facility is causing or contributing to an exceedance of a state or federal ambient air quality standard, increases to these emission rates are not in themselves considered violations of these ambient air quality standards (see Ambient Air Standards Requirements).

STANDARD NO. 2 - AMBIENT AIR QUALITY STANDARDS EMISSION RATES (LB/HR)								
Emission Point ID	PM ₁₀	PM _{2.5}		SO ₂	NO _x	CO	Lead	
		24-Hr	Annual					
S1	17.628	17.628	17.628	5.000	25.784	13.818	--	
S5	1.157	--	--	--	--	4.844	--	
S6	1.196	--	--	--	--	4.844	--	
S15	FBYP1_F	7.770	6.720	0.077	0.752	6.800	18.050	--
	FBYP1_I	6.204	5.364	5.364	0.300	2.640	7.200	--

STANDARD NO. 2 - AMBIENT AIR QUALITY STANDARDS EMISSION RATES (LB/HR)							
Emission Point ID	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	Lead	
S0	Chipping	0.84	0.84	--	--	--	--
	Debarking	0.07	0.01	--	--	--	--
	Pile Drop	6.16E-03	9.33E-04	--	--	--	--
	Pile Erosion	0.32	0.05	--	--	--	--
	Roads - Paved	0.10	0.02	--	--	--	--
	Roads - Unpaved	1.80	0.18	--	--	--	--
	Screening	0.33	0.33	--	--	--	--
	Truck Dump 1	2.78E-03	4.21E-04	--	--	--	--
Truck Dump 2	2.78E-03	4.21E-04	--	--	--	--	
S1	--	--	--	--	--	7.12E-04	
S2	0.17	0.17	--	--	--	--	
S4	0.17	0.17	--	--	--	--	
S5	--	0.69	3.06E-03	0.82	--	2.55E-06	
S6	--	0.69	6.12E-03	0.82	--	5.10E-06	
S7	0.17	0.17	--	--	--	--	
S8	0.99	0.99	--	--	--	--	
S9	0.28	0.28	--	--	--	--	
S15	--	--	--	--	--	2.03E-03	

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STANDARD NO. 8 - TOXIC AIR POLLUTANTS EMISSION RATES (LB/HR)					
Table 1 of 4					
Emission Point ID	Acetaldehyde	Acrolein	Arsenic	Beryllium	
	75-07-0	107-02-8	7440-38-2	7440-41-7	
S1	0.734	0.504	3.25E-04	1.63E-05	
S5	7.62E-02	0.113	1.02E-06	6.12E-08	
S6	7.62E-02	0.113	2.04E-06	1.22E-07	
S15	FBYP1_F	2.49E-02	0.120	6.66E-04	3.72E-05
	FBYP1_I	9.96E-03	0.048	2.64E-04	1.32E-05

STANDARD NO. 8 - TOXIC AIR POLLUTANTS EMISSION RATES (LB/HR)					
Table 2 of 4					
Emission Point ID	Cadmium	Chlorine	Cobalt Compounds	Formaldehyde	
	7440-43-9	7782-50-5	N/A	50-00-0	
S1	9.40E-05	0.158	9.69E-05	0.455	
S2	--	--	--	7.31E-02	
S4	--	--	--	1.13E-03	
S5	5.61E-06	--	4.28E-07	0.289	
S6	1.12E-05	--	8.56E-07	0.289	
S15	FBYP1_F	1.27E-04	2.37E-02	1.95E-04	0.132
	FBYP1_I	4.92E-05	9.48E-03	7.80E-05	5.28E-02

STANDARD NO. 8 - TOXIC AIR POLLUTANTS EMISSION RATES (LB/HR)					
Table 3 of 4					
Emission Point ID	Hydrochloric Acid	Manganese Compounds	Mercury	Methanol	
	7647-01-0	N/A	7439-97-6	67-56-1	
S0 (Chipping)	--	--	--	8.75E-02	
S1	0.380	2.32E-02	5.89E-05	0.582	
S2	--	--	--	0.170	
S4	--	--	--	2.62E-03	
S5	--	1.94E-06	1.33E-06	1.36E-02	
S6	--	3.87E-06	2.65E-06	1.36E-02	
S15	FBYP1_F	0.570	4.80E-02	1.09E-04	--
	FBYP1_I	0.228	1.92E-02	4.20E-05	--

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STANDARD NO. 8 - TOXIC AIR POLLUTANTS EMISSION RATES (LB/HR)				
Table 4 of 4				
Emission Point ID	Nickel	Phenol	Phosphorus	--
	7440-02-0	108-95-2	7723-14-0	--
S1	5.44E-04	0.577	3.91E-04	--
S5	1.07E-05	5.72E-02	--	--
S6	2.14E-05	5.72E-02	--	--
S15	FBYP1_F	9.94E-04	1.53E-03	8.10E-04
	FBYP1_I	3.96E-04	6.12E-04	3.24E-04

STANDARD NO. 8 - DE MINIMIS TOXIC AIR POLLUTANTS EMISSION RATES (LB/HR)				
Table 1 of 8				
Emission Point ID	Acetophenone	Antimony Compounds	Benzene	Bis (2-ethylhexyl) phthalate
	98-86-2	N/A	71-43-2	117-81-7
S1	3.20E-08	1.15E-04	4.20E-02	4.70E-07
S5	--	--	1.07E-05	--
S6	--	--	2.14E-05	--
S15	1.34E-07	3.32E-04	2.14E-06	1.97E-06

STANDARD NO. 8 - DE MINIMIS TOXIC AIR POLLUTANTS EMISSION RATES (LB/HR)				
Table 2 of 8				
Emission Point ID	Carbon Tetrachloride	Chlorobenzene	Chloroform	Chromium (+6) Compounds
	56-23-5	108-90-7	67-66-3	N/A
S1	4.50E-04	3.30E-04	2.80E-04	9.47E-05
S5	--	--	--	7.14E-06
S6	--	--	--	1.43E-05
S15	1.89E-03	1.39E-03	--	--

STANDARD NO. 8 - DE MINIMIS TOXIC AIR POLLUTANTS EMISSION RATES (LB/HR)				
Table 3 of 8				
Emission Point ID	p-Dichlorobenzene	2,4-Dinitrophenol	Ethylene Dichloride	Ethyl Benzene
	106-46-7	51-28-5	107-06-2	100-41-4
S1	--	1.80E-06	2.90E-04	3.10E-04
S5	6.12E-06	--	--	--
S6	1.22E-05	--	--	--
S15	--	7.56E-06	1.22E-03	1.30E-03

ATTACHMENT - Emission Rates for Ambient Air Standards

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STANDARD NO. 8 - DE MINIMIS TOXIC AIR POLLUTANTS EMISSION RATES (LB/HR)				
Table 4 of 8				
Emission Point ID	Hexane	Methyl Bromide	Methyl Chloride	Methyl Chloroform
	110-54-3	74-83-9	75-09-2	71-55-6
S1	--	1.50E-04	2.30E-04	3.10E-04
S5	9.18E-03	--	--	--
S6	1.84E-02	--	--	--
S15	--	6.30E-04	9.66E-04	1.30E-03

STANDARD NO. 8 - DE MINIMIS TOXIC AIR POLLUTANTS EMISSION RATES (LB/HR)				
Table 5 of 8				
Emission Point ID	Methylene Chloride	Naphthalene	Pentachlorophenol	Polychlorinated Biphenyls
	75-09-2	91-20-3	87-86-5	N/A
S1	2.90E-03	9.70E-04	5.10E-07	8.15E-08
S5	--	3.11E-06	--	--
S6	--	6.22E-06	--	--
S15	--	4.09E-03	2.14E-06	3.42E-07

STANDARD NO. 8 - DE MINIMIS TOXIC AIR POLLUTANTS EMISSION RATES (LB/HR)				
Table 6 of 8				
Emission Point ID	Polycyclic Organic Matter	Propionaldehyde	Propylene Dichloride	Selenium Compounds
	N/A	123-38-6	78-87-5	N/A
S1	1.25E-03	2.66E-01	3.30E-04	4.14E-05
S5	3.56E-06	3.31E-02	--	1.22E-07
S6	7.12E-06	3.31E-02	--	2.45E-07
S15	5.25E-03	2.56E-03	1.39E-03	1.39E-04

STANDARD NO. 8 - DE MINIMIS TOXIC AIR POLLUTANTS EMISSION RATES (LB/HR)				
Table 7 of 8				
Emission Point ID	Styrene	Tetrachlorinated Dibenzo-p-dioxins	Tetrachloroethylene	Toluene
	100-42-5	1746-01-6	127-18-4	108-88-3
S1	1.90E-02	8.60E-11	3.80E-04	4.07E-04
S5	--	--	--	1.73E-05
S6	--	--	--	3.47E-05

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STANDARD NO. 8 - DE MINIMIS TOXIC AIR POLLUTANTS EMISSION RATES (LB/HR)				
Table 7 of 8				
Emission Point ID	Styrene	Tetrachlorinated Dibenzo-p- dioxins	Tetrachloro- ethylene	Toluene
	100-42-5	1746-01-6	127-18-4	108-88-3
S15	--	3.61E-10	1.60E-03	6.20E-05

STANDARD NO. 8 - DE MINIMIS TOXIC AIR POLLUTANTS EMISSION RATES (LB/HR)				
Table 8 of 8				
Emission Point ID	Trichloro- ethylene	2,4,6-Tri- chlorophenol	Vinyl Chloride	Xylene
	79-01-6	88-06-2	75-01-4	1330-20-7
S1	3.00E-04	2.20E-07	1.80E-04	2.50E-04
S15	1.26E-03	9.24E-07	7.56E-04	1.09E-06

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The Algorithms are representative of the process equipment as specified in the permit application and are consistent with previously established emissions reporting for the purpose of ensuring continued compliance with synthetic minor emission limits. The owner/operator shall use the initial emission factors listed in the application and in the Statement of Basis until new emission factors developed from source testing have been approved in writing, by the Department.

Monthly VOC, PM_{2.5} and HAP emissions for the Green Wood Chipping, Green Hammermill, Green Chip Silo, Furnace/Dryer, Vertical Dry Hammermills, Pelletizers/Pellet Coolers

Emissions (E) = emission factor (EF) (lb/ODT) X Oven-Dry Tons of wood processed x 1 ton / 2000 lb

Monthly PM and PM₁₀ emissions for the Green Wood Chipping, Green Hammermill/Green Chip Silo, Furnace/Dryer, Vertical Dry Hammermills

Emissions (E) = emission factor (EF) (lb/ODT) X Oven-Dry Tons of wood processed x 1 ton / 2000 lb

Monthly PM emissions for the Pelletizers/Pellet Coolers

Emissions (E) = [Flow Rate (scfm) x Outlet Grain Loading (gr/scf) x 60 min/hour / 7,000 gr/lb] x operating hours x 1 ton / 2000 lb

Baghouse flow rate (scfm) and outlet grain loading (gr/scf) are based on equipment vendor recommendations

Monthly PM₁₀ emissions for the Pelletizers/Pellet Coolers

Emissions (E) = [Flow Rate (scfm) x Outlet Grain Loading (gr/scf) x 60 min/hour / 7,000 gr/lb] x operating hours x 1 ton / 2000 lb

(PM₁₀ speciation) PM₁₀ as a percentage of PM = 26%

Baghouse flow rate (scfm) and outlet grain loading (gr/scf) are based on equipment vendor recommendations

Monthly VOC emissions from the Wood Pellet Storage Silo 1 and Wood Pellet Storage Silo 2

Emissions (E) = emission factor (EF) (lb/hr) x operating hours x 1 ton / 2000 lb

Emission factor based on site specific sampling.

Monthly HAP emissions from the Wood Pellet Storage Silo 1 and Wood Pellet Storage Silo 2

Emissions (E) = VOC emission factor (EF) (lb/hr) x HAP Allocation x operating hours x 1 ton / 2000 lb

VOC emission factor based on site specific sampling.

HAP Allocation based on NCASI Wood Products Database for Dry Wood Handling Operations.

Monthly PM, PM₁₀, PM_{2.5}, VOC and HAP emissions based on Biomass Combustion - Furnace Cold Start-Up

Emissions (E) = emission factor (EF) (lb/MMBtu) x Heat Input Capacity (MMBtu/hr) x operating hours x 1 ton / 2,000 lb

ATTACHMENT - Algorithms

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Monthly PM, PM₁₀, PM_{2.5}, VOC and HAP emissions based on Biomass Combustion - Furnace Cold Start-Up

Criteria pollutant emission factors are based on AP-42, Chapter 1, Section 1.6 - Wood Residue Combustion in Boilers (09/03), Table 1.6-1, for bark/bark and wet wood and are included in Table 5 of Appendix C of the Application. Total PM, Total PM₁₀ and Total PM_{2.5} factors equal to the sum of the filterable and condensable factors. VOC emission factor excludes formaldehyde. Formaldehyde EF = 4.4E-03 lb/MMBtu

HAP emission factors are based on AP-42, Chapter 1, Table 1.6-3 and are included in Table 5 of Appendix C of the Application

If the AP-42 section changes or updates the owner/operator may use the most recent AP-42 factors

Monthly PM, PM₁₀, PM_{2.5}, VOC and HAP emissions based on Diesel Fuel - Furnace Cold Start-Up

Emissions (E) = emission factor (EF) (lb/10³ gal) x Fuel Usage (gal/month) x 1 ton / 2,000 lb

Criteria pollutant emission factors are based on AP-42, Chapter 1, Section 1.3 - Fuel Oil Combustion, distillate fuel oil (05/10), Table 1.3 - 1, Table 1.3-2, Table 1.3-3, Table 1.3-6 and are located in Appendix C, Table 5 of the Application. SO₂ emissions, assume a 15 ppm sulfur content in diesel fuel

HAP emission factors are based on AP-42, Chapter 1, Table 1.3-8, Table 1.3-9 and are located in Appendix C, Table 5 of the Application

If the AP-42 section changes or updates the owner/operator may use the most recent AP-42 factors

Monthly PM, PM₁₀, PM_{2.5}, VOC and HAP emissions based on Biomass Combustion - Furnace Idle Mode

Emissions (E) = emission factor (EF) (lb/MMBtu) x Heat Input Capacity (MMBtu/hr) x operating hours x 1 ton / 2,000 lb

Criteria pollutant emission factors are based on AP-42, Chapter 1, Section 1.6 - Wood Residue Combustion in Boilers (09/03), Table 1.6-1, for bark/bark and wet wood and are located in Appendix C, Table 6 of the Application. Total PM, Total PM₁₀ and Total PM_{2.5} factors equal to the sum of the filterable and condensable factors. VOC emission factor excludes formaldehyde. Formaldehyde EF = 4.4E-03 lb/MMBtu

HAP emission factors are based on AP-42, Chapter 1, Table 1.6-3 and are located in Appendix C, Table 6 of the Application

If the AP-42 section changes or updates the owner/operator may use the most recent AP-42 factors

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Monthly PM, PM₁₀, PM_{2.5}, VOC and HAP emissions based on natural gas combustion - Dryer Duct Burner

Emissions (E) = emission factor (EF) (lb/MMBtu) x Heat Input Capacity (MMBtu/hr) x operating hours x 1 ton / 2,000 lb

Criteria pollutant emission factors are based on AP-42, Chapter 1, Section 1.4 - Natural Gas Combustion (07/98), Table 1.4-1, Table 1.4-2 and are located in Appendix C, Table 7 of the Application. Emission factors are based on an average natural gas higher heating value of 1,020 Btu/scf

HAP emission factors are based on AP-42, Chapter 1, Table 1.4-3, Table 1.4-4, and NCDAQ Natural Gas Combustion Spreadsheet and are located in Appendix C, Table 7 of the Application. EF for acetaldehyde, acrolein, and ammonia are cited in the NCDAQ spreadsheet as being sourced from the USEPA's WebFIRE database.

If the AP-42 section changes or updates the owner/operator may use the most recent AP-42 factors

Monthly PM, PM₁₀, and HAP emissions based on natural gas combustion - Regenerative Thermal Oxidizers / Catalytic Thermal Oxidizers ¹

Emissions (E) = emission factor (EF) (lb/MMBtu) x Heat Input Capacity (MMBtu/hr) x operating hours x 1 ton / 2,000 lb

Criteria pollutant emission factors are based on AP-42, Chapter 1, Section 1.4 (07/98), Table 1.4-1, Table 1.4-2. Emission factors are based on an average natural gas higher heating value of 1,020 Btu/scf

HAP emission factors are based on AP-42, Chapter 1, Section 1.4, Table 1.4-1, Table 1.4-3, and Table 1.4-4. Emission factors are based on an average natural gas higher heating value of 1,20 Btu/scf

¹ Only for those emissions not already captured by algorithms and factors described above.

Monthly VOC and HAP emissions from the Dry Chip Silo and Pelletizer Feed Silo

Emissions (E) = emission factor (EF) (lb/ODT) X Oven-Dry Tons of wood processed x 1 ton / 2000 lb

Monthly PM, PM₁₀ and PM_{2.5} emissions from the Dry Chip Silo, Pelletizer Feed Silo, Pellet Silo 1, and Pellet Silo 2

Emissions (E) = Flow Rate (scfm) x Outlet Grain Loading (gr/scf) x 60 min/hour / 7,000 gr/lb x operating hours x 1 ton / 2,000 lb

Baghouse flow rate (scfm) and outlet grain loading (gr/scf) are based on vendor recommendations

Monthly PM, PM₁₀ and PM_{2.5} emissions from Loadout

Emissions (E) = Flow Rate (scfm) x Outlet Grain Loading (gr/scf) x 60 min/hour / 7,000 gr/lb x operating hours x 1 ton / 2,000 lb

Baghouse flow rate (scfm) and outlet grain loading (gr/scf) are based on vendor recommendations

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Monthly PM, PM₁₀ and PM_{2.5} emissions from Dust Silo

Emissions (E) = Flow Rate (scfm) x Outlet Grain Loading (gr/scf) x 60 min/hour / 7,000 gr/lb x operating hours x 1 ton / 2,000 lb

Baghouse flow rate (scfm) and outlet grain loading (gr/scf) are based on vendor recommendations

Monthly PM, PM₁₀, PM_{2.5}, VOC emissions based on diesel fuel combustion - Engine 1 - Generator, Engine 2 - Fire Pump

Emissions (E) = emission factor (EF) (g/hp-hr) x engine power (hp) x operating hours x 1 lb / 453.592 g x 1 ton / 2,000 lb

Criteria pollutant emission factors for Engine 1 are based on Technical Data sheet. Criteria emission factors for Engine 2 are based on 40 CFR 60 Subpart IIII (or 40 CFR 89.112 where applicable) in compliance with post-2009 construction except for VOC, which is based on AP-42 Section 3.3, Tables 3.3-1, Table 3.3-2.

If the AP-42 section changes or updates the owner/operator may use the most recent AP-42 factors

Monthly HAP emissions based on diesel fuel combustion - Engine 1 - Generator, Engine 2 - Fire Pump

Emissions (E) = emission factor (EF) (lb/hp-hr) x engine power (hp) x operating hours x 1 tons/2,000 lb

HAP emission factors are based on AP-42, Chapter 3, Section 3.3 - Gasoline and Diesel Engines (10/96), Tables 3.3-1, Table 3.3-2 and are included in Appendix C, Table 18 of the Application

If the AP-42 section changes or updates the owner/operator may use the most recent AP-42 factors

Attachment B

Statement of Basis Permit No. 1240-0133-CC



STATEMENT OF BASIS
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BAQ Air Permitting Division

Company Name:	Enviva Pellets Greenwood, LLC	Permit Writer:	Jo Anna Cunningham
Permit Number:	1240-0133-CC	Date:	November 10, 2020

DATE APPLICATION RECEIVED: February 10, 2020

FACILITY DESCRIPTION (SIC CODES 2499-Wood Products, NEC, NAICS CODES-321999 – All other wood product manufacturing)
Enviva Pellets Greenwood, LLC. (herein referred to as Enviva Greenwood) owns and operates a Wood Pellet Manufacturing Facility in Greenwood, South Carolina. The facility started operating on September 22, 2016. The facility currently has been issued construction permits 1240-0133-CA, 1240-0133-CB, 1240-0133-CB-R1 and 1240-0133-CB-R2. Facility-wide federally enforceable synthetic minor limits for particulate matter (PM), particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (PM₁₀), particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers (PM_{2.5}) and volatile organic compounds (VOC) to avoid Prevention of Significant Deterioration (PSD) and hazardous air pollutant (HAP) emission limits to avoid major HAP source status were established in 1240-0133-CA and were carried over in 1240-0133-CB, 1240-0133-CB-R1 and 1240-0133-CB-R2. These synthetic minor limits shall remain in-place with this project to maintain the facility's status as a non-major PSD source and an area source of HAP.

A facility-wide federally enforceable synthetic minor limit for carbon monoxide (CO) to avoid PSD was established in 1240-0133-CA however the potential to emit of CO is less than PSD major source threshold limits for the pellet plant as-built configuration. This limit is no longer necessary and will not be carried over with this project.

A facility-wide federally enforceable synthetic minor limit for Carbon Dioxide equivalent basis (CO_{2e}) to avoid PSD was established in 1240-0133-CA. The EPA's final rule dated August 19, 2015 in response to the D.C. Circuit's amended judgment and mandate in *Coalition for Responsible Regulation v. EPA* provides that PSD does not trigger for greenhouse gases (GHGs) unless they trigger for another pollutant. Since Enviva Greenwood has PSD avoidance limits on the pollutants (PM, PM₁₀, PM_{2.5} and VOCs), the CO_{2e} limit is no longer necessary and will not be carried over with this project.

With the issuance of this Synthetic Minor Construction Permit, the following construction permits 1240-0133-CA, 1240-0133-CB, 1240-0133-CB-R1, and 1240-0133-CB-R2 will be superseded by Synthetic Minor Construction Permit 1240-0133-CC.

The current permit application presents throughputs and emission factors for the process emission units based on Oven-Dried Short Tons (ODT). By the Wood Products Industry definition, ODT means the amount of wood that weighs 2,000 pounds at a zero percent moisture content. The Enviva Greenwood manufacturing process is based on the final dried wood pellet having a moisture content of approximately 5.5%. Due to the varying moisture content of wood throughout the Enviva Greenwood pellet manufacturing process, the use of ODT enables for standardization of throughputs and emissions factors.

Method to convert the Enviva processes from wet weight to dry weight

Moisture content on a wet basis is calculated with the following algorithm:

$$\text{Percent (\%)} \text{ moisture content wet basis} = (\text{wet weight} - \text{dry weight}) / \text{wet weight} \times 100$$

$$\text{Dry weight} = \text{wet weight} \times (1 - \% \text{ moisture content wet basis})$$

Example: For the Debarker, the weight of the wet wood is 230 tons; the moisture content of the wet wood is 50%.
The conversion to dry weight = 230 tons x (1 - 50%) = 115 ODT



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Reference document for wood conversion from wet basis to dried tons : <https://www.forestresources.org/digital-magazine/item/195-understanding-oven-dry-weight>

PROJECT DESCRIPTION

Permission is hereby granted to increase wood pellet production by adding additional equipment, adding particulate matter control devices, by reducing the volatile organic compounds (VOC) emissions from the Dry Hammermills, and by increasing the firing capacity of the existing VOC control devices. The facility will be limited to a wood pellet production limit of 660,000 oven dried short tons (ODT)/year. This project consists of the following modifications:

- Increase the wood pellet plant production limit to 660,000 ODT/year.
- Increase Woodyard throughput rate from 541,500 ODT per year to 876,000 ODT per year for the Debarker (E1) and 766,500 ODT per year for the other woodyard operations.
- Increase the amount of softwood processed from a maximum of 90% to 100%.
- Replace the existing five (5) Horizontal Dry Hammermills (DHMs) with thirty-six (36) new Vertical DHMs. Emissions will be controlled by the existing Wet Electrostatic Precipitator (WESP) (CD2) and Regenerative Thermal Oxidizer RTO1 (CD3) and, a new Bin Vent Filter (CD24).
- Add one (1) new Green Hammermill, three (3) new Pelletizers, one (1) new Pellet Cooler, one (1) new Baghouse and update the as-built configuration of the Dust Silo control devices to a single Cyclofilter (CD23).
- Update the firing capacity of (RTO1) (CD3) to four (4) burners each rated at 8 MMBtu / hr, update the firing capacity of RTO2/RCO1 (CD15) to 5.2 MM Btu/hr (single burner), and update the firing capacity of RTO3/RCO2 (CD19) to two (2) burners each rated at 5.2 MMBtu/hr.
- Add the following new exempt sources: Truck Dump 2, one (1) Electric Powered Radial Log Crane, and one (1) Air-to-Air Chiller. Note: the Electric Powered Radial Log Crane, and Air-to-Air Chiller are not sources of air emissions.
- Up-date the facility emissions to include emissions from existing sources including the Wood Pellet Storage Silos, Dryer Duct Burner, Furnace Bypass Stack (S15), and Fugitive Particulate Matter emissions from an existing truck dump and from vehicle traffic on unpaved and paved roads.

EXISTING FEDERALLY ENFORCEABLE LIMITS

The existing facility-wide federally enforceable synthetic minor limits for PM, PM₁₀, PM_{2.5}, and VOC to avoid PSD major source status shall remain in-place and be carried over with this project.

The existing facility-wide federally enforceable synthetic minor limits for HAP emission limits to avoid HAP major source status shall remain in-place and be carried over with this project.

With this project new technical information has been presented, which indicates there are potential CO emissions from the storage of wood pellets. Enviva quantified the CO emissions from the wood pellet storage silos, emission



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units 40 and 41, based on November 2018 bag sampling which was conducted at the Greenwood plant. The bag sampling results from the wood pellet storage silos, add an additional 0.02 tpy of CO emissions. The PTE for CO based on the facility's as built configuration (i.e., before accounting for the preexisting federally enforceable synthetic minor limit) remains less than 250.0 tpy. Therefore, the existing facility-wide federally enforceable synthetic minor limit for carbon monoxide (CO) to avoid PSD which was established in 1240-0133-CA will not be carried over with this project.

WOOD PELLET MANUFACTURING PROCESS

Wood is received as logs and wood chips. The logs are fed to a Debarker then go through the Chipper. Wood chips received via truck are sent through a screener and stored with the chips from the chipper in an outdoor chip pile. The chips are processed through the Green Hammermills and then stored in a green chip silo until they are sent to the Dryer. The heat for the Dryer is provided by a 200 MMBTU/hr bark fuel Furnace. Bark fuel is generated by the Debarker and received via truck. Bark fuel is stored in a fuel storage pile before being sent to the fuel storage feeder bin with the final destination being the furnace. From the Dryer, the chips are stored in the Dry Chip Silo and then go to the new Vertical Dry Hammermills, followed by the Pelletizer Feed Silo, Pelletizers and Pellet Coolers and the Pellet Silos. Finished wood pellets are loaded into railcars via the Loadout operations.

PROCESSES

- Process P0 – Woodyard - emissions minimized by Best Management Practices
- Process P1 – Green Hammermills, Green Chip Silo – emissions are controlled by control devices.
- Process P2 – Furnace, Rotary Dryer, Dryer Duct Burner, Dry Chip Silo – emissions are controlled by control devices, except for duct burner, which is uncontrolled.
- Process P3 – Vertical Dry Hammermills, Pelletizer Feed Silo – emissions are controlled by control devices.
- Process P4– Pelletizers, Pellet Coolers– emissions are controlled by control devices.
- Process P5 – Pellet Silo 1, Pellet Silo 2, Loadout, Dust Silo – emissions are controlled by control devices.
- Process P7 – Unpaved and Paved Roads – emissions minimized by Best Management Practices

PROCESS ADD-ON CONTROL DEVICES

Regenerative Thermal Oxidizer (RTO) to control VOC and HAPs and Toxic Air Pollutants (TAPs) from the following processes:

- Green Hammermills, Green Chip Silo, Furnace, Rotary Dryer, and Vertical Dry Hammermills

Note: Thermal oxidation reduces VOC emissions by oxidizing VOC to carbon dioxide (CO₂) and water vapor (H₂O) at a high temperature.

RTO / Regenerative Catalytic Oxidizers (RCO) to control VOC, HAPs and TAPs from the following processes:

- Pelletizers and Pellet coolers

Note: A RCO is similar to a RTO. A RCO uses a catalyst to lower the temperature necessary to oxidize VOC compounds to carbon dioxide and water vapor.

Wet Electrostatic Precipitator (WESP) to control particulate matter from the following processes:

- Green Hammermills, Green Chip Silo, Furnace, Rotary Dryer, and Vertical Dry Hammermills

Baghouse(s) to control particulate matter from the following processes:



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- Pelletizers and Pellet coolers, Finished Wood Pellet Loadout

Cyclofilters to control particulate matter from the following processes:

- Pellet Silos, Dust Silo and existing horizontal Dry Hammermills, which are proposed to be replaced by the new vertical Dry hammermills

Cyclone 6 (CD21) required for the operation of Baghouse 3 (CD23) to control particulate matter from the Finished Wood Pellet loadout

Bin Vent Filters to control particulate matter from the following processes:

- Dry Chip Silo, Pelletizer Feed Silo, Vertical Dry Hammermills,

Process Material Recovery

The Cyclone Pack (Multiclone) CD1 is used for material recovery and not pollution control. CD1 does not vent to the ambient air. It is in series with the WESP (CD2) and RTO1 (CD3)

New Process Equipment

Thirty Six (36) New Vertical Dry Hammermills (DHMs)

Exhaust from the new vertical DHMs will be routed to:

- A new bin vent filter [Bin Vent Filter 3 (CD24)] followed by a safety water quench duct and then to the dryer furnace (E11) followed by the existing WESP (CD2) and RTO1 (CD3);
- A safety water quench duct and then the existing WESP (CD2) followed by the existing RTO1 (CD3); or
- A combination of the two routing options.

Three (3) New Pelletizers and One (1) New Pellet Cooler

The exhaust from this equipment will be routed to a baghouse (CD-18c) for PM control followed by RTO3/RCO2 (CD19) for VOC and HAP control.

One (1) New Green Hammermill

New Exempt Sources

Air-to-Air Chiller – The air-to-air chiller is an electric powered air conditioner that will enhance the cooling of pellets moving through the pellet coolers.; Electric Powered Radial Log Crane; Truck Dump 2.

Note: The Air-to-Air Chiller and Electric Powered Radial Log Crane are not sources of emissions.

New Control Devices

Baghouse - Will be installed to reduce particulate matter emissions present in the pellet cooler exhaust air.

Bin Vent Filter – Will be installed to reduce particulate matter emissions present in the new Vertical Dry Hammermills exhaust stream.



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Furnace (E11) Bypass Operations via the Furnace Bypass Stack (S15)

Cold Start-Ups - The furnace bypass stack is used when the furnace is started up from a cold shut down until the secondary combustion zone temperature approaches 600° F. Once the secondary combustion zone temperature reaches 600° F, the Dryer induction draft fan is started. Although the bypass stack remains open at this point it will no longer be used to exhaust emissions but will be used to draw ambient air into the unit and exhaust through the Dryer and downstream control devices until the secondary combustion zone reaches 900° F when the bypass stack is closed, and normal Furnace operations can proceed. The purpose of the bypass stack remaining open during the 600° - 900° F period is to allow ambient air to enter the unit when the induction fan is started. If the bypass stack does not remain open the induction fan would pull all the air it requires through the furnace which would be too much to support combustion until the secondary combustion zone reaches 900° F. Approximately 15-30 gallons of diesel fuel will be used as an accelerant for each start-up (up to 100 -200 gallons per year) and the heat rate of the furnace during this initial stage of the start-up is not expected to exceed 15% of the maximum heat input of the furnace (30 MM Btu/hr heat input maximum).

Use of the furnace bypass stack for cold start-ups will not exceed eight (8) hours per start-up and 50 hours per year, total. Criteria pollutant, HAP and TAP emissions, which occur during cold start-up, were calculated based on emission factors from AP-42, Section 1.6, Wood Residue Combustion in Boilers and Section 1.3, Fuel Oil Combustion.

Record keeping and reporting of these events shall be required.

Idle Mode - The furnace bypass stack may be used when the furnace is operating in Idle Mode. Operation in Idle Mode is needed to maintain the temperature of the fire brick lining the furnace to prevent damage from rapid temperature changes. Operation in idle mode also reduces the amount of time required to restart the dryer. Furnace emissions are only vented through the bypass stack in idle mode when the facility is either conducting maintenance and cleaning of the WESP and RTO, or during dryer system repairs including repairs to raw material input and product discharge.

Furnace Idle Mode shall be defined as furnace operation up to a maximum heat input rate of 12 MM Btu/hr. The furnace may operate up to (500) hours per year, total. Criteria pollutant, HAP and TAP emissions, which occur when the furnace operates in Furnace Idle Mode, were calculated based on emission factors from AP-42, Section 1.6, Wood Residue Combustion in Boilers.

Malfunction - The furnace bypass stack will be used in the event of a malfunction. The fuel feed will automatically stop, and the furnace maximum heat input will drop down to Idle Mode heat input.

Record keeping and reporting of these events shall be required.

Planned Shutdown - When the facility has scheduled a Planned Shutdown, the furnace heat input will be decreased, and all remaining fuel will be moved through the processing system to prevent a fire. The fuel remaining in the furnace will be combusted prior to opening the furnace bypass stack. Emissions will continue to be controlled by the WESP (CD2) and RTO (CD3), until the furnace reaches Furnace Idle Mode or is shut down completely.



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Record keeping and reporting of these events shall be required.

Rotary Dryer (E12) Bypass Operations via the Dryer Bypass Stack

Malfunction - The rotary dryer bypass stack will be used if there is power failure, equipment failure, interlock trip, or if there is a furnace abort. Numerous Dryer operation interlocks exist for equipment downstream of the Dryer including but not limited to Dryer Cyclone plugage, Dryer ID fan operation, WESP and RTO operation. If an interlock failure occurs, raw material feed to the Dryer will stop and the dryer will abort through the Dryer Bypass Stack.

Record keeping and reporting of these events shall be required.

Planned Shutdown - The rotary dryer bypass stack will be used when the facility has scheduled a planned shutdown. As the remaining fuel is combusted by the furnace, the chip input to the rotary dryer is reduced. When a small amount of chips remains, the dryer drum will be emptied. At this point, the dryer bypass stack will be opened. A purge air fan will be used to ensure no explosive build-up of flammable gas occurs in the drum. The furnace and dryer are no longer operating, and as such, emissions are not generated.

Record keeping and reporting of these events shall be required.

SOURCE TEST REQUIREMENTS

Pollutants: PM, PM₁₀, PM_{2.5}, VOC, CO, NO_x, Acetaldehyde, Acrolein, Formaldehyde, Methanol, Phenol, and Propionaldehyde

To verify PM, PM₁₀, PM_{2.5}, VOC, CO, NO_x, Acetaldehyde, Acrolein, Formaldehyde, Methanol, Phenol, and Propionaldehyde emissions and, to ensure continuing compliance with the existing facility-wide synthetic minor emission limits for PSD Avoidance (PM, PM₁₀, PM_{2.5}, VOC) and major HAP source Avoidance (facility-wide HAPs < 10/25 tpy), a source test shall be conducted within 180 days after project completion and the start-up of new and modified equipment. With the exception of CO and NO_x, subsequent source tests shall be conducted annually and completed no later than twelve (12) months after the previous source test. Subsequent source tests for CO and NO_x shall be conducted every 5 years and completed no later than sixty (60) months after the previous source test. The source test requirement is applicable to the following process equipment, emission points and pollutants:

EU ID	Source	Testing Location (Emission Point ID)	Pollutants
E6-E9, E58, E10, E11, E12, E59-E94	Green Hammermills, Green Chip Silo, Furnace, Dryers, Dry Hammermills	S1	PM, PM ₁₀ , PM _{2.5} , VOC, CO, NO _x , Acetaldehyde, Acrolein, Formaldehyde, Methanol, Phenol, and Propionaldehyde
E20-E31	Pelletizers 1 – 9, Pellet Coolers 1 - 3	S5	PM, PM ₁₀ , PM _{2.5} , VOC, CO, NO _x , Acetaldehyde, Acrolein, Formaldehyde, Methanol, Phenol, and Propionaldehyde



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EU ID	Source	Testing Location (Emission Point ID)	Pollutants
E32 – E39, E49 – E52	Pelletizers 10 – 18, Pellet Coolers 4 – 6	S6	PM, PM ₁₀ , PM _{2.5} , VOC, CO, NO _x , Acetaldehyde, Acrolein, Formaldehyde, Methanol, Phenol, and Propionaldehyde

The source test will be used to verify emission rates in units of pounds per hour (lb/hr) and to establish and/or re-establish site specific emission factors, for each process equipment, in units of pounds per oven-dried short tons (lb/ODT). For all particulate matter control devices except the WESP, the facility shall also monitor and record the pressure drop across the control device to establish or re-establish pressure drop ranges needed to ensure compliance with PM, PM₁₀, and PM_{2.5} emission limits. For the WESP, the facility shall also monitor and record the secondary voltage and current for each grid to establish or re-establish voltage and current ranges needed to ensure compliance with PM, PM₁₀, and PM_{2.5} emission limits. For all thermal incineration control devices, the facility shall also monitor and record the combustion zone temperature to re-establish operating temperatures needed to ensure compliance with VOC emission limits.

The facility may request that the source tests be conducted less often than annually for a given pollutant if the source tests for at least three (3) consecutive tests indicate facility wide emissions will be less than 85% of the synthetic minor limits. If the request is granted, the facility shall conduct a source test no more than 36 months after the previous source test for the given pollutant. If a subsequent source test indicates facility wide emissions will be greater than 85% of the synthetic minor limits, the facility shall return to conducting annual source tests (no later than 12 months after the previous source test) for that pollutant.

The Department believes after three annual source tests there should be sufficient data to indicate what the actual emissions are at a given production rate, and the use of a threshold of 85% of the synthetic minor limits will provide an adequate safety factor for granting a less frequent source test schedule.

All emissions points, duct work and other locations that are required to be tested, shall be designed and constructed in a manner to facilitate testing in accordance with applicable EPA approved source testing methods including, but not limited to, methods specifying test port location and sizing criteria. Sampling port locations shall be established in a place that is adequate for test methods; and safe to access and sample.

Rationale for proposed source test frequency to meet the requirements of on-going compliance:

- I. The annual testing frequency is consistent with wood pellet plant permits for facilities such as Enviva Sampson, North Carolina, Air Quality Permit No. 10386R04 and recently issued SC DHEC, BAQ, Jasper Pellets, permit # 1360-0050-CC.
- II. Recent testing at Pellet Manufacturing Plants demonstrates that emissions at wood pellet plants are highly variable. As such yearly source testing will ensure continued compliance with the synthetic minor limits. References: August 28, 2014 stack tests on the pellet coolers at Hazlehurst Wood Pellets in Georgia (emission



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factor of 0.30 lb/ODT), testing performed at that same plant on December 16, 2015 (emission factor of 0.62 lb/ODT).

To verify potential HAP emissions estimated in the application, a total of four (4) source tests shall be conducted on the Wood Pellet Storage Silos, with one test per quarter within a 12-month period from the initial test to determine if there is any variability in emissions due to changes in weather during the year and changes in softwood percentage. The facility may test emissions of volatile organic compounds (VOCs) as a surrogate to determine the total potential HAP emissions by applying the HAP ratios used in the application. The initial source test shall be conducted within 180 days after project completion and the startup of new and modified equipment. There shall be at least a 60 day separation between each test. The facility must submit a source test plan to Manager of Source Evaluation for approval prior to performance of the source tests.

To verify potential CO emissions estimated in the application, a total of four (4) source tests shall be conducted on the Wood Pellet Storage Silos, with one test per quarter within a 12-month period from the initial test to determine if there is any variability in emissions due to changes in weather during the year and changes in softwood percentage. The initial source test shall be conducted within 180 days after project completion and the startup of new and modified equipment. There shall be at least a 60 day separation between each test. The facility must submit a source test plan to Manager of Source Evaluation for approval prior to performance of the source tests.

MONITORING

- I. The owner/operator shall continue to monitor RTO and RTO/RCO Combustion Zone Temperature. Rationale to meet the requirements of on-going compliance with the synthetic minor limits for PSD and major HAP Avoidance.
- II. The owner/operator shall continue to monitor WESP secondary voltage and current. Rationale to meet the requirements of on-going compliance with the synthetic minor limits for PSD and major HAP Avoidance.
- III. The owner/operator shall continue to monitor Baghouse Pressure Differential. Rationale to meet the requirements of on-going compliance with the synthetic minor limits for PSD and major HAP avoidance.
- IV. The owner/operator shall continue to monitor Bin Vent Pressure Differential. Rationale to meet the requirements of on-going compliance with the synthetic minor limits for PSD and major HAP avoidance.
- V. The owner/operator shall continue to monitor Cyclofilter Pressure Differential. Rationale to meet the requirements of on-going compliance with the synthetic minor limits for PSD and major HAP avoidance.
- VI. The owner/operator shall continue to perform routine maintenance on the Cyclone. Rationale to meet the requirements of on-going compliance with the synthetic minor limits for PSD and major HAP Avoidance.

RECORD KEEPING

The owner/operator shall continue to perform emissions calculations on a monthly basis and a 12-month rolling sum shall be calculated for VOC, PM, PM₁₀, PM_{2.5} and HAP. Emissions calculations shall be based on the site-specific emission factors, as established in the most recent source test. Rationale to meet the requirements of on-going compliance with the synthetic minor limits for PSD and non-major source for HAPs.



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The owner/operator shall use the initial emission factors, identified in the Statement of Basis until new emission factors that are developed from the initial source testing have been approved to use.

REPORTING

- I. With this construction project, the emissions from the Vertical DHMs will controlled by the WESP, RTO and new Bin Vent Filter. Compliance with the synthetic minor limits shall continue to be achieved. Semi-Annual reporting shall continue to be required.

PROJECT EMISSIONS						
Pollutant	Uncontrolled		Controlled		PTE	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
P0/E1 - Debarking						
PM	2.7	11.82	2.7	11.82	2.7	11.82
PM ₁₀	0.07	0.32	0.07	0.32	0.07	0.28
PM _{2.5}	0.01	0.05	0.01	0.05	0.01	0.05
P0/E2 - Chipping						
VOC	0.44	1.92	0.44	1.92	0.44	1.92
PM	1.68	7.36	1.68	7.36	1.68	7.36
PM ₁₀	0.84	3.68	0.84	3.68	0.84	3.68
PM _{2.5}	0.84	3.68	0.84	3.68	0.84	3.68
Methanol	0.088	0.38	0.088	0.38	0.088	0.38
P0/E3 - Screening						
PM	0.33	1.46	0.33	1.46	0.33	1.46
PM ₁₀	0.33	1.46	0.33	1.46	0.33	1.46
PM _{2.5}	0.33	1.46	0.33	1.46	0.33	1.46
P0/E4 - Pile Drop						
PM	0.01	0.06	0.01	0.06	0.01	0.06
PM ₁₀	6.16E-03	0.03	6.16E-03	0.03	6.16E-03	0.03
PM _{2.5}	9.33E-04	4.09E-03	9.33E-04	4.09E-03	9.33E-04	4.09E-03
P0/E5 - Pile Erosion						
PM	0.65	2.83	0.65	2.83	0.65	2.83
PM ₁₀	0.32	1.41	0.32	1.41	0.32	1.41
PM _{2.5}	0.05	0.21	0.05	0.21	0.05	0.21
VOC	0.69	3.03	0.69	3.03	0.69	3.03
P0/E46 - Truck Dump 1						
PM	5.88E-03	0.03	5.88E-03	0.03	5.88E-03	0.03
PM ₁₀	2.78E-03	0.01	2.78E-03	0.01	2.78E-03	0.01
PM _{2.5}	4.21E-04	1.84E-03	4.21E-04	1.84E-03	4.21E-04	1.84E-03
P0/E46 - Truck Dump 2						
PM	5.88E-03	0.03	5.88E-03	0.03	5.88E-03	0.03
PM ₁₀	2.78E-03	0.01	2.78E-03	0.01	2.78E-03	0.01
PM _{2.5}	4.21E-04	1.84E-03	4.21E-04	1.84E-03	4.21E-04	1.84E-03



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PROJECT EMISSIONS						
Pollutant	Uncontrolled		Controlled		PTE	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
P1/E6-E9 - Green Hammermill 1 through 4; P1/E10 - Green Chip Silo; P1/E58 -Green Hammermill 5; P2/E11 - Furnace; P2/E12 - Dryer						
PM	256.77	1,125	2.57	11.25	2.57	11.25
PM ₁₀	256.77	1,125	2.57	11.25	2.57	11.25
PM _{2.5}	256.77	1,125	2.57	11.25	2.57	11.25
CO	13.65	59.80	13.65	59.80	13.65	59.80
SO ₂	5.00	21.90	5.00	21.90	5.00	21.90
NO _x	25.59	112.07	25.59	112.07	25.59	112.07
VOC	187.30	820.37	9.36	41.02	9.36	41.02
P2/E11 - Furnace Bypass Stack (Furnace Cold Start-up; Furnace Idle Mode)						
PM	24.27	106.15	24.27	106.15	24.27	2.16
PM ₁₀	21.75	95.11	21.75	95.11	21.75	1.94
PM _{2.5}	18.81	82.23	18.81	82.23	18.81	1.68
CO	25.25	110.38	25.25	110.38	25.25	2.25
SO ₂	1.05	4.60	1.05	4.60	1.05	0.09
NO _x	9.44	40.47	9.44	40.47	9.44	0.83
VOC	0.72	3.13	0.72	3.13	0.72	0.06
P2/E12 - Dryer Bypass Stack (Planned Shutdown)						
Furnace (E11) and Dryer (E12) Not operating, no emissions generated						
P2/E13 - Dry Chip Silo						
PM	17.14	75.09	0.17	0.75	0.17	0.75
PM ₁₀	17.14	75.09	0.17	0.75	0.17	0.75
PM _{2.5}	17.14	75.09	0.17	0.75	0.17	0.75
VOC	1.25	5.50	1.25	5.50	1.25	4.69
P2/E48 - Dryer Duct Burner						
PM	0.04	0.16	0.04	0.16	0.04	0.16
PM ₁₀	0.04	0.16	0.04	0.16	0.04	0.16
PM _{2.5}	0.04	0.16	0.04	0.16	0.04	0.16
CO	0.41	1.80	0.41	1.80	0.41	1.80
SO ₂	2.94E-03	0.01	2.94E-03	0.01	2.94E-03	0.01
NO _x	0.49	2.15	0.49	2.15	0.49	2.15
VOC	0.03	0.12	0.03	0.12	0.03	0.12
P3/E14 through E18 - Dry Hammermill 1 through 5 (existing but have been proposed to be removed with this construction project);						
P3/E59 - through E94 - Vertical Dry Hammermill 1 through Vertical Dry Hammermill 36						
PM	1,506	6,596	15.06	65.96	15.06	56.27
PM ₁₀	1,506	6,596	15.06	65.96	15.06	56.27
PM _{2.5}	1,506	6,596	15.06	65.96	15.06	56.27
*CO	0.0	0.0	0.17	0.73	0.17	0.62
*NO _x	0.0	0.0	0.20	0.86	0.20	0.74



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PROJECT EMISSIONS						
Pollutant	Uncontrolled		Controlled		PTE	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
* There are no uncontrolled CO or NO _x emissions from the DHMs. CO and NO _x result from thermal oxidation						
VOC	108.80	476.54	5.44	23.83	5.44	20.33
P3/E19 - Pelletizer Feed Silo						
PM	17.14	75.09	0.17	0.75	0.17	0.75
PM ₁₀	17.14	75.09	0.17	0.75	0.17	0.75
PM _{2.5}	17.14	75.09	0.17	0.75	0.17	0.75
VOC	0.02	0.08	0.02	0.08	0.02	0.07
P4/E20 - E22 Pelletizer 1 through 3 P4/E23 - Pellet Cooler 1; P4/E24 - E26 -Pelletizer 4 through 6; P4/E27 - Pellet Cooler 2; P4/E28 - E30 -Pelletizer 7 through 9; P4/E31 - Pellet Cooler 3						
PM	428.57	1,877	4.32	18.94	4.32	18.94
PM ₁₀	111.86	489.93	1.16	5.07	1.16	5.07
PM _{2.5}	69.13	251.46	0.69	2.51	0.69	2.51
*CO	0.0	0.0	4.84	21.22	4.84	17.62
*NO _x	0.0	0.0	0.82	3.58	0.82	2.97
* There are no uncontrolled CO or NO _x or SO ₂ emissions from pelletizing. CO and NO _x and SO ₂ result from thermal oxidation.						
SO ₂	0.0	0.0	3.06E-03	0.01	3.06E-03	0.01
VOC	134.77	590.28	6.74	29.51	6.74	24.51
P4/E32 - E34 - Pelletizer 10 through 12; P4/E35 - Pellet Cooler 4; P4/E36 - E38 - Pelletizer 13 through 15; P4/E39 - Pellet Cooler5; P4/E49 - E51 Pelletizer 16 through 18; P4/E52 - Pellet Cooler 6						
PM	428.57	1,877	4.36	19.11	4.36	19.11
PM ₁₀	111.86	489.93	1.20	5.24	1.20	5.24
PM _{2.5}	69.13	251.46	0.69	2.51	0.69	2.51
*CO	0.0	0.0	4.84	21.22	4.84	17.62
*NO _x	0.0	0.0	0.82	3.58	0.82	2.97
* There are no uncontrolled CO or NO _x or SO ₂ emissions from pelletizing. CO and NO _x and SO ₂ result from thermal oxidation.						
SO ₂	0.0	0.0	6.12E-03	0.03	6.12E-03	0.03
VOC	134.77	590.28	6.74	29.51	6.74	24.51
P5/E40, E41 - Pellet Silo 1, Pellet Silo 2						
PM	17.14	75.09	0.17	0.75	0.17	0.75
PM ₁₀	17.14	75.09	0.17	0.75	0.17	0.75
PM _{2.5}	17.14	75.09	0.17	0.75	0.17	0.75
Formaldehyde	0.004	0.02	0.004	0.02	0.004	0.02
Methanol	0.01	0.04	0.01	0.04	0.01	0.04
VOC	0.013	0.06	0.013	0.06	0.013	0.06
CO	0.005	0.02	0.005	0.02	0.005	0.02
P5/E42 - Loadout						
PM	98.57	431.74	0.99	4.32	0.99	4.32
PM ₁₀	98.57	431.74	0.99	4.32	0.99	4.32



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PROJECT EMISSIONS						
Pollutant	Uncontrolled		Controlled		PTE	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
PM _{2.5}	98.57	431.74	0.99	4.32	0.99	4.32
P5/E43 – Dust Silo						
PM	28.29	123.89	0.28	1.24	0.28	1.24
PM ₁₀	28.29	123.89	0.28	1.24	0.28	1.24
PM _{2.5}	28.29	123.89	0.28	1.24	0.28	1.24
Dried Wood Handling (Dry Chip Silo (P2/E13) and Pelletizer Feed Silo (P3/E19))						
Formaldehyde	0.074	0.32	0.074	0.32	0.074	0.28
Methanol	0.17	0.75	0.17	0.75	0.17	0.64
P6/E44 – Emergency Generator, 865 bhp, fueled with diesel fuel						
PM	0.03	8.58E-03	0.03	8.58E-03	0.03	0.009
PM ₁₀	0.03	8.58E-03	0.03	8.58E-03	0.03	0.009
PM _{2.5}	0.03	8.58E-03	0.03	8.58E-03	0.03	0.009
CO	0.76	0.19	0.76	0.19	0.76	0.19
SO ₂	9.41E-03	2.35E-03	9.41E-03	2.35E-03	9.41E-03	0.002
NO _x	10.95	2.74	10.95	2.74	10.95	2.74
VOC	0.02	4.77E-03	0.02	4.77E-03	0.02	0.005
P6/E45 – Fire Water Pump, 305 bhp, fueled with diesel fuel						
PM	0.1	0.03	0.1	0.03	0.1	0.03
PM ₁₀	0.1	0.03	0.1	0.03	0.1	0.03
PM _{2.5}	0.1	0.03	0.1	0.03	0.1	0.03
CO	1.75	0.44	1.75	0.44	1.75	0.44
SO ₂	3.3E-03	8.30E-04	3.3E-03	8.30E-04	3.3E-03	0.001
NO _x	2.02	0.50	2.02	0.50	2.02	0.50
VOC	5.36E-03	1.34E-03	5.36E-03	1.34E-03	5.36E-03	0.001
P6/E53 – Diesel Fuel Storage Tank						
VOC	1.98E-04	8.65E-04	1.98E-04	8.65E-04	1.98E-04	8.65E-04
P6/E54 – Diesel Fuel Storage Tank						
VOC	3.32E-05	1.45E-04	3.32E-05	1.45E-04	3.32E-05	1.45E-04
P6/E55 – Diesel Fuel Storage Tank						
VOC	6.58E-05	2.88E-04	6.58E-05	2.88E-04	6.58E-05	2.88E-04
P7/E56 – Unpaved Roads						
PM	63.03	276.09	6.30	27.61	6.30	27.61
PM ₁₀	17.97	78.7	1.80	7.87	1.80	7.87
PM _{2.5}	1.80	7.87	0.18	0.79	0.18	0.79
P7/E57 – Paved Roads						
PM	4.98	21.79	0.50	2.18	0.50	2.18
PM ₁₀	1.00	4.36	0.10	0.44	0.10	0.44
PM _{2.5}	0.24	1.07	0.02	0.11	0.02	0.11



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A summary of emission factors utilized in the emissions calculations in the current permit application along with the justification for their selection is provided in this Statement of Basis.

FACILITY WIDE EMISSIONS						
Pollutant	Prior to Construction			Post Construction		
	Uncontrolled	Controlled	PTE	Uncontrolled	Controlled	PTE
	TPY	TPY	TPY	TPY	TPY	TPY
PM	14,289	281	174	12,684	283	168 / < 250.0
PM ₁₀	14,109	253	157	9,667	206	103 / < 250.0
PM _{2.5}	12,047	215	131	9,102	179	89 / < 250.0
SO ₂	27.1	27.1	22.6	27	27	22
NO _x	292	292	99.95	158	166	125
CO	361	361	79.43	173.02	216.02	100.02
VOC	2,909	308	247	2,491	138	120.3 / < 250.0
Pb	5.10E-02	1.20E-02	3.34E-03	5.10E-02	1.20E-02	3.34E-03
Highest HAP Formaldehyde (Cas # 50-00-0)	18.0	2.41	1.35	91.39	5.67	4.41 / < 10.0
Total HAP	57.9	10.9	4.38	416.35	29.18	22.46 / < 25.0

- The Prior to Construction facility wide uncontrolled, controlled, and PTE emissions for the above-listed pollutants reflect estimates previously submitted by the prior owner (Colombo) for permits 1240-0133-CA and 1240-0133-CB, plus additional existing emissions/sources identified by Enviva when preparing the application for this construction permit. Enviva also discovered that the methodology used by Colombo overestimated the uncontrolled and controlled emissions for NO_x and CO. The emissions listed above for NO_x and CO in the uncontrolled and controlled Prior to Construction columns therefore overestimate pre-modification uncontrolled and controlled emissions. Enviva has updated emissions listed in the Prior to Construction PTE column for NO_x and CO to accurately reflect pre-construction PTE. Enviva's PTE emission estimates for NO_x and CO are now calculated using site-specific emission factors developed from 2018 and 2019 Enviva Greenwood source testing, with an added contingency. Further explanation of the revised NO_x and CO PTE estimates can be found in the Department's Response to Comments, and the supporting documentation supplied to the Department is included in the permit record. The Department has reviewed the revised PTE estimates for NO_x and CO, and the estimates listed for NO_x and CO in the Prior to Construction PTE column reflects corrected PTE estimates.
- Uncontrolled emissions (TPY) are based on the process(es) maximum hourly throughput, operating at 8,760 hours/year.
- Controlled emissions (TPY) are based on the process(es) maximum hourly throughput, operating at 8,760 hours/year, and the application of control device efficiencies.
- Controlled & Limited emissions (TPY) emissions are based on the process(es) annual throughput and, the application of control device efficiencies. Additionally, for the specified pollutants, Federally Enforceable Synthetic Minor limits for PSD and or major HAP Avoidance are applicable.



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OPERATING PERMIT STATUS

The facility submitted a Title V operating permit application on August 23, 2017. The facility currently operates under the following construction permits: 1240-0133-CA was issued on August 23, 2013, 1240-0133-CB was issued on January 12, 2018, 1240-0133-CB-R1 was issued March 20, 2018 and 1240-0133-CB-R2 was issued on October 2, 2018.

With the issuance of this Synthetic Minor Construction Permit, the following construction permits 1240-0133-CA, 1240-0133-CB, 1240-0133-CB-R1, and 1240-0133-CB-R2 will be superseded by Synthetic Minor Construction Permit 1240-0133-CC.

REGULATORY APPLICABILITY REVIEW	
Regulations	Comments/Periodic Monitoring Requirements
Section II.E – Synthetic Minor	<p>Applicable – This construction project is a synthetic minor construction permit to establish a new production limit of 660,000 ODT/year of finished dried wood pellets. Federally Enforceable limits for PM, PM₁₀, PM_{2.5}, VOC and HAP emissions were established with construction permit 1240-0133-CA to avoid PSD and HAP Major Source applicability. These synthetic minor limits shall remain in-place with this project.</p> <p>The federally enforceable synthetic minor limit for carbon monoxide (CO) to avoid PSD which was established in 1240-0133-CA will not be carried over with this project because the pellet plant as-built configuration potential to emit of CO is less than PSD major source threshold limits.</p> <p>A facility-wide federally enforceable synthetic minor limit for Carbon Dioxide equivalent basis (CO_{2e}) to avoid PSD was established in 1240-0133-CA. The EPA's final rule dated August 19, 2015 in response to the D.C. Circuit's amended judgment and mandate in <i>Coalition for Responsible Regulation v. EPA</i> provides that PSD does not trigger for greenhouse gases (GHGs) unless they trigger for another pollutant. Since Enviva Greenwood has PSD avoidance limits on the pollutants (PM, PM₁₀, PM_{2.5} and VOCs) the CO_{2e} limit is no longer necessary and will not be carried over with this project.</p>
Standard No. 1	<p>Applicable – The existing 5 MM Btu/hr, natural gas fired Dryer Duct Burner (E48) meets the criteria of a fuel burning source as defined by Standard 1. The Dryer Duct Burner is subject to the PM = 0.6 lb/MM Btu, 20% Opacity and SO₂ = 2.3 lb/MM Btu emissions limits of this standard.</p>
Standard No. 3 (state only)	<p>The RTO and RTO / RCO's are considered industrial incinerators and are subject to the PM 0.5 lb/MM Btu total heat input and 20% Opacity limits of this standard.</p> <p>The Thermal Incineration Control Devices utilize natural gas in the burners as a source of heat to start and maintain the combustion of the VOC laden exhaust stream from the pellet processes. Natural gas is a clean burning virgin fuel. The exhaust stream from the processes consists of volatile organic compounds. Because there is minimal particulate matter in the combustion fuels, compliance</p>



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REGULATORY APPLICABILITY REVIEW	
Regulations	Comments/Periodic Monitoring Requirements
	<p>with the Standard No. 3 PM limit is assured. The Department reserves the right to require testing if either the starter fuel or process exhaust stream constituents change.</p> <p>With this construction project, exhaust from the vertical dry hammermills may be routed to the existing furnace fire box above the furnace grate. Standard No. 3 is not applicable because, the exhaust stream is passing to the fire box above the furnace grate and not the actual furnace burners. Because the furnace burner, only burns clean untreated bark/hog fuel (i.e. wood chips, fines, sawdust) as fuel, Standard No. 3 is not applicable.</p>
Standard No. 4	<p>Applicable - The Standard 4 PM and 20% opacity limits are applicable to the process IDs P0 thru P05. Process P06 (E53, E54, E55) Diesel Fuel Storage Tanks are subject to Standard 4 for opacity however, the storage tanks do not emit PM, therefore PM compliance is assured. Process P07 Paved and Unpaved Roads is subject to the SC Regulation 61-62.6 – Fugitive emissions.</p>
Standard No. 5.2	<p>Applicable - The 200 MM Btu/hr Furnace (fueled with bark and wood chips) is subject to NO_x emission limit of this standard. The Standard No. 5.2 emission limit as stated: Low-NO_x burners or equivalent technology, shall achieve 30 percent reduction from uncontrolled levels. This existing limit shall be carried over into this construction project.</p> <p>On December 6, 2017 Enviva submitted the vendor guarantee which stated the NO_x emissions from the Furnace are estimated to be 30% less than standard a grate furnace bark combustion systems.</p> <p>Enviva Greenwood (12/2018; 1/2019; 3/2019) Source Test NO_x EF with an added contingency 0.34 lb/ODT; NO_x emissions = 25.6 lb/hr. The furnace is in compliance with Standard No. 5.2 (NO_x emissions are less than 31.57 lb/hr).</p> <p>Each Regenerative Thermal Oxidizer (RTO) and Regenerative Thermal Oxidizer (RTO)/ Regenerative Catalytic Oxidizer (RCO) is exempt from Standard No. 5.2 per Section I (B)(4).....'Any device functioning solely as a combustion control device'.</p> <p>The Dryer Duct Burner (E48) is exempt from Standard No. 5.2 per Section 1 (B) (1) Any source emitting NO_x listed on the Regulation 61-62.1, Section II(B), Exemptions. (The NO_x emission from the dryer duct burner are less than 5 tons/year).</p>
Standard No. 7	<p>Not Applicable</p> <p>For PSD Applicability this facility falls within the 250 tons per year source category. For PSD Applicability, only those emissions from point sources are counted towards determining PSD applicability. Fugitive emissions are excluded, unless</p>



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REGULATORY APPLICABILITY REVIEW	
Regulations	Comments/Periodic Monitoring Requirements
	<p>the facility is within one of the 28 source categories with a 100 tons per year threshold. For quantifying facility-wide total emissions, emissions from point sources and fugitive emissions are counted in the facility total emissions.</p> <p>This construction project does not trigger PSD. Federally enforceable limits (PM, PM₁₀, PM_{2.5}, CO, VOC) were established with construction permit 1240-0133-CA to avoid PSD. Additionally, with the federally enforceable requirement to operate the control devices, to limit the potential to emit, the project's emissions are less than 250. PSD will not be triggered.</p>
61-62.6	<p>Applicable - The fugitive PM emissions are required to be controlled in a manner that should not produce undesirable levels of PM emissions.</p>
40 CFR 60 and 61-62.60	<p>Applicable - The existing 865 bhp emergency generator (E44) and existing 305 bhp fire pump (E45) are each subject to 40 CFR 60 Subpart IIII.</p> <p>40 CFR 60 Subpart Db - Standards of Performance for Industrial Commercial - Institutional Steam Generating Units is not applicable to the 200 MM Btu/hr, bark-fired furnace (E11) because the furnace does not meet the definition of a steam generating unit (steam generating unit means a device that combusts any fuel or byproduct/waste and produces steam or heats water or heats any heat transfer medium).</p> <p>40 CFR 60 Subpart Dc - Standards of Performance for Small Industrial Commercial -Institutional Steam Generating Units is not applicable to the Dryer Duct Burner (E48) because it does not meet the definition of a steam generating unit. Steam generating unit means a device that combusts any fuel or byproduct/waste and produces steam or heats water or heats any heat transfer medium). Also, the Dryer Duct Burner has a maximum heat input of 5 MM Btu/hr which is less than the size threshold specified by the regulation.</p> <p>40 CFR 60 Subpart Kb - Volatile Organic Liquid Storage Vessels is not applicable to the facility's storage tanks (existing 660-gallon diesel fuel storage tank (E55), September 2016 installation, existing 359-gallon diesel fuel storage tank (E54), September 2016 installation, existing 2,000 gallon diesel tank (E53), September 2016 installation) because the tanks do not have maximum storage capacity greater than or equal to 39,890 gallons of a volatile organic liquid and therefore, the facility is not subject to Subpart Kb.</p> <p>40 CFR 60 Subpart IIII - Stationary Compression Ignition Internal Combustion Engines - The existing diesel-fired emergency generator (E44) and the fire pump engine (E45) are each subject to this regulation and shall continue to comply with Subpart IIII standards for the engines.</p>



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REGULATORY APPLICABILITY REVIEW	
Regulations	Comments/Periodic Monitoring Requirements
40 CFR 63 and 61-62.63	<p>The facility has established federally enforceable facility-wide limits on HAPs emissions, less than 10 tons per year for any single HAP and less than 25 tons per year for total combined HAPs. Therefore, this facility is categorized as an Area Source for Air Toxics.</p> <p>The existing 865 bhp emergency generator (E44) and existing 305 bhp fire pump (E45) are each subject to 40 CFR 63 Subpart ZZZZ - NESHAP for Stationary Reciprocating Internal Combustion Engines.</p> <p>40 CFR 63 Subpart DDDD - National Emission Standards For Hazardous Air Pollutants: Plywood And Composite Wood Products (PCWP) is not applicable to this facility because Subpart (4D) is applicable to PCWP manufacturing facilities which are a major source of hazardous air pollutants (HAP) emissions. This facility has established federally enforceable limits (Facility-Wide HAPs <10/25 tpy) and is categorized as an Area source for HAPs. A second reason that Subpart (4D) is not applicable to this facility is because Subpart (4D) applies to facilities that manufacture plywood and/or composite wood products by bonding wood material (fibers, particles, strands, veneers, etc.) or agricultural fiber, generally with resin under heat and pressure, to form a structural panel or engineered wood product. The processes at this wood pellet manufacturing plant do not utilize resin to form a structural panel or engineered wood product. The wood pellet process involves lignins which are naturally occurring in wood and which are released during the pelletizing process to create a bond.</p> <p>Regulatory review indicates there are no Area Source Standards for this source category.</p>
61-62.68	Not Applicable - This facility does not use or store any chemicals regulated by 112(r).
40 CFR 64 (CAM)	<p>In order for a pollutant specific emission unit (PSEU) to be subject to compliance assurance monitoring (CAM) the PSEU must meet the following criteria:</p> <ul style="list-style-type: none"> i. Be located at a major source for which a Part 70 or 71 permit is required ii. Be subject to an emission limitation or standard iii. Use a control device to achieve compliance iv. Have potential pre-control emissions of greater than 100 tons per year if a criteria pollutant or greater than 10/25 tons per year if a HAP and must not otherwise be exempt from CAM <p>CAM will be addressed during Title V permitting.</p>



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Standard No. 1 Allowable						
ID	PM Allowable (lb/hr)	SO ₂ Allowable (lb/hr)	Uncontrolled Emissions		Controlled Emissions	
			PM (lb/hr)	SO ₂ (lb/hr)	PM (lb/hr)	SO ₂ (lb/hr)
5 MM Btu/hr natural gas fired Dryer Duct Burner (E48)	3 (lb/hr)	11.5 (lb/hr)	0.04	2.94E-03	0.04	2.94E-03

Standard No. 4 Allowable					
Process	Process Weight Rate (tons/hr)	PM Allowable (lb/hr)	Uncontrolled Emissions PM (lb/hr)	Controlled Emissions PM (lb/hr)	Monitoring
Debarker (P0/E1)	230	60.04	2.70	2.70	Work Practices
Electric Powered Chipper (P0/E2)	175	57.07	1.68 (process emissions)	1.68 (process emissions)	Work Practices
Green Wood Screening (P0/E3)	175	57.07	0.33	0.33	Work Practices
Pile Drop (P0/E4)	350	64.76	0.01	0.01	Work Practices
Storage Pile Wind Erosion (P0/E5)	350	64.76	0.65	0.65	Work Practices
Truck Dump 1 (P0/E46)	175	57.07	5.88E-03	5.88E-03	Work Practices
Truck Dump 2 (P0/E47)	175	57.07	5.88E-03	5.88E-03	Work Practices
Green Hammermill 1 (P1/E6)	435 (total)	67.29 (total)	256.77 (total)	2.57 (total)	Measurement of WESP Secondary Voltage (kV) and Current (mA) each shift PM missions will continue to be controlled by the existing Wet Electrostatic Precipitator (WESP)
Green Hammermill 2 (P1/E7)					
Green Hammermill 3 (P1/E8)					



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Standard No. 4 Allowable					
Process	Process Weight Rate (tons/hr)	PM Allowable (lb/hr)	Uncontrolled Emissions PM (lb/hr)	Controlled Emissions PM (lb/hr)	Monitoring
Green Hammermill 4 (P1/E9)					
Green Hammermill 5 (P1/E58)					
Green Chip Silo (P1/E10)					
Furnace (P2/E11)					
Dryer (P2/E12)					
Furnace Bypass (P2/E11)	85	49.62	24.27	24.27	Work Practices
Dry Chip Silo (P2/E13)	85	49.62	17.14	0.17	Work Practices
Vertical Dry Hammermill 1 through 36 (P3/E59 through E94)	96	50.87	1,506	15.06	Measurement of WESP Secondary Voltage (kV) and Current (mA) each shift PM missions will continue to be controlled by the existing Wet Electrostatic Precipitator (WESP)
Pelletizer 1 (P4/E20)	48 (total)	44.20 (total)	428.57 (total)	4.29 (total)	Pressure Differential (each shift)- Particulate Matter Emissions will continue to be controlled by the existing Baghouses (Cyclofilters)
Pelletizer 2 (P4/E21)					
Pelletizer 3 (P4/E22)					
Pelletizer 4 (P4/E24)					
Pelletizer 5 (P4/E25)					



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Standard No. 4 Allowable					
Process	Process Weight Rate (tons/hr)	PM Allowable (lb/hr)	Uncontrolled Emissions PM (lb/hr)	Controlled Emissions PM (lb/hr)	Monitoring
Pelletizer 6 (P4/E26)					
Pelletizer 7 (P4/E28)					
Pelletizer 8 (P4/E29)					
Pelletizer 9 (P4/E30)					
Pellet Cooler 1 (P4/E23)					
Pellet Cooler 2 (P4/E27)					
Pellet Cooler 3 (P4/E31)					
<hr/>					
Pelletizer 10 (P4/E32)					
Pelletizer 11 (P4/E33)					
Pelletizer 12 (P4/E34)					
Pelletizer 13 (P4/E36)					
Pelletizer 14 (P4/E37)					
Pelletizer 15 (P4/E38)	48	44.20	428.57	4.29	Pressure Differential (each shift) - PM Emissions will continue to be controlled by the existing and new Baghouses (Cyclofilters)
Pelletizer 16 (P4/E49)	(total)	(total)	(total)	(total)	
Pelletizer 17 (P4/E50)					
Pelletizer 18 (P4/E51)					
Pellet Cooler 4 (P4/E35)					
Pellet Cooler 5 (P4/E39)					
Pellet Cooler 6 (P4/E52)					



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Standard No. 4 Allowable					
Process	Process Weight Rate (tons/hr)	PM Allowable (lb/hr)	Uncontrolled Emissions PM (lb/hr)	Controlled Emissions PM (lb/hr)	Monitoring
Pellet Silo 1 (P5/E40)	96 (total)	50.87 (total)	17.14 (total)	0.17 (total)	Pressure Differential (each shift) - PM Emissions will continue to be controlled by the existing Baghouse (Cyclofilter)
Pellet Silo 2 (P5/E41)					
Loadout (P5/E42)	150	55.44	98.57	0.99	Pressure Differential (each shift) - PM Emissions will continue to be controlled by the existing Baghouses and existing Cyclone
Dust Silo (P5/E43)	5	12.05	28.29	0.28	Pressure Differential each shift PM Emissions will continue to be controlled by the existing Baghouse (Cyclofilter 7)

AMBIENT AIR STANDARDS REVIEW	
Regulations	Comments/Periodic Monitoring Requirements
Standard No. 2	This facility has demonstrated compliance through modeling; see modeling summary dated 04/02/2020
Standard No. 8 (state only)	This facility has demonstrated compliance through modeling; see modeling summary dated 04/02/2020

Emission Factors						
Emission Unit ID	Source Description	Pollutant	EF	Units	Controlled or Uncontrolled Factor?	Supporting Justification
E2	Wood Chipper	PM	1.92E-02	lb/ODT	Uncontrolled	PM emission factors from Assessment of Fugitive Particulate Emission Factor for Industrial Processes, EPA-450/3-78-107 (September 1978), Table 2-47. Emission factor reduced by 60% to account for enclosed nature of operation. PM10/PM2.5 emissions assumed one-half of PM emissions.
		PM ₁₀	9.6E-03	lb/ODT	Uncontrolled	
		PM _{2.5}	9.6E-03	lb/ODT	Uncontrolled	
		Methanol	1.00E-03	lb/ODT	Uncontrolled	Methanol emission factor from 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.
		VOC (as propane)	5.00E-03	lb/ODT	Uncontrolled	VOC emission factor from AP-42, Section 10.6.3., Medium Density Fiberboard, 08/02, Table 7.



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Emission Factors

Emission Unit ID	Source Description	Pollutant	EF	Units	Controlled or Uncontrolled Factor?	Supporting Stack Tests and Justification
E6-E9, E58, E10, E11, E12	Green Hammermill 1 - 5, Green Chip Silo, Furnace, Dryer	CO	0.18	lb/ODT	Uncontrolled	- Enviva Greenwood December 2018
		NO _x	0.34	lb/ODT	Uncontrolled	Based on recent Enviva stack test results for the Greenwood plant. Contingency (engineering judgement) was applied to account for stack testing variability.
		PM/PM ₁₀ /PM _{2.5}	3.41	lb/ODT	Uncontrolled	
		VOC	2.49	lb/ODT	Uncontrolled	

Emission Factors

Emission Unit ID	Source Description	Pollutant	EF	Units	Controlled or Uncontrolled Factor?	Supporting Stack Tests and Justification
E6-E9, E58, E10, E11, E12	Green Hammermill 1 - 5, Green Chip Silo, Furnace, Dryer	Acetaldehyde	0.19	lb/ODT	Uncontrolled	- Wiggins October 2013 - Engineering judgement Recent Enviva stack testing for Greenwood did not measure detectable levels of this pollutant. Therefore, factor is based on test results for these emission sources at other Enviva facilities and engineering judgement. Contingency (engineering judgement) was applied to account for stack testing and inter-plant variability.
		Acrolein	0.12	lb/ODT	Uncontrolled	- Greenwood (Colombo) October 3, 2017 - Wiggins October 2013 No Enviva testing available for Greenwood. Therefore, factor is based on Colombo test results for these emission sources at the Greenwood facility and testing at other Enviva facilities. Contingency (engineering judgement) was applied to account for stack testing and inter-plant variability.
		Formaldehyde	0.12	lb/ODT	Uncontrolled	- Enviva Greenwood December 2018 Based on recent Enviva stack test results for the Greenwood plant. Contingency (engineering judgement) was applied to account for stack testing variability.
		Methanol	0.15	lb/ODT	Uncontrolled	- Sampson March 29, 2018 - Amory October 2013 - Engineering judgement Recent Enviva stack testing for Greenwood did not measure detectable levels of this pollutant. Therefore, factor is based on test results for these emission sources at other Enviva facilities and engineering judgement. Contingency (engineering judgement) was applied to account for stack testing and inter-plant variability.
		Phenol	0.15	lb/ODT	Uncontrolled	- Greenwood (Colombo) October 3, 2017 - Engineering judgement No Enviva testing available for Greenwood. Therefore, factor is based on Colombo test results for these emission sources at the Greenwood facility and engineering



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Emission Factors						
Emission Unit ID	Source Description	Pollutant	EF	Units	Controlled or Uncontrolled Factor?	Supporting Stack Tests and Justification
						judgement. Contingency (engineering judgement) was applied to account for stack testing variability.
		Propionaldehyde	5.62E-02	lb/ODT	Uncontrolled	- Wiggins October 2013 - Engineering judgement No testing available for Greenwood. Therefore, factor is based on test results for these emission sources at other Enviva facilities and engineering judgement. Contingency (engineering judgement) was applied to account for stack testing and inter-plant variability.

Emission Factors						
Emission Unit ID	Source Description	Pollutant	EF	Units	Controlled or Uncontrolled Factor?	Supporting Stack Tests and Justification
E14-E18, E59-E94	Dry Hammermills	VOC	1.23	lb/ODT	Uncontrolled	- Enviva Greenwood December 4-5, 2018 - Greenwood (Colombo) October 2-6, 2017 - Amory October 2013 - Wiggins October 2013 Enviva did not believe the Greenwood December 2018 stack test results alone were fully representative of VOC emission from these DHMs. Therefore, a higher factor was selected, which is based on inclusion of additional test results for these sources at Greenwood and other Enviva facilities. Contingency (engineering judgement) was applied to account for stack testing and inter-plant variability.
		PM/PM ₁₀ /PM _{2.5}	0.17	lb/ODT	Controlled	- Enviva Greenwood December 2018 Based on recent stack test results for the Greenwood plant. Contingency (engineering judgement) was applied to account for stack testing variability.

Emission Factors						
Emission Unit ID	Source Description	Pollutant	EF	Units	Controlled or Uncontrolled Factor?	Supporting Stack Tests and Justification
E14-E18, E59-E94	Dry Hammermills	Acetaldehyde	7.20E-03	lb/ODT	Uncontrolled	(Acetaldehyde) Wiggins October 2013
		Acrolein	1.08E-02	lb/ODT	Uncontrolled	Recent Enviva stack testing for Greenwood did not measure detectable levels of this pollutant. Therefore, Acetaldehyde factor is based on test results for these emission sources at other Enviva facilities. Contingency (engineering judgement) was applied to account for stack testing and inter-plant variability.



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Emission Factors						
Emission Unit ID	Source Description	Pollutant	EF	Units	Controlled or Uncontrolled Factor?	Supporting Stack Tests and Justification
						(Acrolein) Enviva stack testing for Greenwood did not measure detectable levels of this pollutant. Therefore, Acrolein factor is based on test results for these emission sources at other Enviva facilities. Contingency (engineering judgement) was applied to account for stack testing and inter-plant variability
		Formaldehyde	2.40E-04	lb/ODT	Uncontrolled	- Enviva Greenwood December 2018
		Methanol	5.88E-03	lb/ODT	Uncontrolled	Based on recent stack test results for the Greenwood plant. Contingency (engineering judgement) was applied to account for stack testing variability. - Engineering judgement
		Phenol	2.76E-03	lb/ODT	Uncontrolled	Enviva stack testing for Greenwood did not measure detectable levels of this pollutant and no testing available for other plants. Therefore, factor is based on engineering judgement.
		Propionaldehyde	1.24E-02	lb/ODT	Uncontrolled	- Greenwood (Colombo) October 2017 No Enviva testing available for Greenwood. Therefore, factor is based on Colombo test results for these emission sources at the Greenwood facility. Contingency (engineering judgement) was applied to account for stack testing variability.

Emission Factors						
Emission Unit ID	Source Description	Pollutant	EF	Units	Controlled or Uncontrolled Factor?	Supporting Justification
E13, E19	Dry Chip Silo, Pelletizer Feed Silo	Formaldehyde	8.4E-04	lb/ODT	Uncontrolled	Formaldehyde and Methanol emission factors calculated from NCASI's Wood Products Database (February 2013) for dry wood handling operations at an OSB mill. The emission factors were converted from lb/MSF (3/8") to lb/ODT using the density and moisture content of an OSB panel. VOC emission factor calculated based on Greenwood bag sampling data and includes 20% contingency.
		Methanol	2.03E-03	lb/ODT	Uncontrolled	
		VOC (as propane form dry chip silo)	1.42E-02	lb/ODT	Uncontrolled	
		VOC (as propane form pelletizer feed silo)	2.19E-04	lb/ODT	Uncontrolled	

Emission Factors						
Emission Unit ID	Source Description	Pollutant	EF	Units	Controlled or Uncontrolled Factor?	Supporting Stack Tests and Justification
E20-E39, E49-E52	Pelletizers and Pellet Coolers	VOC	2.97	lb/ODT	Uncontrolled	Based on recent stack test results for the Greenwood plant. Contingency (engineering judgement) was applied
		CO	0.11	lb/ODT	Uncontrolled	
		NO _x	1.80E-02	lb/ODT	Uncontrolled	
		PM _{2.5}	1.52E-02	lb/ODT	Controlled	



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Emission Factors

Emission Unit ID	Source Description	Pollutant	EF	Units	Controlled or Uncontrolled Factor?	Supporting Stack Tests and Justification
						to account for stack testing variability.

Emission Factors

Emission Unit ID	Source Description	Pollutant	EF	Units	Controlled or Uncontrolled Factor?	Supporting Stack Tests and Justification
E20-E39, E49-E52	Pelletizers and Pellet Coolers	Acetaldehyde	3.36E-02	lb/ODT	Uncontrolled	- Enviva Greenwood January 2019 Based on recent stack test results for the Greenwood plant. Contingency (engineering judgement) was applied to account for stack testing variability.
		Acrolein	4.99E-02	lb/ODT	Uncontrolled	- Wiggins October 2013 - Greenwood (Colombo) October 2017 No Enviva testing available for Greenwood. Therefore, factor is based on Colombo test results for these emission sources at the Greenwood facility and testing at other Enviva facilities. Contingency (engineering judgement) was applied to account for stack testing and inter-plant variability.
		Formaldehyde	0.13	lb/ODT	Uncontrolled	- Enviva Greenwood January 2019 Based on recent stack test results for the Greenwood plant. Contingency (engineering judgement) was applied to account for stack testing variability.
		Methanol	5.98E-03	lb/ODT	Uncontrolled	- Enviva Greenwood March 2019 Based on recent stack test results for the Greenwood plant. Contingency (engineering judgement) was applied to account for stack testing variability.
		Phenol	2.52E-02	lb/ODT	Uncontrolled	- Wiggins October 2013 Enviva stack testing for Greenwood did not measure detectable levels of this pollutant. Therefore, factor is based on test results for these emission sources at other Enviva facilities. Contingency (engineering judgement) was applied to account for stack testing and inter-plant variability.
		Propionaldehyde	1.46E-02	lb/ODT	Uncontrolled	- Wiggins October 2013 - Greenwood (Colombo) October 2017 No Enviva testing available for Greenwood. Therefore, factor is based on Colombo test results for these emission sources at the Greenwood facility and testing at other Enviva facilities. Contingency (engineering judgement) was applied to account for stack testing and inter-plant variability.



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Emission Unit ID	Source Description	Pollutant	Emission Rate	Controlled or Uncontrolled	Justification
E20-E39, E49-E52	Pelletizers and Pellet Coolers	Total PM	4.29 lb/hr	Controlled	Enviva relied on equipment vendor recommendations applied to actual flow rates to determine Pelletizer and Pellet Coolers, PM and PM ₁₀ emission rates. PM and PM ₁₀ emissions calculated using this methodology were higher than the results obtained during stack testing at the Greenwood plant PM ₁₀ speciation factors are based on engineering judgment and data from a similar Enviva facility.
		Total PM ₁₀	1.12 lb/hr	Controlled	
PM emissions based on an outlet grain loading of 0.01 gr/scf and an exhaust flow rate of 50,000 scfm. Per Vendor recommendations.					
PM ₁₀ emissions are based on PM emissions and speciation based on data for similar Enviva facility. (PM ₁₀ speciation) PM ₁₀ as a percentage of PM = 26%					
The initial PM and PM ₁₀ emissions rates for the Pelletizers and Pellet Coolers are based on baghouse flow rate (scfm) and outlet grain loading (gr/scf). These initial emission rates are based on equipment vendor recommendations and represent a more conservative emissions estimate than the EF which was determined during stack test (Enviva Greenwood January 2019)					

Emission Factors

Emission Unit ID	Source Description	Pollutant	EF	Units	Controlled or Uncontrolled Factor?	Supporting Justification
E40, E41	Wood Pellet Storage Silo 1 and Wood Pellet Storage Silo 2	Formaldehyde	3.90E-03	lb/hr	Uncontrolled	*Formaldehyde and Methanol emission factors are calculated using emission factors from the NCASI's Wood Products Database (February 2013) factors for dry wood handling operations at an OSB mill. Additional details below
		Methanol	9.1E-03	lb/hr	Uncontrolled	
		VOC	1.31E-02	lb/hr	Uncontrolled	
		CO	4.98E-03	lb/hr	Uncontrolled	VOC and CO emissions factors are calculated based on November 2018 Greenwood bag sampling data for the wood pellet storage silos and include 20% contingency.

* Formaldehyde and Methanol, emission factors were calculated by a methodology to allocate the measured VOC emissions using NCASI's Wood Products Database (February 2013) emission factors for dry wood handling operations at an Oriented Strand Board (OSB) mill. The NCASI emission factors for Formaldehyde and Methanol are listed as 0.00049 pounds per thousand square feet of three-eighths inch oriented strand board, and 0.00114 pounds per thousand square feet of three-eighths inch oriented strand board. To determine what percentage of the total measured VOC emissions from the wood pellet storage silos was formaldehyde and methanol, the NCASI formaldehyde and methanol emission factors were ratioed to determine a constant. The calculated ratio was then multiplied by the measured VOC emission factor (lb/hr), which resulted in an emission factor of 0.00393 lb/hr formaldehyde and 0.0091 lb/hr methanol.



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FUEL COMBUSTION EMISSIONS					
Furnace - Normal Operations - Biomass Combustion Emission Factors					
Fuel Type and Heat Input Capacity	Pollutant	EF	Units	Controlled or Uncontrolled Factor?	Justification
200 MM Btu/hr Clean untreated bark/wet wood chips	SO ₂	0.025	lb/MM Btu	Uncontrolled	SO ₂ emission factor is based on AP-42, Chapter 1, Section 1.6 - Wood Residue Combustion in Boilers, Table 1.6-1, for bark/bark and wet wood.

Furnace Bypass - Cold Start-Up - Biomass Combustion Emission Factors					
Fuel Type and Heat Input Capacity	Pollutant	EF	Units	Controlled or Uncontrolled Factor?	Justification
30 MM Btu/hr Clean untreated bark/ wet wood chips	PM	0.58	lb/MMBtu	Uncontrolled	Criteria pollutant emission factors are based on AP-42, Chapter 1, Section 1.6 - Wood Residue Combustion in Boilers, Table 1.6-1, for bark/bark and wet wood. Total PM, Total PM ₁₀ and Total PM _{2.5} factors equal to the sum of the filterable and condensable factors. VOC emission factor excludes formaldehyde. Formaldehyde EF = 4.4E-03 lb/MMBtu
	PM ₁₀	0.52	lb/MMBtu	Uncontrolled	
	PM _{2.5}	0.45	lb/MMBtu	Uncontrolled	
	VOC	0.017	lb/MMBtu	Uncontrolled	
	CO	0.60	lb/MMBtu	Uncontrolled	
	NO _x	0.22	lb/MMBtu	Uncontrolled	
SO ₂	0.025	lb/MMBtu	Uncontrolled		

Furnace Bypass - Cold Start-Up - Diesel Fuel Emission Factors					
Fuel Type and Heat Input Capacity	Pollutant	EF	Units	Controlled or Uncontrolled Factor?	Justification
7 MM Btu / yr Diesel Fuel (15-30 gallons per start-up; up to 100 -200 gallons per year)	Total PM	3.3	lb/10 ³ gal	Uncontrolled	Criteria pollutant emission factors are based on AP-42, Chapter 1, Section 1.3 - Fuel Oil Combustion, distillate fuel oil, Table 1.3 - 1, Table 1.3-2, Table 1.3-3, Table 1.3-6 and are located in Appendix C, Table 5 of the Application. SO ₂ emissions, assume a 15 ppm sulfur content in diesel fuel
	Total PM ₁₀	3.3	lb/10 ³ gal	Uncontrolled	
	Total PM _{2.5}	3.3	lb/10 ³ gal	Uncontrolled	
	VOC	0.2	lb/10 ³ gal	Uncontrolled	
	CO	5	lb/10 ³ gal	Uncontrolled	
	NO _x	20	lb/10 ³ gal	Uncontrolled	
	SO ₂	0.2	lb/10 ³ gal	Uncontrolled	

Furnace Bypass - Idle Mode - Biomass Combustion Emission Factors					
Fuel Type and Heat Input Capacity	Pollutant	EF	Units	Controlled or Uncontrolled Factor?	Justification
Clean untreated bark/ wet wood chips 12 MM Btu/hr	PM	0.58	lb/MMBtu	Uncontrolled	Criteria pollutant emission factors are based on AP-42, Chapter 1, Section 1.6 - Wood Residue Combustion in Boilers, Table 1.6-1, for bark/bark and wet wood. Total PM, Total PM ₁₀ and Total PM _{2.5} factors equal to the sum of the filterable and condensable factors. VOC emission factor excludes formaldehyde. Formaldehyde EF = 4.4E-03 lb/MMBtu
	PM ₁₀	0.52	lb/MMBtu	Uncontrolled	
	PM _{2.5}	0.45	lb/MMBtu	Uncontrolled	
	VOC	0.017	lb/MMBtu	Uncontrolled	
	CO	0.60	lb/MMBtu	Uncontrolled	
	NO _x	0.22	lb/MMBtu	Uncontrolled	
	SO ₂	0.025	lb/MMBtu	Uncontrolled	



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Dryer Duct Burner Emission Factors					
Fuel Type and Heat Input Capacity	Pollutant	EF	Units	Controlled or Uncontrolled Factor?	Justification
Natural Gas 5 MM Btu/hr	PM _{condensable}	5.70	lb/MMscf	Uncontrolled	Criteria pollutant emission factors are based on AP-42, Chapter 1, Section 1.4 - Natural Gas Combustion, Table 1.4-1, Table 1.4-2. Emission factors are based on an average natural gas higher heating value of 1,020 Btu/scf
	PM _{10 condensable}	5.70	lb/MMscf	Uncontrolled	
	PM _{2.5 condensable}	5.70	lb/MMscf	Uncontrolled	
	PM _{filterable}	1.90	lb/MMscf	Uncontrolled	
	PM _{10 filterable}	1.90	lb/MMscf	Uncontrolled	
	PM _{2.5 filterable}	1.90	lb/MMscf	Uncontrolled	
	VOC	5.50	lb/MMscf	Uncontrolled	
	CO	84.0	lb/MMscf	Uncontrolled	
	NO _x	100.0	lb/MMscf	Uncontrolled	
SO ₂	0.60	lb/MMscf	Uncontrolled		

Engine 1 - Generator Emission Factors					
Fuel Type and Engine Power	Pollutant	EF	Units	Controlled or Uncontrolled Factor?	Justification
Diesel Engine 1 - 865 hp (brake)	PM	1.8E-02	g/hp-hr	Uncontrolled	Criteria pollutant emission factors are based on Technical Data sheet for the engine. Sulfur content in accordance with Year 2010 standards of 40 CFR 80.510 (a) as required by 40 CFR 60 Subpart IIII
	PM ₁₀	1.8E-02	g/hp-hr	Uncontrolled	
	PM _{2.5}	1.8E-02	g/hp-hr	Uncontrolled	
	VOC	1.00E-02	g/hp-hr	Uncontrolled	
	CO	4.00E-01	g/hp-hr	Uncontrolled	
	NO _x	5.74	g/hp-hr	Uncontrolled	
	SO ₂	15	ppmv	Uncontrolled	

Engine 2 - Fire Pump Emission Factors					
Fuel Type and Engine Power	Pollutant	EF	Units	Controlled or Uncontrolled Factor?	Justification
Diesel Engine 2 - 305 hp (brake)	PM	0.15	g/hp-hr	Uncontrolled	PM, PM ₁₀ , PM _{2.5} , CO and NO _x emission factors based on 40 CFR 60 Subpart IIII (or 40 CFR 89.112 where applicable) in compliance with post-2009 construction. Sulfur content in accordance with Year 2010 standards of 40 CFR 80.510 (a) as required by Subpart IIII. VOC emission factor based on AP-42 Section 3.3, Tables 3.3-1, Table 3.3-2
	PM ₁₀	0.15	g/hp-hr	Uncontrolled	
	PM _{2.5}	0.15	g/hp-hr	Uncontrolled	
	VOC	2.51E-03	g/hp-hr	Uncontrolled	
	CO	2.60	g/hp-hr	Uncontrolled	
	NO _x	3.00	g/hp-hr	Uncontrolled	
	SO ₂	15	ppmv	Uncontrolled	

Initial PM emissions for the Pelletizers/Pellet Coolers
Emissions (E) = [50,000 (scfm) x 0.01 (gr/scf) x 60 min/hour / 7,000 gr/lb] x operating hours x 1 ton / 2000 lb
Baghouse flow rate (scfm) and outlet grain loading (gr/scf) are based on equipment vendor recommendations

Initial PM₁₀ emissions for the Pelletizers/Pellet Coolers
Emissions (E) = [50,000 (scfm) x 0.01 (gr/scf) x 60 min/hour / 7,000 gr/lb] x operating hours x 1 ton / 2000 lb
(PM ₁₀ speciation) PM ₁₀ as a percentage of PM = 26%



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Initial PM ₁₀ emissions for the Pelletizers/Pellet Coolers
Baghouse flow rate (scfm) and outlet grain loading (gr/scf) are based on equipment vendor recommendations

Initial PM, PM ₁₀ and PM _{2.5} emissions from the Dry Chip Silo, Pelletizer Feed Silo, Pellet Silo 1, and Pellet Silo 2
Emissions (E) = 2,000 (scfm) x 0.01 (gr/scf) x 60 min/hour / 7,000 gr/lb x operating hours x 1 ton / 2,000 lb
Baghouse flow rate (scfm) and outlet grain loading (gr/scf) are based on vendor recommendations

Initial PM, PM ₁₀ and PM _{2.5} emissions from Loadout
Emissions (E) = 23,000 (scfm) x 0.005 (gr/scf) x 60 min/hour / 7,000 gr/lb x operating hours x 1 ton / 2,000 lb
Baghouse flow rate (scfm) and outlet grain loading (gr/scf) are based on vendor recommendations

Initial PM, PM ₁₀ and PM _{2.5} emissions from Dust Silo
Emissions (E) = 3,300 (scfm) x 0.01 (gr/scf) x 60 min/hour / 7,000 gr/lb x operating hours x 1 ton / 2,000 lb
Baghouse flow rate (scfm) and outlet grain loading (gr/scf) are based on vendor recommendations

PUBLIC NOTICE

This construction permit underwent a 30-day public notice period, in accordance with SC Regulation 61-62.1, Section II.N and to establish synthetic minor limits for a plant-wide total wood pellet production limit of 660,000 oven dry short tons per year. The comment period was open from July 20, 2020 to August 27, 2020, and the draft permit was placed on the BAQ website during that time period. Comments were received during the comment period.

ADDITIONAL PUBLIC PARTICIPATION

A virtual public hearing was held on August 20, 2020. In addition:

- The Department developed a webpage specific to Enviva so the community would have one place to get up to date information on Enviva Greenwood, including a fact sheet about the project, a copy of the public hearing presentation and recording of the public hearing, and other information.
- The Department Met with several community members and county officials to hear their concerns and answer any questions they had.
- The Department Communicated by phone or virtually with community leaders, local officials, and community-based organizations to provide requested information and answer questions.
- The Department Placed two temporary air sensors in the area to determine if there were PM_{2.5} concentrations in the community that would warrant further investigation.

SUMMARY AND CONCLUSIONS

It has been determined that this source, if operated in accordance with the submitted application, will meet all applicable requirements and emission standards

Attachment C

**Response to Comments
Permit No. 1240-0133-CC**

South Carolina Department of Health and Environmental Control
Bureau of Air Quality
Response to Comments
Public Notice #20-046-TV-C-H
Enviva Pellets Greenwood, LLC (1240-0133-CC)

The following is the SC Department of Health and Environmental Control's (DHEC) Bureau of Air Quality (Department) response to the comments made and issues raised during the formal comment period held July 20, 2020 through August 27, 2020 and the public hearing held on August 20, 2020, regarding the draft Enviva Pellets Greenwood, LLC ("Enviva") synthetic minor construction permit. The written comments received regarding the draft permit are available for viewing at the SC DHEC Columbia office located at 2600 Bull Street, Columbia, SC 29201, or hardcopies can be requested by contacting our Freedom of Information Office at (803) 898-3817.

Due to health concerns associated with the COVID-19 pandemic the public hearing was held virtually using Microsoft Teams and a telephone call in number to allow for public participation while protecting public health under current guidance to prevent the spread of COVID-19. Approximately 70 people participated in the virtual hearing, of those forty people provided oral comments. During the comment period a total of 767 written and oral comments were received

The Department has considered and provided a written summary of the comments followed by the Department's response:

During the comment period, comments were received from the general public and environmental groups. The Environmental Integrity Project submitted comments on behalf of: Lakeland Citizens for Clean Air, South Carolina Chapter of the Sierra Club, Dogwood Alliance, Partnership for Policy Integrity, Natural Resources Defense Council, Our Children's Earth, Friends of the Earth and themselves, Environmental Integrity Project and the Southern Environmental Law Center.

The Department has considered each comment and revised the draft permit where appropriate. The following is a summary of the changes to the draft permit since it went on public notice in 2020:

- The fugitive dust condition (C.10) has been updated to require additional dust control measures for the Enviva Greenwood Best Management Practices (BMP) Plan. The reassessed BMP Plan was submitted by Enviva and reviewed by the Department in advance of issuance of the permit. The permit condition therefore has also been modified to require plan reassessment periodically or any time the Department requests, rather than within 180 days of permit issuance.

- Condition C.12 has been added which requires a source test on the Wood Pellet Storage Silos to verify potential Hazardous Air Pollutants (HAPs) and potential Carbon Monoxide (CO) emissions. A total of four source tests shall be performed, with one test per quarter within a 12-month period.
- The Algorithms Attachment has been updated to include Volatile Organic Compounds (VOCs) and HAP algorithms for the Green Wood Chipper (Emission Unit 2) and the Wood Pellet Storage Silos (Emission Units 40 and 41)

GENERAL SUPPORT OR OPPOSITION TO THE ISSUANCE OF THE PERMIT: The Department received general comments in support or opposition to the issuance of the Enviva Greenwood air construction permit.

Department Response: The Department appreciates all comments made regarding Enviva Greenwood draft air construction permit. However, the Department does not have the authority to make permitting decisions based on community, business, employee, and customer approval or disapproval of the company/facility. The Department's decision is based on the technical review of the application and regulatory requirements in place at the time the application was submitted and whether the facility has demonstrated that it can meet all applicable air regulatory requirements if operated according to the information provided in the application. The Department has considered all comments received pertaining to the draft construction permit and the facility's ability or inability to meet applicable air regulatory requirements, as detailed in the below comments and responses.

ENVIVA WORK WITH THE COMMUNITY: The Department received comments stating that Enviva should work with the community to address issues such as dust. Commenters state that dialogue and relationships with the community need to be developed to learn how to best protect South Carolinians.

Department Response: Enviva has made efforts to reach out to the community to identify, discuss and address the concerns of the community. Also, DHEC's Public Participation Coordinator and other Bureau staff have met with Enviva, several community members, and county officials to help facilitate dialogue between Enviva and the community. The Department expects Enviva to continue communicating with the community to address future concerns.

ENVIRONMENTAL JUSTICE AND ENVIRONMENTAL EQUITY COMMENTS: One commenter asked whether environmental equity is something the Department is required to consider as part of the permitting process. The Department also received comments opposed to the proposed expansion project based on an alleged failure by DHEC to consider and address Environmental Justice concerns. The commenters assert that DHEC issued a draft permit for the proposed expansion project that would disproportionately impact low-income

communities and communities of color without a full and complete understanding of how the proposed expansion would impact those communities. Commenters assert the population living closest to the facility is predominantly low income (59%) with a large minority population (45%) and these communities are already burdened by other sources of air pollution. Commenters assert that the impacts of the proposed expansion project can have significant negative impacts on the health and quality of life for people living nearby to the facility, especially when the cumulative impact from other air pollution sources are considered. Commenters state that in 2018 DHEC adopted “Environmental Justice Guiding Principles” in order to support the agency’s mission of improving the quality of life for all South Carolinians. Commenters assert that despite its commitment to addressing environmental justice in permitting decisions, DHEC proposed a draft permit to allow for an expansion of the Enviva Greenwood facility operations without completing an environmental justice analysis.

Commenters state that DHEC must consider the cumulative impacts of the facility on nearby communities, taking into account the background health information and other polluting industries in the area. Commenters assert that according to EJSCREEN, the area within a 2-mile radius of Enviva Greenwood is in the high 80th percentile for several EJ Indexes, when compared to the rest of the State: the area is ranked in the 88th percentile for PM_{2.5}, ozone, and air toxics, and the 87th percentile for respiratory hazards, all of which are impacted by Enviva Greenwood’s operations. Commenters assert that DHEC should use the demographic and socioeconomic data for the area, along with the area’s background health data, other polluting industries, and environmental justice indicators (such as those used by EPA’s EJSCREEN) to assess the cumulative effects of this facility and meet the commitments set forth in DHEC’s environmental justice guiding principles.

Department Response: In an effort to provide opportunities for meaningful engagement to the community near Enviva the Department provided the following:

- Developed a webpage specific to Enviva so the community would have one place to get up to date information on Enviva Greenwood, including a copy of the public hearing presentation and recording of the public hearing, and other information.
- Met with several community members and county officials to hear their concerns and answer any questions they had and provided a fact sheet about the project.
- Communicated by phone or virtually with community leaders, local officials, and community-based organizations to provide requested information and answer questions.
- Placed two temporary air sensors in the area to determine if there were PM_{2.5} concentrations in the community that would warrant further investigation. As discussed in the “Ambient Air Sensors” section, this monitoring did not indicate any trend warranting further investigation.
- Held a public hearing at the request of community members.

As stated on our website, DHEC is committed to “the fair treatment and meaningful involvement of people of all races, cultures and income with respect to the development, adoption, implementation and enforcement of environmental laws, regulations and policies in working towards increasing prosperity of all South Carolinians.” To that end, DHEC utilized EPA’s EJSCREEN to review the environmental and demographic indicators near Enviva Greenwood Pellets located on 200 Enviva Way, Greenwood SC. Upon review of the EJSCREEN data, as stated by the commenter, EJSCREEN ranks the area in the 88th percentile for PM_{2.5}, ozone and air toxics and the 87th percentile for respiratory hazards within a two-mile radius. Although EPA has stated that in the past the 80th percentile has been “helpful to establish a suggested Agency starting point for the purpose of identifying geographic areas that may warrant further consideration, analysis, or outreach,” the EPA webpage (<https://www.epa.gov/ejscreen/how-does-epa-use-ejscreen>) details how EPA intended for EJSCREEN to be used. EJSCREEN is not to be used to quantify specific risk values for a selected area.

DHEC is committed to environmental justice and engaging with communities and permit applicants to address environmental justice concerns. However, South Carolina air quality regulations do not require an EJ analysis or assessment of a facility’s cumulative effects. Facilities are required to ensure that National Ambient Air Quality Standards (“NAAQS”) are not violated and that applicable regulatory requirements are met. South Carolina is currently, and has a long history of, meeting the NAAQS statewide. These standards have been established by the US EPA and set to be protective of public health, including those sensitive and vulnerable populations, and the environment. The Department also requires applicants to demonstrate the proposed modification will not cause or contribute to a violation of the NAAQS. That demonstration can be done through either air dispersion modeling or through “other information”. Enviva Greenwood submitted air dispersion modeling as part of the ambient air quality analysis to demonstrate the facility will not interfere with the attainment of the NAAQS for PM₁₀, PM_{2.5}, NO₂, SO₂, and CO. Background concentrations (which account for emissions from other facilities and naturally occurring emissions) were included in the analysis.

DHEC works closely with community members and environmental justice stakeholders across South Carolina to ensure that citizens in overburdened communities can have meaningful involvement in our decision-making processes. Moreover, the air permit decision is based on all applicable air quality regulations and review of all technical and other information submitted showing compliance with requirements for issuance of the permit. In addition, the permit’s terms include additional requirements designed to minimize off-site impacts (e.g., Best Management Practices Plan requirements).

It is a priority of the Department to empower communities to work closely with regulated facilities and local officials to identify potential community hazards and steps that could be taken to reduce risks. The Department was recently awarded a U.S. EPA grant for environmental justice initiatives that will benefit low-income and minority communities. The

Department will use this new funding to further enhance our ability to work collaboratively with environmental justice communities to understand, promote and integrate approaches that provide meaningful and measurable improvements to public health and the environment. The Department looks forward to working closely with our environmental justice partners across South Carolina as we pilot new training programs and other initiatives to expand statewide.

COMPLIANCE HISTORY COMMENTS: The Department received comments opposed to the proposed expansion project citing Enviva Greenwood's history of non-compliance. Commenters assert, that with Enviva Greenwood history of non-compliance, there cannot be a reasonable expectation that the facility will address any new issues which may result from the proposed expansion project. Of particular note, commenters assert that Enviva plants in other States such as North Carolina, also have a history of non-compliance.

Department Response: The Department expects and requires all regulated facilities to comply with the terms and conditions of any permit the Department issues. The Department conducts unannounced routine inspections to verify that the conditions of the permit are being met, as well as additional inspections on a complaint-driven basis. Alleged violations of any permit condition or any applicable state and federal regulation are detailed in the inspection report and would result in the facility being referred to SC DHEC's Bureau of Air Quality's (BAQ) enforcement section. If the Enforcement Section determines that a violation has occurred, enforcement action may be taken requiring corrective action and the possible payment of civil penalties. Penalties are assessed in accordance with the Department's Uniform Enforcement Policy. The Department strongly encourages the public to report any concerns as soon as they are observed so that the Department can investigate and respond to any noncompliance and take enforcement action as needed.

As the comments pointed out the existing facility was previously found to be in violation of its 20% opacity limit. In July 2020, a consent order including a civil penalty was executed. BAQ does not include penalty schedules for potential future violations in permits. As part of the consent order, the facility was required to re-assess and re-submit an updated dust control plan. The updated plan was submitted as required.

DHEC expects all facilities to operate in compliance at all times. In cases where this does not occur, as noted above, penalties may be assessed, and corrective actions are required so that the facility comes back into compliance as quickly as possible and remains so in future operations. The Department must base air permit decisions on the applicable air quality regulations and standards in place at the time of the Department's technical review of the permit application. South Carolina regulations do not allow permitting decisions to be based on compliance or enforcement history at other facilities or in other states. In this case, the facility has met the requirements for issuance of a construction permit, and the facility's DHEC compliance history does not provide grounds for denial.

SAFETY COMMENTS: The Department received comments opposed to the proposed expansion project citing safety issues, such as fires that have occurred at the facility. Additional commenters stated concerns that the details of the permit do not go far enough to ensure the safety of the communities that are nearest to the facility, in other words, those fence line and frontline communities.

Department Response: The Department understands that safety is a concern, particularly to the communities which are nearest to the facility. The Department's review of the application indicates the facility can comply with the applicable air quality regulations. These regulations include NAAQS which are established to be protective of the public health. The standards must be met at the facility property line and beyond. In addition, as discussed in the "Dust Comments" section, the permit contains various conditions designed to minimize fugitive dust and other offsite impacts on nearby communities.

Regarding safety concerns such as fires, the local fire department and the Department should be contacted promptly when fires or explosions are observed at any regulated facility. As part of the facility's updated BMP Plan, it will be providing nearby residents with a phone number to call for complaints. The local fire department and emergency management agencies would be responsible for notifying the community if a fire or smoke may impact the nearby community. Residents should follow all instructions from these response organizations. The Department also has guidelines for responding to complaints within 24 to 48 hours. This guideline is established to ensure that all complaints are prioritized and handled based on the health and safety of our citizens. We also encourage residents to contact local officials to address any safety concerns that may be outside the scope of air quality requirements and this permitting decision, which, as discussed above, is based on applicable air quality regulations and the Department's technical review of the permit application.

The Department also reached out to Enviva to allow it to directly respond to safety concerns. Enviva stated that the Greenwood Plant will have three (3) mechanisms which are designed to prevent future fire incidents. The first is an existing spark detection system which operates by shutting down the process equipment if a spark is detected. The second mechanism is the addition of vertical dry hammermills, which will replace the horizontal dry hammermills as part of this proposed construction project. The vertical dry hammermills are designed such that they do not require the addition of air in order to convey the wood fiber. As such, the wood fiber will not come in contact with oxygen, which will reduce the potential of any future fire incidents. The third mechanism, also new with this proposed construction project, is the installation of a safety water quench duct, which will be located after the vertical dry hammermills. The safety water quench duct provides a non-combustible zone within the process exhaust duct work, which will prevent combustible matter, such as particulate matter, from reaching the wet electrostatic precipitator and regenerative thermal oxidizer control devices.

DUST COMMENTS: The Department received comments opposed to the proposed expansion project citing dust inside and outside of the property boundaries and requesting elimination of those fugitive dust emissions. One commenter stated that dust in her pool was analyzed and found to be groundwood and wood fines from the Enviva facility. Comments also asserted concern about dust generated by the truck traffic, increased storage, handling, conveyor transfer points, wood yard dust, and engine exhaust. Commenters requested the construction permit be modified in order to better control fugitive emissions and not allow for the proposed production increase. Commenters wanted to see the permit revised to include specific, detailed, and enforceable operating practices, maintenance schedules, and better monitoring to mitigate or eliminate fugitive dust emissions. A commenter stated that the Business Management Plan (i.e., BMP Plan) should be known to the community. Commenters also expressed interest in more monitors around the facility and expressed the desire to have the monitors analyzed by an independent firm.

One commenter specifically asserted that DHEC must incorporate stronger fugitive dust provisions into the permit to protect public health and well-being. The commenter asserted that improvement in particulate emissions from new pollution controls would occur concurrently with an increase in truck traffic and in storage and handling of woody materials, resulting in increased escape of fugitive dust. The commenter described public concerns about dust and complaints of sneezing, running noses, and coughing alleged in conjunction with the facility and discussed health and visibility concerns associated with dust more generally. The commenter asserted that the facility is not meeting the requirement to conduct non-enclosed operations such that a minimum of particulate matter becomes airborne and expressed concern that the Best Management Practices (BMP) Plan is not adequate and needs to be stronger by having specific measures incorporated directly in the permit and supplementing them as needed. The commenter referenced potential additional conditions to be added to the permit conditions for dust and stated that DHEC should require adequate monitoring, recordkeeping, and reporting requirements to ensure compliance. The commenter expressed general concern that the proposed expansion would increase existing harms, and that Enviva should not be allowed to expand without addressing fugitive dust issues.

Department Response: The Department understands that Enviva Greenwood, like other wood pellet plants, has the potential to generate large amounts of fugitive dust, based on the nature of operation alone. Enviva Greenwood, like any facility that generates or has the potential to generate fugitive dust, is required to implement measures to minimize fugitive dust to the extent possible. More specifically, the Enviva Greenwood facility must meet requirements under R.61-62.5, Standard No. 4, Section X, and R.61-62.6, Section III, governing non-enclosed operations and control of fugitive particulate matter. These requirements also appear in C.27 of the permit. Conditions C. 18, C.19, C.20 and C.22 further limit opacity to 20%. The Department has also included in the permit dust control provisions requiring Enviva Greenwood to control and minimize fugitive dust from the plant, and required Enviva to submit a re-assessed BMP Plan for dust control. Although the draft permit on public notice

would have required submission of a reassessed plan for Department review and approval within 180 days of final permit issuance, the Department instead required submission of a reassessed plan for Department review and approval as part of the response to comments and the permit decision process, given concerns expressed in the comments. Enviva submitted the reassessed BMP Plan to the Department electronically on October 27, 2020, and it has been reviewed and approved by the Department. The BMP plan is available to the public upon request through DHEC's Freedom of Information process.

Condition C.10 contains a list of minimum requirements that must be addressed in the BMP Plan. Upon consideration of the comments received, the Department has added further requirements for dust control to the permit and is requiring additional measures to be included in the BMP Plan submitted to the Department. These additional measures are part of the latest dust plan submitted to the Department by Enviva and must be fully implemented by the facility, as required by the permit. Additions to and notable provisions of Enviva's BMP Plan (which is available upon request through Freedom of Information procedures) are summarized as follows: Neighbors will be provided a phone number to allow them to file complaints anytime of the day. If a dust complaint is received, the facility will investigate to determine root cause, and attempt to contact neighbor to inform them of cause and solution. Roadways paved and unpaved will be sprayed with water each day Monday-Friday and on weekends when receiving wood. The facility will use as needed the pick-up broom on 200 Enviva Way road due to high traffic. Water Truck trips will be recorded in Water Truck Log daily. Pickup broom trips will be recorded in Pickup Broom Truck Log as used. Dryer emergency abort stack has control logic that shuts off feed to the dryer when dryer abort opens. Dry Hammermill emergency dump has water spray that activates when dump is in operation. Pellet Cooler emergency dumps have water spray that activates when dump is in operation. Silos emergency dumps will be observed for fugitive dust, if fugitive dust is observed then personnel will spray discharge with water. If any fugitive dust events occur, the shift supervisor will stop the fugitive dust, implement corrective action, and record fugitive dust event and corrective action on shift production report. Onsite weather station will continuously record wind speed and direction and rainfall. The weather station will assist in investigating fugitive dust events and dust complaints. Pursuant to South Carolina Statutes, the facility will post signage which states that Haul trucks carrying wood chips shall be covered. Both the permit and BMP Plan also include a variety of monitoring and recordkeeping provisions such as requirements for a maintenance schedule, complaint logs, recording of fugitive dust observations and corrective actions, training plans and rosters, and retention of all dust plan records on site for five years, made available to the Department upon request.

As a general matter, the Department believes that facilities are best positioned to propose what dust control measures are necessary and appropriate for meeting the requirements contained in the permit and Department regulations related to fugitive dust and particulate matter emissions. Fugitive dust considerations and requirements are specific to each site and as such fugitive dust plans require accurate, site-specific detail on how dust, truck traffic,

process equipment, and other factors at the facility will be controlled and maintained. Prior to the issuance of a construction permit, the specific details required for the plan may not be known for certain by the facility at that time. If it is determined that the BMP Plan measures pursuant to this permit are insufficient to ensure the facility's impact to any nearby communities is minimized, the facility is required to revise the plan so that it is sufficient to minimize impacts. The Department's regional office will also investigate citizen's complaints, including dust complaints, when received from the public. The facility would also be subject to enforcement action as appropriate to the extent dust is not minimized as required by the permit. All permit terms, including requirements to develop and implement the BMP Plan, are enforceable.

The Department regulates the fugitive dust from roads within the facility; however, the Department does not have the authority to regulate truck traffic on the public roads. Tailpipe emissions from mobile sources are regulated by the EPA under the authority of the Clean Air Act. The permit requires the facility's roadways to be paved and/or treated (such as through the use of water sprays) to minimize dust. The permit also requires the BMP Plan to address dust control methods for roadways, railcar, and truck operations at the facility, and as discussed above, the updated BMP Plan includes provisions addressing these operations.

The updated BMP plan and the additional controls being added to the existing equipment should decrease dust leaving the facility and are expected to reduce the overall particulate matter emissions. Stack testing will be performed to verify the emission reductions.

See "Air Pollution Concerns and Health Issues" Section for further discussion in response to concerns related to health and particulate matter emissions generally.

AMBIENT AIR SENSORS READING HIGH LEVELS OF PARTICULATE: The Department received comments opposed to the proposed expansion project citing that community members had obtained an independent source to install particulate sensors approximately five (5) miles to the northeast of the plant and, that when Enviva Greenwood is operating in full production, the sensors are reading 160 particles of PM_{2.5} within a 10-minute cycle.

Department Response: The Department understands the concerns the commenters may have with the information provided by the sensors. As a result of technological advances, air sensors have become available for purchase by the public. Some of these air sensors are small, relatively inexpensive air samplers, which give a general look at whether certain pollutants (PM_{2.5}) are present or not. However, these sensors cannot determine exactly from where the pollutants originate and the samples cannot be tested for specific pollutants that a facility may emit. The results from these air sensors cannot be used to determine compliance with National Ambient Air Quality Standards (NAAQS). The Department uses MetOne air sensors to determine if particulate trends show there may be potential problems. In July of 2020 and prior to the public hearing, the Department placed two MetOne sensors less than a mile from the Enviva Greenwood plant to collect PM_{2.5} data in micrograms

per cubic meter ($\mu\text{g}/\text{m}^3$). One sensor was placed on the property of a nearby community member at her request, and the other sensor was placed at a location close to the facility for which computer modeling and wind rose data indicate where maximum concentrations may exist. To date, the data record has not indicated a trend that would be a potential problem. These sensors measure $\text{PM}_{2.5}$ concentrations from all area facilities and other emission activities, not just Enviva. The Department reached out to the commenter to obtain additional information about the sensors they used and days when the readings mentioned were recorded. The commenter was not able to provide archived readings but was able to provide a screen shot of more recent readings showing an Air Quality Index (AQI) of 200 based on a 10-minute average (unhealthy) on September 15, 2020. The data was not provided in microgram per cubic meter, making it difficult to compare the results to the data we have collected from our sensors closer to the plant. On that same day (September 15, 2020), the Department's air sensor recorded a highest hourly average of $7.5 \mu\text{g}/\text{m}^3$ and a daily average of $3.84 \mu\text{g}/\text{m}^3$. These averages are within the acceptable range. Based on the information provided by the commenter, PurpleAir sensors are being used. Please note that the EPA has recently concluded a study of the performance of PurpleAir sensors. Based on that study, the EPA determined that the PurpleAir raw $\text{PM}_{2.5}$ data overestimates $\text{PM}_{2.5}$ concentration by approximately 60% in most states. More information about this study can be found at

[https://cfpub.epa.gov/si/si_public_record_report.cfm?Lab=CEMM&count=10000&dirEntryId=348234&searchall=&showcriteria=2&simplesearch=0&timstype=.](https://cfpub.epa.gov/si/si_public_record_report.cfm?Lab=CEMM&count=10000&dirEntryId=348234&searchall=&showcriteria=2&simplesearch=0&timstype=)

Also note that other activities can create high readings of $\text{PM}_{2.5}$ such as smoke from nearby burning or forest fires and mobile source emissions such as vehicle exhaust, lawn and garden equipment, and outdoor cooking.

NOISE COMMENTS: The Department received comments opposed to the proposed expansion project with concerns that the expansion project will lead to increased noise from the facility's day-time and night-time operations, and increased noise due to additional rail cars and increased logging trucks transporting materials to the plant.

Department Response: The Department does not have any noise standards in its air quality regulations and therefore lacks authority to base a permit decision on noise levels. However, excessive noise levels not usual for a site should be reported to the SC DHEC regional office. Abnormal noise could be an indication that equipment is not operating properly. Issues such as noise are typically addressed at the local level by municipalities or counties through noise ordinances. We understand that Greenwood County does not have a noise ordinance in place currently and encourage residents to contact their local Greenwood County officials and work with the local officials to address their noise concerns.

TRUCK TRAFFIC COMMENTS: The Department received comments opposed to the proposed expansion project citing currently there is constant truck traffic concerns and with the proposed expansion, the volume of truck traffic will increase, thereby creating a larger general nuisance issue.

Department Response: As stated above, the Department regulates fugitive dust generated by truck traffic occurring on the facility roads and property. This is also addressed in the permit. The Department does not have the authority to regulate traffic on public roads. Tailpipe emissions from trucks (mobile sources) are regulated by the US EPA under the authority of the Clean Air Act. However, as part of Enviva's BMP Plan, Enviva will post signage with respect to SC Code of Laws Sections 56-5- 4100 and 56-5-4110. To promote safety from hauling, these laws require that haul trucks prevent the escape of materials loaded onto vehicles, escaped substances or cargo be cleaned from highways, and loads and covers be firmly attached. The signage shall be posted at all truck entrances and exits. See "Dust Comments" Section for further discussion of roads and relevant BMP Plan requirements.

ODOR ISSUES: The Department received comments opposed to the proposed expansion project citing existing odor concerns and concern that with the proposed expansion, the odor issue will increase.

Department Response: The presence of odor does not necessarily indicate the presence of dangerous air pollution. Many air pollutants can be detected by smell at much lower concentrations than the maximum allowable concentrations established to protect public health. There are no state or federal odor regulations that would apply to the Enviva facility. The Department's regional offices do investigate citizen complaints, including odor complaints when they occur. Abnormal odors could be an indication of a malfunction or equipment issue and thus should be reported to the Department. Also note that there are other facilities in the immediate area that may be the source of some odors.

COMMUNITY/QUALITY OF LIFE: The Department received comments opposed to the proposed expansion project citing the potential impacts to the community's way of life.

Department Response: A community's quality of life can be impacted both positively and negatively by a variety of factors. The Department does not have the authority to base permit decisions on these factors. Furthermore, the Department does not have the authority to dictate where a facility locates or to make zoning decisions. The permit decision is based on the Department's technical review of the permit application and the applicable air regulations and standards in place at the time of the Department's review. The air regulations and standards are established to protect public health and the environment.

COVID-19 COMMENTS : The Department received comments requesting postponement of all permitting procedures for this facility and well as all facilities in South Carolina until the Coronavirus emergency declaration has been lifted and until community meetings can be held safely and the most affected communities can exercise their full legal right to submit comments.

Department Response: The Department received requests to postpone all permitting procedures, including the public comment period and public hearing for Enviva Greenwood,

until after the COVID-19 pandemic emergency declaration has been lifted. As the state's public health agency, the Department makes public health and safety a priority. In doing so, the Department initiated a new public participation mechanism in the permitting process that enables the Department to safely hear from all those who are interested while at the same time meeting the timeframes set forth under South Carolina law to complete our review and take action on a permit application.

Virtual hearings are a permissible tool which allows the Agency to continue to operate while still providing the public an opportunity to participate in the permitting process. The US EPA confirmed in an April 16, 2020, memorandum that virtual public hearing and meetings are permissible. EPA has developed best practices for virtual hearings and meetings that include documenting the reason for holding the hearing/meeting virtually, providing notice of the procedures, and providing telephone access instruction for anyone without internet access. The US EPA has used these best practices to conduct virtual hearings and meetings since 2015. The Department has followed and will continue to follow the US EPA's best practices. Based on the Department's ability to implement the public participation process virtually using US EPA best practices, the virtual public hearing scheduled on August 20, 2020, was held as scheduled. In addition to attending the virtual hearing, the public was also able to participate in the permitting process by submitting comments by US mail or by email during the public comment period. A phone line was also made available during the public hearing for those without internet access that wanted to listen and/or provide comments verbally. Any person not able to access the public hearing materials on the website could contact DHEC for hardcopies of the materials to be received by US mail or by email. During the virtual hearing, 70 members of the public participated, and 40 people provided oral comments. Approximately 7 - 10 of these participated by phone. The Department also received over 700 written comments, which indicates notice was widely received and represents a significant level of participation in the permitting process.

POSTPONE APPROVAL OF PROJECT UNTIL LONG-TERM COMPLIANCE HAS BEEN DEMONSTRATED: The Department requesting that DHEC postpone approving the proposed expansion project until Enviva has been in compliance with air quality standards for 18-20 months at least.

Department Response: The Department has no air regulations that require a facility to demonstrate compliance for any particular period of time prior to obtaining a permit for an expansion or other project. Enviva, like all facilities, is expected and required to comply with its existing permit and regulations at all times, and observed noncompliance is addressed through appropriate enforcement. Pursuant to Section 48-1-100(A) of the S.C. Pollution Control Act, the Department must issue a permit upon submission of a complete application demonstrating that the source can meet applicable requirements. Enviva has demonstrated it can meet the applicable air regulatory requirements with respect to the expansion project. The Department's Environmental Protection Fees regulation (S.C. Regulation 61-30) establishes schedules for timely action on permit applications for construction permits.

Therefore, the Department may not hold a permit application indefinitely when a facility has submitted the required information, and the Department has reviewed and considered such information as well as information from the public and determined that all applicable requirements for issuance of the permit have been satisfied. As part of the application for expansion of production, Enviva is proposing to install and upgrade pollution controls. The permit (condition C.31) does require that Enviva complete all upgrades and installations related to improving PM emissions and fugitive dust before initiating any increase in the production rate.

AIR POLLUTION CONCERNS AND HEALTH ISSUES: The Department received comments opposed to the proposed expansion project citing air pollution concerns generally. Commenters assert that the proposed expansion project will lead to an increase in several pollutants, including particulate matter. Commenters also raised a concern that the synthetic minor permit would allow Enviva to avoid having to comply with the Clean Air Act. The Department also received comments citing various health issues associated with the facility's air pollutant emissions, with PM_{2.5} and its impact on the respiratory system being of particular concern. The commenters indicate concerns regarding the air pollution in the surrounding areas of the facility and its impact on their organs, central nervous systems, respiratory systems (including increased respiratory risks due to the coronavirus pandemic), pulmonary systems, and cancer risks, as well as the health impacts to children and factors which could affect their futures. Commenters also stated concern that because the facility operates 24-hours per day, the operating hours may also be leading to increased health risks. Commenters further assert that sawdust, which may have chemicals which are carcinogens, is coming inside their homes impacting the indoor air quality.

Department Response: A synthetic minor permit is a type of Department air quality permit. State and federal air quality regulations allow a facility to establish federally enforceable limits to cap its potential to emit and thereby operate as a "minor" rather than "major" source of emissions, as defined by applicable federal and state regulations. In the case of Enviva the synthetic minor permit allows Enviva to be a minor source for purposes of prevention of significant deterioration (PSD) applicability. Enviva will be a major source for Title V applicability. The synthetic minor permit does not exempt a facility from complying with the Clean Air Act (CAA) or implementing federal and state regulations.

Federal and state air quality regulations are established to be protective of public health, using scientific data and human health risk assessments. These regulations include standards for ambient air quality and emission limits, controls and/or operational requirements for industrial facilities. The CAA requires the EPA to establish NAAQS for six common pollutants ("criteria" pollutants) considered harmful to public health. There are two types of NAAQS: primary standards and secondary standards. Primary standards are set to protect public health, in particular, the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards are set to protect public welfare, such as

protection against decreased visibility, and damage to animals, crops, vegetation, and buildings.

The EPA is also required to designate areas of the country as nonattainment when monitoring information shows pollutant concentrations exceed (or violate) a set standard. There are no nonattainment areas in South Carolina for pollutants emitted by this project.

National ambient standards have been set for the following pollutants emitted from this project: particulate matter (PM) (which consists of particulate matter less than 10 micrometers in diameter (PM₁₀) and particulate matter less than 2.5 micrometers in diameter (PM_{2.5})), sulfur dioxide (SO₂), nitrogen oxide (NO_x), carbon monoxide (CO). In accordance with S.C. Regulation 61-62.1, "no permit to construct or modify a source will be issued if emissions interfere with attainment or maintenance of any state or federal standard." Enviva Greenwood operations were evaluated to determine if the emissions from the proposed expansion would interfere with attainment of the NAAQS. An air quality analysis was performed using an EPA-approved air dispersion computer model to simulate how the facility's maximum emissions will be dispersed into the atmosphere surrounding the proposed site. The EPA-approved model demonstrated compliance with the NAAQS at and beyond the property boundary.

Air toxics are also emitted from the operations conducted by Enviva. Enviva has accepted federally enforceable facility-wide limits on hazardous air pollutants ("HAPs") (less than 10 tons per year for any single HAP and less than 25 tons per year for total combined HAPs). In addition, Enviva is subject to the state air toxics rule. This rule requires facilities that emit a regulated state air toxic to meet the applicable ambient standard established for that toxic pollutant at the property boundary or beyond. As part of the technical review of the application, Enviva has demonstrated it would meet the established standards.

The air quality analysis for all criteria and air toxic pollutants was based on facility operation at full permitted capacity for 24-hours per day.

The permit also includes requirements for the control of fugitive dust, as discussed further in the "Dust Comments" section. The updated BMP Plan and the additional controls being added to the existing equipment should decrease dust leaving the facility and are expected to reduce the overall particulate matter emissions. Stack testing will be performed to demonstrate compliance with the specified emissions limits.

PROPERTY VALUE COMMENTS: The Department received comments opposed to the proposed expansion project citing a concern that nearby residents had experienced decreased property values in the area.

Department Response: The Department's permitting decisions are based on the Department's technical review of an application and the regulatory requirements in place at

the time of the Department's review. The Department cannot dictate where a facility desires to locate or control impacts on property values and does not have the regulatory authority to consider current or future property values when making permitting decisions. Air quality permitting decisions are made based on state and federal air quality regulations. Appropriate land use is best determined at the local level, and acceptable use is usually determined by zoning established by the county or municipality. We encourage you to contact your local city or county council representatives for more information on how to get involved in local zoning and planning issues.

GREENHOUSE GAS EMISSIONS, DEFORESTATION, CLIMATE CHANGE, AND DEGRADATION OF NATURAL RESOURCES: The Department received comments opposed to the proposed expansion project citing concerns that greenhouse gases will be generated, the project adversely impacts the climate, and deforestation is a degradation of the State's natural resources, a viable asset. The commenters assert that additionally, deforestation will have a negative impact on water quality and also could lead to increased flooding. The commenters proposed that Enviva Greenwood should be subject to limits on the number of trees they cut down and should also execute a re-forestation plan. In addition, commenters asserted that the proposed project raises ethical and moral issues and as such the project should be highly regulated and scrutinized.

Department Response: As stated above, the Department's permitting decisions are based on the Department's technical review of an application and the regulatory requirements in place at the time of the Department's review. After rigorous review based on all the technical and other information submitted, including required emissions data for the project, Enviva's application for its proposed expansion project was determined to demonstrate that applicable air quality requirements could be met. Applicable regulations do not provide for consideration of deforestation or other similar concerns and do not specifically address ethical and moral issues, and these matters are therefore outside the scope of the Department's permit review. The types of facilities that choose to locate and operate in the state pursuant to applicable permit and regulatory requirements is also a matter outside of the Department's control. Although the Department lacks a basis for limiting the number of trees cut down or requiring a re-forestation plan, the permit does contain a federally enforceable limit on Enviva's annual wood pellet production limit for purposes of Enviva remaining a minor source of air pollutants.

The Department did reach out to Enviva, which provided the following additional statements in regard to the commenters' concerns about deforestation: Enviva stated that it promotes reforestation. Specifically, because of the regulatory requirements in Enviva's end use markets, Enviva stated that it does not build or acquire a mill in an area where the forest resource is being used at unsustainable rates (i.e. trees are being cut faster than they are growing). Additionally, Enviva stated it does not accept wood from a harvest where the landowner intends to convert to a different land use other than forestry. These requirements are included in Enviva's Responsible Sourcing Policy as well as the third-party sustainability

standards, such as the Sustainable Biomass Program (SBP). Enviva stated that it is audited and assessed every year by the SBP. The SBP requires certified mills to publish an annual summary report that provides evidence of compliance with the requirements of the SBP. Enviva stated that data from the United States Forest Service (USFS), Forest Inventory and Analysis program, indicate that forest inventory in the Greenwood South Carolina supply basin has continued to increase since 2000 at an average rate annual rate of approximately one percent (1%), which suggests that reforestation is occurring. Enviva stated that it monitors samples of forest tracts post-harvest to ensure regeneration is taking place. Enviva also stated that it partners with a variety of conservation groups to help accomplish landscape conservation goals. One partnership is with the Longleaf Alliance, in which they have a five-year partnership to protect and restore longleaf pine forests. Enviva also provided written comments for the record during the public comment period detailing their position on the sustainability of the Enviva Pellets Greenwood facility and the climate benefits of sustainable bioenergy, and these comments are part of the record for review.

MARKET FOR FOREST PRODUCTS: The Department received favorable comments from members of various forestry groups such as Laurens County Forest Landowners Association, Greenwood County Forest Landowners Association, Forestry Association of South Carolina, South Carolina Forestry Commission and Abbeville County Landowners Association. Generally, the commenters stated that a source of demand is essential for the competitive and orderly harvest that ensures the health of the forests. The commenters emphasized that a market for forest products such as those provided by Enviva will help slow the conversion of South Carolina Forest to more intensive land use such as urban and residential developments. The commenters stated that to keep lands as forest, landowners need viable markets, including wood-based bioenergy. The commenters added that markets are important to landowners since the “markets” provide the incentive to plant and manage healthy and productive forests, and the market which Enviva creates allows landowners to thin their pine stands for improved health and vigor. The commenters stated that the presence of the Enviva Pellet Mill offers another market for wood and has been a positive and stabilizing influence for pulpwood harvesting. The commenters stated that a pellet mill such as Enviva has a positive impact on stumpage values, which drives the incentive for reforestation and healthy forest management.

Department Response: The Department does not have the authority to make permitting decisions based on community, business, employee, and customer approval or disapproval of the company/facility or market demands. The Department’s decision is based on the technical review of the application and regulatory requirements in place at the time the application was submitted and whether the facility has demonstrated that it can meet all applicable air regulatory requirements if operated according to the information provided in the application.

REQUEST FOR DEPARTMENT TO WORK WITH ENVIVA TO ENSURE ACCOUNTABILITY: The Department received a comment opposed to the proposed expansion project and to deny

Enviva's permit to expand based on accountability. The Commenter referenced the Westinghouse nuclear fuel fabrication plant. The commenter stated that SC DHEC, Bureau of Land and Waste Management, Site Assessment Remediation Section, worked with the facility and entered into a consent agreement. As part of the consent agreement, the facility added additional monitors, collected data, and performed data analysis to ensure that going forward, they would be operating in compliance with their permit. The Commenter also stated that Westinghouse withdrew their initial application, re-revised it and re-submitted the application. The commenter stated that SC DHEC should do similarly with Enviva Greenwood to ensure accountability and compliance with the permit emission limits.

Department Response: The history, circumstances, and action taken in relation to the Westinghouse facility are matters separate from this permitting action. The Department appreciates all comments received and where appropriate the proposed draft permit has been revised based on comments received and also based on receipt of additional information from Enviva Greenwood. The Department is responsible for ensuring the permit is consistent with all of the applicable state and federal regulations and contains appropriate monitoring, record keeping and reporting and testing requirements, which will ensure that the facility operates in compliance with all applicable air quality standards. In addition, the facility will be inspected by Regional DHEC personnel to ensure compliance. If there is a compliance issue, the Department's Enforcement Section works with the facility to ensure corrective actions are taken. Department enforcement actions may include consent orders, administrative orders, or consent agreements assessing civil penalties and/or requiring additional corrective action (such as additional monitors and data collection), as appropriate.

INCREASE STACK HEIGHTS: The Department received a comment opposed the proposed expansion project citing the need to increase stack heights so that VOCs and HAPs are released higher up in the atmosphere and so as to lower the health risk for the citizens of Greenwood and surrounding areas.

Department Response: S.C. Regulation 61-62.7 requires sources subject to air quality modeling to use good engineering practice stack height (GEP) in their modeling. As stated by the commenter, dispersion of emissions increases as the height of the stack is increased. The GEP rule is to prevent companies from claiming compliance with ambient standards while emitting higher levels of a pollutant than may have been possible if modeling were based on a GEP or lower stack height.

Enviva Greenwood submitted a compliance demonstration that addressed emissions of pollutants regulated under S.C. Regulation 61-62.5, Standards No. 2 and 8. Standard No. 2 sets forth the NAAQS standards that are designed to be protective of human health. Standard No. 8 addresses Toxic Air Pollutants (TAPs), which includes Hazardous Air Pollutants (HAPs) as defined by the EPA as well as a number of other toxic air pollutants regulated by the state. The compliance demonstration was reviewed and approved by the

Department. The demonstration showed that the facility's emissions of all pollutants regulated under Standards No. 2 and 8 will not cause an exceedance of those Standards.

Compliance for TAPs was demonstrated via a combination of modeling and de minimis analyses. Fifteen TAPs were modeled using AERMOD, the current EPA-preferred refined regulatory guideline model for permit modeling. The model simulates the release and dispersion of pollutants in the ambient air based on several factors, one of which is stack height. The pollutant concentrations predicted by the model, at the Enviva Greenwood property line and beyond, are well below the respective allowable concentrations. Thus, raising stack heights is not necessary for these modeled TAPs since predicted concentrations are well below the standards. A de minimis analysis was conducted for several other TAPs which are emitted at very low emission rates. These rates are below the respective "de minimis" emission rates for which compliance with Standard No. 8 is shown without the requirement of a modeling analysis. Thus, raising stack heights is not necessary for these "de minimis" TAPs since compliance was demonstrated independent of stack height.

Volatile Organic Compounds (VOCs) are gases that will be emitted into the atmosphere as a result of the processing of the pellets at the Enviva facility. In general, dispersion of VOCs in the ambient air increases with increasing stack height. However, unlike TAPs, there is no ambient air standard for VOCs and, thus, VOCs are not subject to a compliance demonstration that could include modeling (the results of which would depend on stack height). Enviva Greenwood VOC emissions are subject to a federally enforceable permit limit of less than 250.0 tons per year, a limit that does not depend on stack height. Thus, there is no regulatory basis on which to require Enviva Greenwood to raise stack heights to improve dispersion of VOC.

FINANCIAL BIAS FOR LARGE INDUSTRIES (MONEY DRIVEN PROJECT): The Department received comments opposed the proposed expansion project alleging financial bias towards (in favor of) large businesses, and commenters assert that they feel ignored and overrun by non-caring government officials. Commenters assert that the proposed expansion project does not create new jobs, and question who will be benefiting from the proposed expansion project.

Department Response: Air regulations are developed to protect public health and environment. They do not require or allow consideration of how a community may or may not benefit from a proposed project. Therefore, a permit cannot be denied based on these factors. In addition, the Department does not make permitting decisions based on a business's size or finances. Facilities of many different types and sizes are required to obtain Department air quality permits prior to construction or operation. Permit decisions are based on the specific permit application received and the applicant's ability to satisfy regulatory requirements for issuance of a permit.

The Department strives to ensure that engagement with nearby communities is meaningful. Meaningful community engagement encourages transparency, dialogue, and open communication between all Department stakeholders, including community members and regulated facilities. See “Environmental Justice and Environmental Equity Concerns” section for further details on the Department’s community engagement efforts with respect to this permit.

NOT ALL POLLUTANTS WILL DECREASE: Commenters stated at the public hearing that as part of the proposed modification, Enviva plans to install additional pollution control equipment that will decrease several pollutants, but not all pollutants will decrease. By permitting Enviva to expand production by over 100,000 tons per year and increase to one hundred percent softwood, the commenters assert that the draft permit would allow Enviva to increase emissions of hazardous air pollutants (HAPs) and toxic air pollutants (TAPs), including formaldehyde.

Department Response: The commenter is correct that the post construction actual emissions of HAPs such as formaldehyde, acetaldehyde, acrolein, methanol, phenol and propionaldehyde could increase. Any increase in these emissions requires the facility to demonstrate compliance with Standard No. 8 of S.C. Regulation 61-62.5 for toxic air pollutants. This standard sets an ambient concentration that cannot be exceeded at or beyond the property line. In addition, the federally enforceable synthetic minor limits on HAP emissions which were established in construction permit 1240-0133-CA remain in place. The draft permit retains those limits and will not allow for higher HAP emissions than previously permitted.

ENVIVA HAS UNDERESTIMATED HAZARDOUS AIR POLLUTANTS (HAP) EMISSIONS AND IS ALMOST CERTAINLY A MAJOR SOURCE OF HAPS: The commenters state that Enviva has estimated the facility’s post modification potential to emit HAPs as 22.4 tons/year (tpy), which is very close to the major source threshold. The comment asserts that Enviva has underestimated or omitted HAP emissions from several key sources and that when the HAP emissions from omitted sources are accounted for, the potential to emit of HAP emissions exceeds major source threshold limits.

Specifically, the commenters assert that Enviva did not include any HAP emission from wood pellet storage silos (Emission Units 40 and 41). The commenters state that emission factors compiled by the Georgia Environmental Protection Division (Georgia EPD) for wood pellet storage indicate that the Enviva silos have the potential to emit (PTE) of 1.32 tons of acetaldehyde, formaldehyde and methanol per year. The commenters add that Georgia EPD factors do not include acrolein, phenol and propionaldehyde and it is likely pellet storage emit these HAPs at rates roughly comparable to acetaldehyde, formaldehyde and methanol. Therefore, the commenters assert that the pellet storage silos likely emit around 2.5 tpy of HAPs, bringing the facility’s PTE to 24.9 tpy.

The commenters also assert that Enviva only quantified two HAPs for the Dry Chip Silo and Pelletizer Feed Silo (Emission Units 13, 19). When accounting for the four omitted HAPs, the commenters assert that PTE from these sources is likely between 1.2 and 2.5 tpy. The commenters add that Enviva only quantified 0.38 tpy of methanol emissions from the woodchipper (emission unit 2) and that the five remaining HAPs would likely add one to two tpy.

The commenters assert that quantification of all omitted HAPs from the facility would bring the facility's PTE to above the 25 tpy major source threshold, likely around 28 to 29 tpy. The commenters conclude that Enviva must either obtain a major source Maximum Achievable Control Technology (MACT) permit or restrict production to approximately 590,000 tpy.

Department Response: Upon further review of the permit application and the above comment, the Department required Enviva to re-evaluate the HAP emissions which could potentially be emitted from the pellet storage silos, dry chip silo, pelletizer feed silo, and wood chipper sources, for the purpose of identifying and quantifying all of the relevant HAPs emissions, with specific consideration of Formaldehyde, Methanol, Acetaldehyde, Acrolein, Phenol and Propionaldehyde, as referenced by the commenter.

As discussed further below, in reevaluating HAP emissions from each of these sources, Enviva relied on NCASI and AP-42 emission factors. Reliance on such industry and generic emission factors is appropriate for these sources when site-specific or other representative test data is not available, unlike estimates for the dryer, hammermill, and pelletizer/pellet cooler, which are based on either site-specific test data or test data from other Enviva facilities (with contingencies to account for stack-testing and inter-plant variability).

As part of the re-evaluation of the HAP emissions from the wood pellet storage silos, Enviva provided emissions data based on November 2018 site specific bag sampling conducted on the Enviva Greenwood Wood Pellet Storage Silos and NCASI emissions factors. Two bag samples were collected at the outlet of the baghouse controlling both storage silos and analyzed for hydrocarbons, which detected concentrations of 3 parts per million (ppm) as propane. This concentration is equivalent to emission rates of 0.06 tpy of VOC. The VOC emission factor, based on the bag sampling, for the Wood Pellet Storage Silos was calculated as 0.0131 lb / hr VOC emissions and includes a 20% contingency. Enviva conservatively applied an assumption that all VOC emissions represent HAP emissions, though HAP emissions would actually represent only a fraction of VOC emissions.

Enviva then reviewed NCASI wood handling emission factors. NCASI is an independent, non-profit research institute that focuses on environmental and sustainability topics relevant to forest management and the manufacture of forest products. NCASI emission factors were relied upon by Enviva in its original permit application for evaluating emissions from other sources at the facility (Dry Chip Silo and Pelletizer Feed Silo) and have been applied as appropriate in evaluating emissions for other DHEC-permitted facilities. Review of the NCASI

database indicated that four of the key HAPs, Acetaldehyde, Acrolein, Phenol and Propionaldehyde, are listed as non-detectable for dry wood handling operations. In order to determine an emission factor for the remaining two key HAPs emitted from the storage silos, Formaldehyde and Methanol, Enviva applied a methodology to derive Formaldehyde and Methanol emission factors from measured VOC emissions from bag sampling with the use of NCASI's Wood Products Database (February 2013) emission factors for dry wood handling operations at an Oriented Strand Board (OSB) mill. The NCASI emission factors for Formaldehyde and Methanol are listed as 0.00049 pounds per thousand square feet of three-eighths inch oriented strand board, and 0.00114 pounds per thousand square feet of three-eighths inch oriented strand board. To determine what percentage of the total measured VOC emissions from the wood pellet storage silos was formaldehyde and methanol, the NCASI formaldehyde and methanol emission factors were ratioed to determine a constant. The calculated ratio was then multiplied by the measured VOC emission factor (lb/hr), which resulted in an emission factor of 0.00393 lb/hr for formaldehyde and 0.0091 lb/hr for methanol. Based on these emission factors, this would add 0.02 tpy of formaldehyde emissions and 0.04 tpy of methanol emissions. Adding these emissions rates to the previously calculated facility wide HAP total, 22.4 tpy, brings the revised facility wide total of HAPs to 22.46 tpy.

The Department has reviewed the Georgia EPD emission factors and has relied on them in past permit decisions where more representative data was not available. The Georgia EPD factors for storage and handling, however, were not based on a test of the storage silos directly. The emission factors were determined from one test of a pellet cooler at one facility, and a ratio was used to arrive at the storage and handling factors. By contrast, the testing underlying the NCASI emission factors supplied by Enviva is more representative for deriving emissions estimates for the wood pellet storage silos because they were specific to dry wood material handling, as opposed to the pellet cooler tested by Georgia EPD. The NCASI emission factor was also based on a larger number of test runs (27). Therefore, the Department believes the NCASI emission factors and data provided by Enviva for the pellet storage silos are more appropriate for estimating emissions for this permitting decision. The Department has updated the HAP emissions estimates for Emission Units 40 and 41 to include Methanol and Formaldehyde emissions and the facility-wide total HAP emissions have been updated, accordingly. The Department has also updated the permit to require Enviva to conduct additional source testing of the storage silos once the increased production has been reached to confirm there is not significant variability in the results after transitioning to 100% softwood and during different times of the year.

In re-evaluating HAPs from the Dry Chip Silo - Emission Unit 13 and the Pelletizer Feed Silo - Emission Unit 19, Enviva provided emission data from the NCASI Wood Products Database (February 2013) for dry wood handling operations at an oriented strand board mill. These operations are similar to the chip handling at pellet mills. The same NCASI data base was used for emission factors for Formaldehyde and Methanol in the application for the draft permit. The remaining key HAPs, Acetaldehyde, Acrolein, Phenol and Propionaldehyde are

listed as non-detectable for dry wood handling operations in the NCASI database. Therefore, it is reasonable to exclude emissions for these four HAPS. Even if the non-detect limits were used as emission factors it would not significantly alter the total HAP emissions. No changes are proposed to the HAP emissions that were already included in the Enviva Application and the Draft Statement of Basis. With the emissions from the pellet storage silos determined above, the facility wide total HAPs remains as calculated above, 22.46 tons per year.

Enviva also re-evaluated the HAP emissions for the wood chipper - Emission Unit 2. Enviva provided emissions data based on the U.S. Environmental Protection Agency (EPA) AP-42 Compilation of emission factors, section 10.6.3 Medium Density Fiberboard Manufacturing, Table 10.6.3-7 - Log Chipper, and cross referenced this with section 10.6.4 Hardboard and Fiberboard Manufacturing, Table 10.6.4-9. The emission factor for Methanol is listed as 0.001 lb per ODT, resulting in 0.38 tons per year of emissions and was included in the Enviva application and the draft permit. As indicated in the referenced AP-42 sections, the remaining five key HAPs, Formaldehyde, Acetaldehyde, Acrolein, Phenol and Propionaldehyde are listed as below test method detection limit. Based on the information presented in the re-evaluation the Department, HAP emissions from the wood chipper have been adequately quantified and no changes are proposed to the HAP emissions from the wood chipper presented in the draft statement of basis.

The re-evaluation of HAP emissions resulted in some small additional HAP emissions from the pellet storage silos that were not previously accounted for. As discussed above, Enviva's analysis has not shown measurable additional HAP emissions from the dry chip silo, pelletizer feed silo and the wood chipper beyond those calculated previously. Based on the data presented, Enviva's facility wide potential to emit of HAPs has been revised to 22.46 tpy, which is less than major source thresholds. Therefore, Enviva is not required to apply for a Maximum Achievable Control Technology (MACT) permit or to further restrict production. In the event of any miscalculation by the facility in its emissions estimates, the facility must constrain operations and emissions within the permitted HAP PTE levels to avoid enforcement and remain a minor source of HAPs.

ENVIVA MUST QUANTIFY CO EMISSIONS FROM WOOD PELLET STORAGE SILOS AND DHEC MUST REQUIRE EMISSIONS TESTING ON THE SILOS FOR CO: The Department received comments stating that Enviva's conclusion that the facility's pellet storage silos will not emit any carbon monoxide (CO) is contradicted by numerous studies conducted over the past decade demonstrating that bulk storage of wood pellets is a significant source of CO emissions. The commenters state that the scientific studies which were reviewed indicated that: wood pellets emit more carbon monoxide than wood chips and other types of biomass; fresh pellets emit more carbon monoxide than pellets that have been stored for longer periods of times; softwood emits more carbon monoxide than hardwood; temperature is a key component of carbon monoxide emissions; increased headspace above the pellets as well as increased humidity also correlate to increased emissions; and concentrations of carbon monoxide in one pellet storage warehouse exceeded 100 ppm on an 8 hour basis.

The commenter states that in terms of an emission factor, one study found that softwood pellets stored at 35° C (95° F) for two days had an emission factor of approximately 0.7 g / kg of stored wood, which converts to 1.4 lb / ton. Commenters state that based on this emission factor the facility wide CO emissions at Enviva Greenwood would be 462 tons of CO per year, which is above the PSD major source threshold. The commenters also state that wood pellet stored in silos frequently reach and maintain temperatures well above 35° C even when ambient temperatures are much lower, which means that the emissions factor is likely applicable year-round. The commenters also note that Florida recently required one-time CO testing at another Enviva plant and that Alabama recently required two pellet mills to test for CO emissions during initial and periodic compliance testing. The commenters request the Department to require similar CO testing for the storage silos.

Department Response: The possibility of CO emissions from non-combustion sources such as wood pellet storage is new information to the Department. The Department has reviewed the data and references submitted by the commenter. The scientific studies indicate that off-gassing of CO emissions could occur during the bulk storage of wood pellets. Although the Wood Pellet Storage Silos at Enviva Greenwood are not an identical scenario to the scientific studies, they are very similar.

In light of this information the Department requested Enviva to evaluate the potential CO emissions from their Wood Pellet Storage Silos, Emission Units 40 and 41. In response, Enviva has stated that the stack associated with pellet storage silo baghouse at Greenwood is not of sufficient size to accommodate stack testing in accordance with EPA reference method test procedures, and testing upstream of the pellet storage silo baghouse would pose a fire hazard due to elevated dust concentrations. As an alternative method to quantify CO emissions from the Wood Pellet Storage Silos, Enviva performed bag sampling to collect carbon monoxide (CO) emissions data for these emission units. In November 2018, during the bag sampling, three (3) samples were collected at the outlet of the baghouse which controls both wood pellet storage silos. The samples were analyzed for CO. The results of the bag sampling detected CO concentrations of 0.0, 2.664 and 2.73 parts per million (ppm), which averages to 1.8 ppm. The Wood Pellet Storage Silo emission factor, based on the bag sampling, was calculated as 0.00498 lb /hr CO emissions and includes a 20% contingency. The CO concentration of 1.8 ppm converts to an emission rate of approximately 0.02 tpy. The CO emissions documented in the Statement of Basis have been updated to include the additional 0.02 tpy of CO emissions from the Wood Pellet Storage Silos. Based on the highest CO concentration, 2.73 ppm, the wood pellet storage silo emission factor would be 0.00756 lb/hr CO. This converts to an emission rate of 0.03 tpy of CO emissions and will not change the status of the permit.

The referenced reports on CO emissions indicate there could be some variability in CO emissions from the pellet storage based on the ambient temperature, with higher CO emission expected at higher temperatures. Based on this, the draft permit was updated to require a source test on the Wood Pellet Storage Silos. A total of four source tests shall be

performed, with one test per quarter within a 12-month period, to determine if there is any variability in emissions due to changes in weather during the year and changes in softwood percentage. There shall be at least a 60 day separation between each test. The quarterly testing will address the seasonal weather variability associated with the storage of wood pellets and any potential change in CO when transitioning to 100% softwoods.

ENVIVA GREENWOOD IS EXCEEDING THE LEGAL LIMITS FOR NO_x AND CO: The Department received comments asserting that Enviva Greenwood is exceeding the legal limits for NO_x and CO. The commenters state that the Enviva permit application and Department's draft permitting documents show that Enviva Greenwood is a major source of NO_x and CO and that it should have obtained a PSD permit. Specifically, the commenters assert that the Enviva permit application and draft Department Statement of Basis admit that the facility, as currently constructed, has the potential to emit 252 tpy of NO_x and 253 tpy of CO, when operated at full capacity. The commenters assert that despite this PTE, the facility has not applied for a major source permit nor does the existing permit contain any enforceable production limits to ensure the facility will not emit NO_x or CO above the PSD major source threshold. The commenter references Enviva's statement in its permit application that existing emissions from the previous owner, Colombo Energy ("Colombo"), were never appropriately quantified and included in the facility-wide emissions profile. The commenters then excerpt the corrected, pre-modification emissions calculations contained in Enviva's permit application that reference NO_x and CO emissions of 252 and 253 tpy respectively. Commenters assert that, based on these updated emissions estimates, Enviva has been in violation of state and federal law since at least 2018, and DHEC must utilize its authority to institute and enforcement action against Enviva Greenwood for these violations and impose appropriate civil penalties.

Department Response: The Department acknowledges the information submitted by Enviva as part of the permit application and the draft permitting documents generated by the Department suggest that the pre-modification NO_x and CO PTE emissions exceed the major source PSD threshold.

As a general matter, the Department notes that enforcement based on alleged past or potential future violations is a matter outside the scope of Department permitting decisions. However, based on further review and comments received, the Department required Enviva to provide additional information for clarification and confirmation of the facility wide potential to emit of CO and NO_x emissions. Enviva submitted information clarifying the facility's emissions data provided in the construction application. Enviva clarified that the permit application's estimates of the sum of Colombo's original application emission estimates plus the addition of estimates for units not accounted for by Colombo "did not reflect any revisions or corrections to Colombo's estimates" and therefore did not accurately represent pre-modification PTE for NO_x and CO for the facility. Specifically, Enviva clarified that Colombo's emission estimates as originally presented for the dryer/furnace were not an accurate representation of dryer/furnace NO_x and CO PTE. The original application from

Colombo references AP-42, Section 1.6 as the basis for NO_x and CO from the dryer/furnace. However, Enviva clarified that the reported emissions did not come from AP-42 and were not based on published emission factors or stack testing. Instead, dryer/furnace PTE appears to have been assigned using engineering estimates and then subtracting the calculated emissions from other sources (*i.e.*, engines on site and the pellet cooler RTO/RCOs) using AP-42 for the engines on site and the pellet cooler RTO/RCOs.

To correct the pre-modification PTE estimates of CO and NO_x, Enviva relied on 2018 and 2019 Enviva Greenwood source testing. CO and NO_x emission rates prior to construction have been re-quantified based on the site-specific emission factors developed from this source testing with an added contingency to account for any inter-test variability. The total corrected PTE for CO and NO_x emissions prior to the modification project is 79.43 and 99.95 tpy respectively. This includes 47.15 tpy CO and 88.57 tpy NO_x for the dryer/furnace, and 27.95 tpy CO and 4.70 tpy NO_x for the pellet cooler RTO/RCOs. The corrected CO PTE also includes the 0.02 tpy of previously unaccounted CO emissions from the Wood Pellet Storage Silos, Emission Units 40 and 41, as discussed above. The total CO and NO_x PTE estimates are shown to be less than the PSD Major source threshold limit, which is 250.0 tons per year for facilities which are in this source category. This additional data submitted by Enviva sufficiently demonstrates that the facility has not violated CO and NO_x major source limits and did not become subject to PSD. No changes are proposed to the draft permit on these grounds. The permit Statement of Basis has been revised to include the correct data, and the supporting documentation supplied to the Department will be included in the permit record.

ISSUANCE OF TITLE V OPERATING PERMIT FOR ENVIVA GREENWOOD: The Department received comments reiterating that under Title V and South Carolina Regulations, the Department must issue or deny a final Title V permit within eighteen (18) months of receiving a complete Title V application. The commenters state that the facility submitted the initial Title V application on August 23, 2017, and therefore the deadline to issue the initial Title V would have been February 23, 2019. The commenters further assert, that even if the Department did not affirmatively declare the application complete, the application would have been deemed complete on October 22, 2017, and therefore, the deadline to issue the Title V would have been April 22, 2019. Commenters state that the Department has not issued or denied Enviva Greenwood Title V permit, which is in violation of Title V and South Carolina's regulations. The commenters describe the Title V permit's significance in assuring a facility's compliance with all applicable requirements and further state that a Title V permit must require adequate monitoring, recordkeeping, and reporting to assure compliance, semi-annual monitoring reports that specifically identify deviations and instances of non-compliance, and annual compliance certifications. The commenters assert that issuance of a Title V operating permit for Enviva Greenwood is particularly important based on the facility's recent history of non-compliance. Commenters assert that issuance of the Title V operating permit for Enviva Greenwood will help assure future compliance with permit

conditions designed to mitigate the harmful impact of this facility on the neighboring community.

Department Response: Title V permitting for the Enviva Greenwood facility, including the timeline for issuance of Title V permit, is a matter outside of the purview of this construction permit decision. However, concerns related to issuance of a Title V permit for this facility may be considered by the Department outside the context of this construction permit.

Although outside the scope of this permit decision, the Department notes that issuance of the Enviva Greenwood Title V permit in response to the pending Title V permit application is and will remain a priority for the Department. In addition, when drafting construction permits for a future or existing Title V facility, the Department takes care to include monitoring, recordkeeping, and reporting requirements sufficient for purposes of a future Title V permitting. This was no different in the case of the Enviva Greenwood facility's original construction permit and the current construction permit being issued. The Department makes it a practice to put conditions in construction permits that would meet Title V requirements as facilities can operate under the construction permit until the operating permit is issued or denied under South Carolina regulations. As it has in the past, the Department will continue to exercise oversight for those requirements in place under the construction permits issued to Enviva, including all applicable monitoring, recordkeeping, and reporting requirements, and will take further enforcement action in response to any future observed violations as appropriate.