CENTRAL FILES

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North Carolina Department of Environment and Natural Resources
Division of Air Quality

Beverly Eaves Perdue
Governor

Sheila C. Holman
Director

Dee Freeman
Secretary

December 7, 2010

Mr. Glenn Gray
Plant Manager
Enviva Pellets, LP
1309 East Cary Street, Suite 200
Richmond, Virginia 23219

Dear Mr. Gray:

SUBJECT: Air Quality Permit No. 10121R00
Facility ID: 4600107
Enviva Pellets, Ahoskie, LP
Ahoskie
Hertford County
Fee Class: Title V

In accordance with your completed Air Quality Permit Application for a state-only construction and operating permit under 15A NCAC 02Q .0300 received October 1, 2010, we are forwarding herewith Air Quality Permit No. 10121R00 to Enviva Pellets, LLC, 142 N.C. Rt 561 East, Ahoskie, North Carolina authorizing the construction and operation, of the emission source(s) and associated air pollution control device(s) specified herein. Additionally, any emissions activities determined from your Air Quality Permit Application as being insignificant per 15A North Carolina Administrative Code 2Q .0503(8) have been listed for informational purposes as an "ATTACHMENT." Please note the requirements for the annual compliance certification are contained in General Condition P in Section 3. The current owner is responsible for submitting a compliance certification for the entire year regardless of who owned the facility during the year.

The Permittee shall file a Title V Air Quality Permit Application pursuant to 15A NCAC 02Q .0504 for those air emission sources (ID Nos. ES-DRYER, ES-CHM-1, 2, 3, and 4, ES-GWH-1 and 2, ES-PPS, ES-CLR-1, 2, 3, and 4, ES-EG, and ES-FWP) on or before 12 months after commencing operation of the first unit.

As the designated responsible official it is your responsibility to review, understand, and abide by all of the terms and conditions of the attached permit. It is also your responsibility to ensure that any person who operates any emission source and associated air pollution control device subject to any term or condition of the attached permit reviews, understands, and abides by the condition(s) of the attached permit that are applicable to that particular emission source.

If any parts, requirements, or limitations contained in this Air Quality Permit are unacceptable to you, you have the right to request a formal adjudicatory hearing within 30 days following receipt of this permit, identifying

Permitting Section
1641 Mail Service Center, Raleigh, North Carolina 27699-1641
2728 Capital Blvd., Raleigh, North Carolina 27604
Phone: 919-715-6235 / FAX 919-733-5317 / Internet: www.ncair.org

the specific issues to be contested. This hearing request must be in the form of a written petition, confo. NCGS (North Carolina General Statutes) 150B-23, and filed with both the Office of Administrative Hearing Mail Service Center, Raleigh, North Carolina 27699-6714 and the Division of Air Quality, Permitting S 1641 Mail Service Center, Raleigh, North Carolina 27699-1641. The form for requesting a formal adjudic hearing may be obtained upon request from the Office of Administrative Hearings. Please note that this permit be stayed in its entirety upon receipt of the request for a hearing Unless a request for a hearing is made pursuan NCGS 150B-23, this Air Quality Permit shall be final and binding 30 days after issuance.

You may request modification of your Air Quality Permit through informal means pursuant to NCGS 150B-22. This request must be submitted in writing to the Director and must identify the specific provisions or issues for which the modification is sought. Please note that this Air Quality Permit will become final and binding regardless of a request for informal modification unless a request for a hearing is also made under NCGS 150B-23.

The construction of new air pollution emission source(s) and associated air pollution control device(s), or modifications to the emission source(s) and air pollution control device(s) described in this permit must be covered under an Air Quality Permit issued by the Division of Air Quality prior to construction unless the Permittee has fulfilled the requirements of GS 143-215-108A(b) and received written approval from the Director of the Division of Air Quality to commence construction. Failure to receive an Air Quality Permit or written approval prior to commencing construction is a violation of GS 143-215.108A and may subject the Permittee to civil or criminal penalties as described in GS 143-215.114A and 143-215.114B.

This Air Quality Permit shall be effective from December 7, 2010 until November 30, 2015, is nontransferable to future owners and operators, and shall be subject to the conditions and limitations as specified therein. Should you have any questions concerning this matter, please contact Kevin Godwin at (919) 715-6255 (kevin.godwin@ncdenr.gov).

Sincerely yours,

/ Vander Vaart

Donald R. van der Vaart, Ph.D., P.E., J.D.
Chief

Enclosure

c: Robert Fisher, Supervisor, Washington Regional Office
✓Central Files

State of North Carolina,
Department of Environment,
and Natural Resources

Division of Air Quality

AIR QUALITY PERMIT

Permit No.	Replaces Permit No.(s)	Effective Date	Expiration Date
10121R00	N/A	December 7, 2010	November 30, 2015

Until such time as this permit expires or is modified or revoked, the below named Permittee is permitted to construct and operate the emission source(s) and associated air pollution control device(s) specified herein, in accordance with the terms, conditions, and limitations within this permit. This permit is issued under the provisions of Article 21B of Chapter 143, General Statutes of North Carolina as amended, and Title 15A North Carolina Administrative Codes (15A NCAC), Subchapters 2D and 2Q, and other applicable Laws.

Pursuant to Title 15A NCAC, Subchapter 2Q, the Permittee shall not construct, operate, or modify any emission source(s) or air pollution control device(s) without having first submitted a complete Air Quality Permit Application to the permitting authority and received an Air Quality Permit, except as provided in this permit.

Permittee:	**Enviva Pellets, LLC**
Facility ID:	**4600107**
Facility Site Location: **City, County, State, Zip:**	**142 N.C. Rt 561 East** **Ahoskie, Hertford County, North Carolina, 27910**
Mailing Address: **City, State, Zip:**	**1309 East Cary Street, Suite 200** **Richmond, Virginia, 23219**
Application Number:	**4600107.10A**
Complete Application Date:	**October 1, 2010**
Primary SIC Code:	**2499**
Division of Air Quality, **Regional Office Address:**	**Washington Regional Office** **943 Washington Square Mall** **Washington, North Carolina, 27889**

Permit issued this the 7th day of December, 2010

D. van der Vaart

Donald R. van der Vaart, Ph.D., P.E., J.D., Chief, Air Permits Section
By Authority of the Environmental Management Commission

ATTACHMENT to Permit No. 10121R00

Insignificant Activities under 15A NCAC 2Q .0503(8)

Emission Source ID No.	Emission Source Description
IES-DWH	Dried wood handling
IES-PP	Pellet press system
IES-FPH	Finished product handling
IST-1 and IST-2	Two diesel storage tanks (2,500 gallon and 500 gallon capacity)
IES-GWHS	Green wood handling and storage
IES-GWFB	Green wood fuel storage bin

1. Because an activity is insignificant does not mean that the activity is exempted from an applicable requirement or that the owner or operator of the source is exempted from demonstrating compliance with any applicable requirement.
2. When applicable, emissions from stationary source activities identified above shall be included in determining compliance with the permit requirements for toxic air pollutants under 15A NCAC 2D .1100 "Control of Toxic Air Pollutants" or 2Q .0711 "Emission Rates Requiring a Permit".
3. For additional information regarding the applicability of GACT see the DAQ page titled "The Regulatory Guide for Insignificant Activities/Permits Exempt Activities". The link to this site is as follows: http://daq.state.nc.us/permits/insig/

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SECTION 1- PERMITTED EMISSION SOURCE (S) AND ASSOCIATED AIR POLLUTION CONTROL DEVICE (S) AND APPURTENANCES

The following table contains a summary of all permitted emission sources and associated air pollution control devices and appurtenances:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ES-DRYER	Direct heat, wood-fired dryer (125 million Btu per hour heat input)	CD-DC and CD-WESP	One simple cyclone (204 inches in diameter) in series with one wet electrostatic precipitator (29,904 square feet of total collection plate area)
ES-CHM-1, 2, 3, and 4	Four coarse hammermills	CD-CHM-BV1, BV2, BV3, and BV4	Four bin vent filters (1,560 square feet of filter area each)
ES-GWH-1 and 2	Ground wood handling	CD-GWH-BF1 and BF2	Two bin vent filters (417 square feet of filter area each)
ES-PPS	Pellet press silo	CD-PPS-BV	One bin vent filter (2,500 square feet of filter area)
ES-CLR1, 2, 3, and 4	Four pellet coolers	CD-CLR-C1, C2, C3, and C4	Four multicyclones (two, 43 inch diameter tubes each)
ES-EG and ES-FWP **NSPS MACT**	One emergency use generator (350 brake horsepower) and one fire water pump (300 brake horsepower)	N/A	N/A

SECTION 2 - SPECIFIC LIMITATIONS AND CONDITIONS

2.1- Emission Source(s) and Control Devices(s) Specific Limitations and Conditions

The emission source(s) and associated air pollution control device(s) and appurtenances listed below are subject to the following specific terms, conditions, and limitations, including the testing, monitoring, recordkeeping, and reporting requirements as specified herein:

A. Wood-fired dryer system (ID No. ES-DRYER), four coarse hammermills (ID Nos. ES-CHM-1, 2, 3, and 4), ground wood handling (ID No. ES-GWH-1 and 2), pellet press silo (ID No. ES-PPS), and four pellet coolers (ID Nos. ES-CLR1, 2, 3, and 4)

The following table provides a summary of limits and standards for the emission source(s) described above:

Regulated Pollutant	Limits/Standards	Applicable Regulation
Particulate matter	$E = 4.10 \times P^{0.67}$ for process weight rate < 30 tph $E = 55 \times P^{0.11} - 40$ for process weigh rate ≥30 tph Where, E = allowable emission rate (lb/hr) P = process weight rate (tph)	15A NCAC 02D .0515
Sulfur dioxide	2.3 pounds per million Btu heat input	15A NCAC 02D .0516
Visible emissions	20 percent opacity when averaged over a six minute period	15A NCAC 02D .0521
Toxic air pollutants	See Section 2.2 A.	15A NCAC 02D .1100

1. 15A NCAC 02D .0515: PARTICULATES FROM MISCELLANEOUS INDUSTRIAL PROCESSES

a. Emissions of particulate matter from this source shall not exceed an allowable emission rate as calculated by the following equation: [15A NCAC 02D .0515(a)]

$E = 4.10 \times P^{0.67}$ for process weight rate < 30 tph

$E = 55 \times P^{0.11} - 40$ for process weight rate ≥30 tph

Where E = allowable emission rate in pounds per hour
P = process weight in tons per hour

Liquid and gaseous fuels and combustion air are not considered as part of the process weight.

Testing [15A NCAC 02D .2601]

b. If emissions testing is required, the testing shall be performed in accordance with General Condition JJ. If the results of this test are above the limit given in Section 2.1 A. 1. a. above, the Permittee shall be deemed in noncompliance with 15A NCAC 02D .0515.

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

c. Particulate matter emissions from the wood dryer system (**ID No. ES-DRYER**) shall be controlled by a simple cyclone (**ID No. CD-DC**) in series with a wet electrostatic precipitator (**ID No. CD-WESP**). Particulate matter emissions from the four coarse hammermills (**ID Nos. ES-CHM1, 2, 3, and 4**) shall be controlled by four bin vent filters (**ID Nos. CD-CHM-BV1, 2, 3, and 4**). Particulate matter emissions from the ground wood handling system (**ID No. ES-GWH-1 and 2**) shall be controlled by two bin vent filters (**ID No. CD-GWH-BV1 and 2**). Particulate matter emissions from the pellet press silo (**ID No. ES-PPS**) shall be controlled by a bin vent filter (**ID No. CD-PPS-BV**). Particulate matter emissions from the four pellet coolers (**ID Nos. ES-CLR-1, 2, 3, and 4**) shall be controlled by four multicyclones (**ID Nos. CD-CLR-C1, 2, 3, and 4**). To assure compliance, the Permittee shall perform inspections and maintenance as recommended by the manufacturer. In

addition to the manufacturer's inspection and maintenance recommendations, or if there is no manufacturer's inspection and maintenance recommendations, as a minimum, the inspection and maintenance requirement shall include the following:

i. a monthly visual inspection of the system ductwork and material collection unit for leaks.
ii. an annual (for each 12 month period following the initial inspection) internal inspection of the bagfilters' structural integrity.

The Permittee shall be deemed in noncompliance with 15A NCAC 02D .0515 if the ductwork and control devices are not inspected and maintained.

d. The results of inspection and maintenance shall be maintained in a log (written or electronic format) on-site and made available to an authorized representative upon request. The log shall record the following:
   i. the date and time of each recorded action;
   ii. the results of each inspection;
   iii. the results of any maintenance performed; and
   iv. any variance from manufacturer's recommendations, if any, and corrections made.

   The Permittee shall be deemed in noncompliance with 15A NCAC 02D .0515 if these records are not maintained.

Reporting [15A NCAC 02Q .0508(f)]

e. The Permittee shall submit the results of any maintenance performed on the bagfilters within 30 days of a written request by the DAQ.

2. 15A NCAC 02D .0516: SULFUR DIOXIDE EMISSIONS FROM COMBUSTION SOURCES

a. Emissions of sulfur dioxide from this source (**ID No. ES-DRYER**) shall not exceed 2.3 pounds per million Btu heat input. Sulfur dioxide formed by the combustion of sulfur in fuels, wastes, ores, and other substances shall be included when determining compliance with this standard. [15A NCAC 02D .0516]

Testing [15A NCAC 02D .2601]

b. If emissions testing is required, the testing shall be performed in accordance with 15A NCAC 02D .2601 and General Condition JJ found in Section 3. If the results of this test are above the limit given in Section 2.1 A.2.a. above, the Permittee shall be deemed in noncompliance with 15A NCAC 02D .0516.

Monitoring/Recordkeeping [15A NCAC 02Q .0508(f) and 15A NCAC 02D .2601]

c. No monitoring/recordkeeping is required for sulfur dioxide emissions from firing wood for these sources.

3. 15A NCAC 02D .0521: CONTROL OF VISIBLE EMISSIONS

a. Visible emissions from these sources shall not be more than 20 percent opacity when averaged over a six-minute period. However, six-minute averaging periods may exceed 20 percent not more than once in any hour and not more than four times in any 24-hour period. In no event shall the six-minute average exceed 87 percent opacity. [15A NCAC 02D .0521 (d)]

Testing [15A NCAC 02D .2601]

b. If emissions testing is required, the testing shall be performed in accordance with 15A NCAC 02D .2601 and General Condition JJ. If the results of this test are above the limit given in Section 2.1 A. 3. a. above, the Permittee shall be deemed in noncompliance with 15A NCAC 02D .0521.

Monitoring [15A NCAC 02Q .0508(f)]

c. To assure compliance, once a month the Permittee shall observe the emission points of this source for any visible emissions above normal. The monthly observation must be made for each month of the calendar year period to ensure compliance with this requirement. The Permittee shall establish "normal" for the source in the first 30 days following the effective date of the permit. If visible emissions from this source are observed to be above normal, the Permittee shall either:
   i. take appropriate action to correct the above-normal emissions as soon as practicable and within the monitoring period and record the action taken as provided in the recordkeeping requirements below, or
   ii. demonstrate that the percent opacity from the emission points of the emission source in accordance with 15A NCAC 02D .2601 (Method 9) for 12 minutes is below the limit given in Section 2.1 A.3. a. above.

   If the above-normal emissions are not corrected per (i) above or if the demonstration in (ii) above cannot be made, the Permittee shall be deemed to be in noncompliance with 15A NCAC 02D .0521.

Recordkeeping [15A NCAC 02Q .0508(f)]

d. The results of the monitoring shall be maintained in a log (written or electronic format) on-site and made available to an authorized representative upon request. The log shall record the following:
   i. the date and time of each recorded action;
   ii. the results of each observation and/or test noting those sources with emissions that were observed to be in noncompliance along with any corrective actions taken to reduce visible emissions; and
   iii. the results of any corrective actions performed.

   The Permittee shall be deemed in noncompliance with 15A NCAC 02D .0521 if these records are not maintained.

B. Emergency Generator (ID No. ES-EG) and Fire Water Pump (ID No. ES-FWP)

The following table provides a summary of limits and/or standards for the emission source(s) described above.

Regulated Pollutant	Limits/Standards	Applicable Regulation
Sulfur dioxide	2.3 pounds per million Btu heat input	15A NCAC 2D .0516
Visible emissions	20 percent opacity	15A NCAC 2D .0521
Toxic air pollutants	**State-enforceable only** See Section 2.2 A.1.	15A NCAC 2D .1100
Hazardous air pollutants (HAP)	National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE) No additional requirements per 63.6590(c)	15A NCAC 2D .1111 (40 CFR 63, Subpart ZZZZ)
NMHC and NOx, CO, PM	0.20 g/kW for PM; 3.5 g/kW for CO; and 4 g/kW for NOx + NMHC	15A NCAC 2D .0524 (40 CFR 60, Subpart IIII)

1. 15A NCAC 2D .0516: SULFUR DIOXIDE EMISSIONS FROM COMBUSTION SOURCES

a. Emissions of sulfur dioxide from these sources shall not exceed 2.3 pounds per million Btu heat input. Sulfur dioxide formed by the combustion of sulfur in fuels, wastes, ores, and other substances shall be included when determining compliance with this standard. [15A NCAC 2D .0516]

Testing [15A NCAC 2D .0501(c)(4)]

b. If emissions testing is required, the testing shall be performed in accordance with 15A NCAC 2D .0501(c)(4) and General Condition JJ. If the results of this test are above the limit given in Section 2.1 F.1.a above, the Permittee shall be deemed in noncompliance with 15A NCAC 2D .0516.

Monitoring/Recordkeeping/Reporting [15A NCAC 2Q .0508(f)]

c. No monitoring/recordkeeping/reporting is required for sulfur dioxide emissions from the firing of diesel fuel in these sources.

2. 15A NCAC 2D .0521: CONTROL OF VISIBLE EMISSIONS

a. Visible emissions from these sources shall not be more than 20 percent opacity when averaged over a six-minute period. However, six-minute averaging periods may exceed 20 percent not more than once in any hour and not more than four times in any 24-hour period. In no event shall the six-minute average exceed 87 percent opacity. [15A NCAC 2D .0521(d)]

Testing [15A NCAC 2D .0501(c)(8)]

b. If emissions testing is required, the testing shall be performed in accordance with 15A NCAC 2D .0501(c)(8) and General Condition JJ. If the results of this test are above the limit given in Section 2.1 F.2.a above, the Permittee shall be deemed in noncompliance with 15A NCAC 2D .0521.

Monitoring [15A NCAC 2Q .0508(f)]

c. To assure compliance, once a month the Permittee shall observe the emission points of these sources for any visible emissions above normal. The monthly observation must be made for each month of the calendar year period to ensure compliance with this requirement. The Permittee shall establish "normal" for the sources in the first 30 days following operation. If visible emissions from this sources are observed to be above normal, the Permittee shall either:

i. take appropriate action to correct the above-normal emissions as soon as practicable and within the monitoring period and record the action taken as provided in the recordkeeping requirements below, or

ii. demonstrate that the percent opacity from the emission points of the emission source in accordance with 15A NCAC 02D .2601 (Method 9) for 12 minutes is below the limit given in Section 2.1 F.2. a. above.

If the above-normal emissions are not corrected per (i) above or if the demonstration in (ii) above cannot be made, the Permittee shall be deemed to be in noncompliance with 15A NCAC 02D .0521.

Recordkeeping [15A NCAC 2Q .0508(f)]

d. The results of the monitoring shall be maintained in a log (written or electronic format) on-site and made available to an authorized representative upon request. The log shall record the following:

i. the date and time of each recorded action;

ii. the results of each observation and/or test noting those sources with emissions that were observed to be in noncompliance along with any corrective actions taken to reduce visible emissions; and

iii. the results of any corrective actions performed.

The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0521 if these records are not maintained.

3. 15A NCAC 2D .0524 NEW SOURCE PERFORMANCE STANDARDS [40 CFR Subpart IIII]

a. The provisions of this subpart are applicable to manufacturer, owners, and operators of stationary compression ignition (CI), reciprocating internal combustion engines (RICE). The Permittee shall comply with all applicable provisions, including the requirements for emission standards, notification,

testing, reporting, recordkeeping, and monitoring, contained in Environmental Management Commission Standard 15A NCAC 2D .0524 "New Source Performance Standards (NSPS)" as promulgated in 40 CFR Part 60 Subpart IIII, including Subpart A "General Provisions."

Emission Standards for Manufacturers:

Emergency Engines

b. Pursuant to 40 CFR §60.4202 (a), stationary RICE engine manufacturers must certify their 2007 model year and later emergency stationary RICE. For engines greater than or equal to 50 hp, the certification emission standards for new non-road CI engines for the same model year and maximum engine power in 40 CFR 89.112 and 40 CFR 89.113 for all pollutants.

Fire Pump Engines

c. Pursuant to 40 CFR §60.4202(d), beginning with the model years in table 3 to this subpart, stationary RICE manufacturers must certify their fire pump RICE to the emission standards in table 4 to this subpart, for all pollutants, for the same model year and NFPA nameplate power.

d. Pursuant to 40 CFR §60.4210, RICE manufacturers must certify the engine using the certification procedures required in 40 CFR Part 89, subpart b, or 40 CFR Part 1039, subpart c as applicable.

e. Pursuant to 40 CFR §60.4203, RICE must meet the emission standards during the useful life of the engine.

Emission Standards for Owners and Operators:

Emergency and Fire Pump Engines

f. Pursuant to 40 CFR §60.4205, owners and operators must comply with the following emission standards:

0.20 g/kW for PM
3.5 g/kW for CO
4 g/kW for NOx + NMHC

g. Pursuant to 40 CFR §60.4206, owners and operators must operate and maintain the stationary RICE according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer, over the entire life of the engine.

Fuel Requirements for Owners and Operators

h. Pursuant to 40 CFR §60.4207, owners and operators must use fuel with a maximum sulfur content of 15 ppmw and a cetane index of at least 40.

i. Pursuant to 40 CFR §60.4209(a), the owner or operator must install a non-resettable hour meter prior to start-up of the engines.

4. **15A NCAC 2D .1111: MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY (40 CFR 63 Subpart ZZZZ)**
   a. Pursuant to §63.6580, Subpart ZZZZ establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations.

   b. Pursuant to §63.6590(c), a new stationary RICE located at an area source must meet the requirements of 40 CFR Part 60, Subpart IIII, for compression ignition engines. No further requirements apply for such engines under this part.

2.2- Multiple Emission Source(s) Specific Limitations and Conditions

A. Facility-wide sources

STATE-ONLY REQUIREMENT:

1. **TOXIC AIR POLLUTANT EMISSIONS LIMITATION AND REQUIREMENT** - Pursuant to 15A NCAC 02D .1100 and in accordance with the approved application for an air toxic compliance demonstration, the following permit limit shall not be exceeded:

EMISSION SOURCE(S)	TOXIC AIR POLLUTANT(S)	EMISSION LIMIT(S)
Dryer system (**ID No. ES-DRYER**)	Acrolein Arsenic & compounds Benzene Formaldehyde Phenol	0.989 lb/hr 1.095 lb/year 2864.52 lb/year 6.02 lb/hr 1.204 lb/hr
Fire Water Pump (**ID No. ES-FWP**)	Acrolein Arsenic & compounds Benzene Formaldehyde	1.94E-04 lb/hr 1.50E-03 lb/year 17.52 lb/year 2.48E-03 lb/hr
Emergency generator (**ID No. ES-EG**)	Acrolein Arsenic & compounds Benzene Formaldehyde	2.27E-04 lb/hr 1.80E-03 lb/year 17.52 lb/year 2.893E-03 lb/hr

   a. For compliance purposes, within 30 days after each calendar year quarter the Permittee shall report acrolein, benzene, formaldehyde, and phenol emissions associated with each of the respective averaging periods to the Regional Supervisor, DAQ.

STATE-ONLY REQUIREMENT:

2. **TOXIC AIR POLLUTANT EMISSION RATES REQUIRING A PERMIT** – Pursuant to 15A NCAC 02Q .0711, a permit to emit toxic air pollutants is required for any facility whose actual rate of emissions from all sources are greater than any one of the following rates:

Pollutant (CAS Number)	Carcinogens (lb/yr)	Chronic Toxicants (lb/day)	Acute Systemic Toxicants (lb/hr)	Acute Irritants (lb/hr)
1,3 Butadiene (106-99-0)	11			
Acetaldehyde (75-07-0)				6.8
Benzo(a)pyrene (50-32-8)	2.2			

Chloroform (67-66-3)	290			
Xylene (1330-20-7)		57		16.4
Methyl isobutyl ketone (108-10-1)		52		7.6
Methylene chloride (75-09-2)	1600		0.39	
Styrene (100-42-5)			2.7	
Toluene (108-88-3)		98		14.4

SECTION 3 - GENERAL CONDITIONS

1. REPORTS, TEST DATA, MONITORING DATA, NOTIFICATIONS, AND REQUESTS FOR RENEWAL shall be submitted to:

   Robert Fisher
   Regional Air Quality Supervisor
   North Carolina Division of Air Quality
   Washington Regional Office
   943 Washington Square Mall
   Washington, NC 27889
   (252) 946-6481

2. PERMIT RENEWAL REQUIREMENT - The Permittee, at least 90 days prior to the expiration date of this permit, shall request permit renewal by letter in accordance with 15A NCAC 2Q .0304(d) and (f). Pursuant to 15A NCAC 2Q .0203(i), no permit application fee is required for renewal of an existing air permit. The renewal request should be submitted to the Regional Supervisor, DAQ.

3. ANNUAL FEE PAYMENT - Pursuant to 15A NCAC 2Q .0203(a), the Permittee shall pay the annual permit fee within 30 days of being billed by the DAQ. Failure to pay the fee in a timely manner will cause the DAQ to initiate action to revoke the permit.

4. ANNUAL EMISSION INVENTORY REQUIREMENTS – The Permittee shall report by June 30 of each year the actual emissions of each air pollutant listed in 15A NCAC 02Q .0207(a) from each emission source within the facility during the previous calendar year. The report shall be in or on such form as may be established by the Director. The accuracy of the report shall be certified by the responsible official of the facility.

5. EQUIPMENT RELOCATION - A new air permit shall be obtained by the Permittee prior to establishing, building, erecting, using, or operating the emission sources or air cleaning equipment at a site or location not specified in this permit.

6. This permit is subject to revocation or modification by the DAQ upon a determination that information contained in the application or presented in the support thereof is incorrect, conditions under which this permit was granted have changed, or violations of conditions contained in this permit have occurred. The facility shall be properly operated and maintained at all times in a manner that will

effect an overall reduction in air pollution. Unless otherwise specified by this permit, no emission source may be operated without the concurrent operation of its associated air cleaning device(s) and appurtenances.

7. REPORTING REQUIREMENT - Any of the following that would result in previously unpermitted, new, or increased emissions must be reported to the Regional Supervisor, DAQ:
   a. changes in the information submitted in the application regarding facility emissions;
   b. changes that modify equipment or processes of existing permitted facilities; or
   c. changes in the quantity or quality of materials processed.

   If appropriate, modifications to the permit may then be made by the DAQ to reflect any necessary changes in the permit conditions. In no case are any new or increased emissions allowed that will cause a violation of the emission limitations specified herein.
8. This permit is nontransferable by the Permittee. Future owners and operators must obtain a new air permit from the DAQ.
9. This issuance of this permit in no way absolves the Permittee of liability for any potential civil penalties which may be assessed for violations of State law which have occurred prior to the effective date of this permit.
10. This permit does not relieve the Permittee of the responsibility of complying with all applicable requirements of any Federal, State, or Local water quality or land quality control authority.
11. Reports on the operation and maintenance of the facility shall be submitted by the Permittee to the Regional Supervisor, DAQ at such intervals and in such form and detail as may be required by the DAQ. Information required in such reports may include, but is not limited to, process weight rates, firing rates, hours of operation, and preventive maintenance schedules.
12. A violation of any term or condition of this permit shall subject the Permittee to enforcement pursuant to G.S. 143-215.114A, 143-215.114B, and 143-215.114C, including assessment of civil and/or criminal penalties.
13. Pursuant to North Carolina General Statute 143-215.3(a)(2), no person shall refuse entry or access to any authorized representative of the DAQ who requests entry or access for purposes of inspection, and who presents appropriate credentials, nor shall any person obstruct, hamper, or interfere with any such representative while in the process of carrying out his official duties. Refusal of entry or access may constitute grounds for permit revocation and assessment of civil penalties.
14. The Permittee must comply with any applicable Federal, State, or Local requirements governing the handling, disposal, or incineration of hazardous, solid, or medical wastes, including the Resource Conservation and Recovery Act (RCRA) administered by the Division of Waste Management.
15. PERMIT RETENTION REQUIREMENT - The Permittee shall retain a current copy of the air permit at the site. The Permittee must make available to personnel of the DAQ, upon request, the current copy of the air permit for the site.

16. CLEAN AIR ACT SECTION 112(r) REQUIREMENTS - Pursuant to 40 CFR Part 68 "Accidental Release Prevention Requirements: Risk Management Programs Under the Clean Air Act, Section 112(r)," if the Permittee is required to develop and register a risk management plan pursuant to Section 112(r) of the Federal Clean Air Act, then the Permittee is required to register this plan in accordance with 40 CFR Part 68.

17. PREVENTION OF ACCIDENTAL RELEASES - GENERAL DUTY - Pursuant to Title I Part A Section 112(r)(1) of the Clean Air Act "Hazardous Air Pollutants - Prevention of Accidental Releases - Purpose and General Duty," although a risk management plan may not be required, if the Permittee produces, processes, handles, or stores any amount of a listed hazardous substance, the Permittee has a general duty to take such steps as are necessary to prevent the accidental release of such substance and to minimize the consequences of any release. **This condition is federally-enforceable only.**

Permit issued this the XXth day of , 2010.

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

_____

Donald R. van der Vaart, PhD., P.E., J.D., Chief, Air Permits Section
Division of Air Quality
By Authority of the Environmental Management Commission

ATTACHMENT

List of Acronyms

AOS	Alternate Operating Scenario
BACT	Best Available Control Technology
Btu	British thermal unit
CAA	Clean Air Act
CAIR	Clean Air Interstate Rule
CEM	Continuous Emission Monitor
CFR	Code of Federal Regulations
DAQ	Division of Air Quality
DENR	Department of Environment and Natural Resources
EMC	Environmental Management Commission
EPA	Environmental Protection Agency
FR	Federal Register
GACT	Generally Available Control Technology
HAP	Hazardous Air Pollutant
MACT	Maximum Achievable Control Technology
NAA	Non-Attainment Area
NCAC	North Carolina Administrative Code
NCGS	North Carolina General Statutes
NESHAPS	National Emission Standards for Hazardous Air Pollutants
NO_X	Nitrogen Oxides
NSPS	New Source Performance Standard
OAH	Office of Administrative Hearings
PM	Particulate Matter
PM_{10}	Particulate Matter with Nominal Aerodynamic Diameter of 10 Micrometers or Less
POS	Primary Operating Scenario
PSD	Prevention of Significant Deterioration
RACT	Reasonably Available Control Technology
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
tpy	Tons Per Year
VOC	Volatile Organic Compound

NORTH CAROLINA DIVISION OF AIR QUALITY

Air Permit Review

Permit Issue Date: 7 December 2010

Region: Washington Regional Office
County: Hertford
NC Facility ID: 4600107
Inspector's Name:
Date of Last Inspection:
Compliance Code:

Facility Data

Applicant (Facility's Name): Enviva Pellets Ahoskie, LP

Facility Address:
Enviva Pellets Ahoskie, LP
142 N.C. Rt 561 East
Ahoskie, NC 27910

SIC: /2499
NAICS: /

Facility Classification: Before: N/A **After:** Title V
Fee Classification: Before: N/A **After:** Title V

Permit Applicability (this application only)

SIP: 02D .0515, .0516, .0521
NSPS: Subpart IIII
NESHAP: Subpart ZZZZ
PSD:
PSD Avoidance:
NC Toxics: 02D .1100 and 02Q .0711
112(r):
Other:

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Glenn Gray Plant Manager (804) 412-0227 1309 east Cary Street, Suite 200 Richmond, VA 23219	Glenn Gray Plant Manager (804) 412-0227 1309 east Cary Street, Suite 200 Richmond, VA 23219	Glenn Gray Plant Manager (804) 412-0227 1309 east Cary Street, Suite 200 Richmond, VA 23219

Application Data

Application Number: 4600107.10A
Date Received: 10/01/2010
Application Type: New Permit
Application Schedule: State

Existing Permit Data
Existing Permit Number: N/A
Existing Permit Issue Date: N/A
Existing Permit Expiration Date: N/A

Review Engineer: Kevin Godwin

Review Engineer's Signature: **Date:** 12-7-10

Kevin T. Godwin

Comments / Recommendations:
Issue 10121R00
Permit Issue Date: 12/07/2010
Permit Expiration Date: 11/30/2015

I. Introduction and Purpose of Application

A. Enviva Pellets, LP (Enviva) is proposing to construct and operate a new wood pellets manufacturing plant at an existing facility in the town of Ahoskie, NC.

B. The proposed plant is designed to produce up to 418,533 tons per year of wood pellets. The pelletizing process is described in the application as follows:

1. Green wood will be delivered via trucks as whole logs or as chipped wood. Logs are chipped and debarked to specification for drying. Chipped wood is conveyed to wood storage and wood/bark is conveyed to green wood fuel dryer storage. Due to the high moisture content of green wood, negligible emissions from handling are expected. No air emissions from green wood handling and storage are reported in the application.
2. Wood dryer (**ID No. ES-Dryer**) – Green wood is conveyed to a rotary dryer system. Direct contact heat is provided to the system via a 125 million Btu/hr burner system. Air emissions from the dryer system are controlled by a simple cyclone (**ID No. CD-DC**) in series with a wet electrostatic precipitator (**ID No. CD-WESP**). Emissions are calculated based on a combination of dryer vendor emission guarantees and AP-42 emission factors.

3. Dried wood handling (**ID No. ES-DWH**) – Dried materials are transferred from the dryer via conveyors to coarse hammermills for further size reduction prior to pelletizing. Calculations included in the application indicate emissions from dried wood handling are less than 5 tpy and are therefore insignificant.
4. Coarse Hammermills (**ID No. ES-CHM**) – Dried materials are reduced to the appropriate size using four coarse hammermills operating in parallel. Particulate emissions are controlled using four bin vent filters (**ID Nos. CD-CHM-BV1, 2, 3, and 4**).
5. Pellet Press Silo and Ground Wood Handling (**ID Nos. ES-PPS and ES-GWH**) – Ground wood from the hammermills is conveyed to a silo prior to pelletizing. Another set of conveyors transports ground wood to the pelletizers. Particulate emissions from the conveyors prior to and after the silo are controlled using a two bin vent filters (**ID Nos. CD-GWH-BV1 and 2**). Emissions from the silo are controlled using a separate bin vent filter (**ID No. CD-PPS-BV**).
6. Pellet Press System (**ID No. ES-PP**) – Dried ground wood is compacted in the presence of water using several screw presses. Exhaust from the pellet press and associated conveyors are vented to the atmosphere with negligible particulate emissions. No chemical binding agents are used for pelletization.
7. Pellet Coolers (**ID Nos. ES-CLR**) – Wood pellets are conveyed to one of four pellet coolers. Cooling air is passed through the pellets. Particulate emissions are controlled using multicyclones (**ID Nos. CD-CLR-C1, C2, C3, and C4**) operating in parallel.
8. Finished product handling (**ID No. ES-FPH**) – Pelletized product is conveyed to storage and load-out operations with no emissions expected.
9. Emergency Generator (**ID No. ES-EG**), Fire water pump (**ID No. ES-FWP**) and associated Fuel oil storage tanks – The facility will use a 350 bhp emergency generator and a 300 bhp fire water pump. Both engines operate on diesel fuel. Fuel for the emergency generator is stored in a 2,500 gallon tank and for the fire pump in a 500 gallon tank. Emissions from both tanks are insignificant.

C. Pursuant to 15A NCAC 02Q .0501(c)(2), Enviva is a new Title V facility that will be issued a state construction permit under 15A NCAC 02Q .0300 with a requirement to submit a Title V permit application within 12 months after commencing operation.

II. Regulatory Review – Specific Emission Source Limitations

A. 15A NCAC 02D .0515 "Particulates from Miscellaneous Industrial Processes" – This regulation establishes an allowable emission rate for particulate matter from any stack, vent, or outlet resulting from any industrial process for which no other emission control standards are applicable. This regulation applies to Total Suspended Particulate (TSP) or PM less than 100 micrometers (μm). The allowable emission rate is calculated using the following equation:

$E = 4.10 \times P^{0.67}$ for $P < 30$ tph
$E = 55 \times P^{0.11} - 40$ for $P \geq 30$ tph

where, E = allowable emission rate (lb/hr)
P = process weight rate (tph)

According to the application, the most significant source of PM emissions is the dryer system operating at 57.9 tph. The allowable emission rate is calculated to be 46 lb/hr. Maximum PM emissions are provided by the dryer vendor. The maximum hourly emission rate is 5.6 lb/hr. Therefore, compliance is indicated.

Control Device Monitoring

To assure compliance, the Permittee shall perform inspections and maintenance as recommended by the manufacturer. In addition to the manufacturer's inspection and maintenance recommendations, or if there is no manufacturer's inspection and maintenance recommendations, as a minimum, the inspection and maintenance requirement shall include the following:

i. a monthly visual inspection of the system ductwork and material collection unit for leaks.
ii. an annual (for each 12 month period following the initial inspection) internal inspection of the bagfilters' structural integrity.

Reporting is required.

B. 15A NCAC 02D .0516 "Sulfur Dioxide Emissions from Combustion Sources" – Under this regulation, sulfur dioxide emissions from combustion sources cannot exceed 2.3 lb/million Btu heat input. No. 2 fuel oil is the worst case fuel. Firing No. 2 fuel oil (0.5% sulfur b.w.) will not cause this limit to be exceeded. Therefore, compliance is indicated.

C. 15A NCAC 02D .0521 "Control of Visible Emissions" – This regulation establishes a visible emission standard for sources based on the manufacture date. For sources manufactured after July 1, 1971, the standard is 20% opacity when averaged over a 6-minute period. The Permittee will be required to establish 'normal' visible emissions from these sources within the first 30-days of the permit effective date. In order to demonstrate compliance, the Permittee will be required to observe actual visible emissions on a monthly basis for comparison to 'normal'. If emissions are observed outside of 'normal', the Permittee shall take corrective action. Recordkeeping and reporting are required. Because all emission sources are designed to be well controlled, compliance with this standard is expected.

III. Regulatory Review – Multiple Emission Source Limitations

A. 15A NCAC 02D .0524 "New Source Performance Standards (NSPS), Subpart IIII" – This regulation applies to owners or operators of compression ignition (CI) reciprocating internal combustion engines (RICE) manufactured after April 1, 2006 that are not fire pump engines, and fire pump engines manufactured after July 1, 2006. Both the 350 hp emergency generator and the 300 hp fire pump engine are subject to the requirements of this regulation.

Under NSPS Subpart IIII, owners or operators of emergency generators manufactured in 2007 or later with a maximum engine power greater than or equal to 50 hp are required to comply with the emission limits referenced in 40 CFR §60.4205(b). These limits are as follows: 0.20 g/kW for PM; 3.5 g/kW for CO; and 4 g/kW for NOx + nonmethane hydrocarbons (NMHC).

Under NSPS Subpart IIII, owners or operators of fire pump engines manufactured after July 1, 2006 must comply with the emission limits in Table 4 of the subpart. The limits are as follows: 0.20 g/kW for PM; 3.5 g/kW for CO; and 4 g/kW for NOx + NMHC.

As stated in the application, Enviva will comply with these limits by operating the engines as instructed in the manufacturer's operating manual in accordance with 40 CFR 60.4211(a), and purchasing an engine certified to meet the referenced emission limits in accordance with 40 CFR 60.4211(b). The engines will be equipped with a non-resettable hour meter in accordance with 40 CFR 60.4209(a). Emergency and readiness testing will be limited to 100 hours per year.

In addition, both engines are required to comply with fuel requirements in 40 CFR 60.4207, which limit sulfur content to a maximum of 15 ppm and a cetane index of at least 40.

B. 15A NCAC 02D .1111 "Maximum Achievable Control Technology, Subpart ZZZZ" – 40 CFR Part 63 applies to RICE located at a major or area source of hazardous air pollutants (HAP). Pursuant to 40 CFR §63.6590(c) (amended August 20, 2010), a new stationary RICE located at an area source must meet the requirements of this part by meeting the requirements of 40 CFR Part 60 Subpart IIII for compression ignition engines. No further requirements apply to such engines under this part.

As reported in the application Enviva is an area source of HAP emissions with a facility-wide total of 13.02 tpy.

C. 15A NCAC 02D .1100 "Control of Toxic Air Pollutants" – This state-only section sets forth the rules for the control of facility-wide toxic air pollutants (TAP) to protect human health. Enviva emits five (5) listed TAPs above the permit exemption rate; acrolein, arsenic & compounds, benzene, formaldehyde, and phenol from the dryer, the fire water pump, and the emergency generator. Therefore, further evaluation using air dispersion modeling is required. Modeling, using AERMOD methodology, was included with the

application. The modeling was reviewed by Mr. Jerry Freeman, Air Quality Analysis Branch (AQAB) on October 26, 2010. According to Mr. Freeman's memo, the modeling did demonstrate compliance with North Carolina's Acceptable Ambient Levels (AAL) for the four TAP. Benzene had the highest impact at 13% of the AAL. The modeled emission rates are placed in the permit as limits for each source. Because the values modeled were based on maximum production, no restrictions are necessary.

D. Prevention of Significant Deterioration (PSD) – This facility is classified in the 250 tpy major source threshold catagory. Calculations included in the application indicate facility-wide criteria pollutant emissions are less than the PSD major source threshold. Therefore, Enviva is minor with regards to PSD. The following table taken from the application provides a summary of criteria pollutants from the rotary dryer:

Pollutant	Emission Factor	Factor Source	Potential Emissions (tpy)
CO	1.22 lb/ODT	Vendor	230.7
NOx	0.87 lb/ODT	Vendor	164.9
TSP	0.13 lb/ODT	WESP specifications	76.5
PM-10	0.13 lb/ODT	WESP specifications	76.5
SO_2	0.025 lb/MMBtu	AP-42, Section 1.6	13.7
VOC	1.051 lb/ODT	Vendor	197.9

E. Nitrogen Dioxide Impact – At the request of DAQ, Enviva modeled NO_2. When the modeled impact and background concentration are added, the total impact reached 94% of the National Ambient Air Quality Standard (NAAQS).

VI. Other Regulatory Requirements

- An application fee of $867.00 is required and was included with the application.
- The appropriate number of application copies was received on October 1, 2010.
- The application included the Reduction and Recycling Form (A4).
- A Professional Engineer's Seal was included in the application (ref. Joe Sullivan, P.E. Seal No. 023037).
- A zoning consistency determination was included with the application (ref. Charles A. Hammond, Town Manager, Sept. 24, 2010).
- Public notice is not required for this state-only construction permit under 15A NCAC 02Q .0300.
- IBEAM Emission Source Module (ESM) update was verified on December 2, 2010.
- According to the application, the facility does not handle any of the substances subject to 112(r).
- The application was signed by Mr. Matt Holland, Chief Operating Officer, on November 19, 2010.

V. Recommendations

This permit application for a new permit has been reviewed by DAQ to determine compliance with all procedures and requirements. DAQ has determined that this facility is expected to achieve compliance as specified in the permit with all applicable requirements. The applicant and Washington Regional Office (WaRO) were provided a draft permit and review on November 12, 2010.

Issue Permit No. 10121R00

Comprehensive Application Report for 4600107.10A

12/07/2010

Enviva Pellets Ahoskie, LLC - Ahoskie (4600107)

Hertford County

General Information: Permit/Latest Revision: 10121/ R00

Permit code:	State
Application type:	New Permit
Engineer/Rev. location:	Kevin Godwin/RCO
Regional Contact:	Yongcheng Chen
Facility location:	Washington Regional Office
Facility classification:	Small
Clock is ON	Application is COMPLETE
Status is :	Issued

Application Dates

Received	Completeness Due	Clock Start	Calculated Issue Due
10/01/201011	/15/2010	10/01/2010	01/26/2011

Fee Information

Initial amount:	Date received	Amount Due :	Add. Amt Rcv'd:	Date Rcv'd:
$867.00	10/01/2010			

Fund type:	Deposit Slip #:	Location rec'd:	Location deposited:
2331			

Contact Information

Type	Name	Address	City State ZIP		Telephone
Authorized	Glenn Gray, Plant Manager	1309 east Cary Street, Suite 200	Richmond, VA	23219	(804) 412-0227
Technical/Permit	Glenn Gray, Plant Manager	1309 east Cary Street, Suite 200	Richmond, VA	23219	(804) 412-0227

Acceptance Criteria

Received?	Acceptance Criteria Description
Yes	Application fee
Yes	Appropriate number of apps submitted
Yes	Zoning Addressed
Yes	Source recycling/reduction form
Yes	Authorized signature
Yes	PE Seal

Completeness Criteria

Received?	Complete Item Description

Application Events

Event	Start	Due	Complete	Comments	Staff
Acknowledgment letter due	10/01/2010	10/11/2010	10/12/2010		mjcuilla
Technical additional information request	10/19/2010	11/18/2010	10/26/2010	NO2 modeling	kgodwin
Draft permit to region	11/12/2010	11/19/2010	11/17/2010		kgodwin
Draft permit to applicant	11/12/2010	11/19/2010	11/30/2010		kgodwin
Permit issued	12/07/2010		12/07/2010		kmhash

Comprehensive Application Report for 4600107.10A

12/07/2010

Enviva Pellets Ahoskie, LLC - Ahoskie (4600107)

Hertford County

Outcome Information

Class before: Unknown Class after: Small

2Q .0711: Yes 2D .1100: Yes

NSPS: Yes NESHAPS/MACT: Yes PSD/NSR: No

PSD/NSR Avoid: No Prohibitory Small: No

PSD/NSR Status After: Minor General permit: No

Multi-site permit: No Multi. permits at facility: No

Quarry permit: No HAP Major (10/25 tpy): Minor

2Q .0705 Last MACT/Toxics: NO NESHAPS/GACT: NO

New Source RACT/LAER: NO Existing Source RACT: NO

RACT/LAER Added Fee: NO RACT Avoidance: NO

2Q .0702 (a)(18) - Toxics/Combustion Source(s) After 07/10/10: NO

Permit/Revision: 10121/R00

Revision Issue Date: 12/07/2010

Accumulated process days (includes public notice periods): 40

Public notice/hearing/add info after 80 days:

Manager's discretion: Appealed? No

Current Permit Information:

Issue	Effective	Expiration	Revision #
12/07/2010	12/07/2010	11/30/2015	R00

Regulations Pertaining to this Permit

Reference Rule		Regulation Description
2D	.0515	Particulates Miscellaneous Industrial Processes
2D	.0516	Sulfur Dioxide Emissions Combustion Sources
2D	.0521	Control of Visible Emissions

Audit Information Pertaining to this Application

Column Name	Date Changed	Old Value	New Value	Editor
dt_App_Rec	10/12/2010	10/11/2010	10/01/2010	Mark Cuilla
permit_No	10/11/2010		10121	Mark Cuilla

CENTRAL OFFICE PERMIT TRACKING SLIP

Facility Name: Envina Perkins Ahoskie LLC
County/Regional Office: Hertford / WARO
Facility/Application ID: 8000107.10A
Engineer: Kevin Godwin

Send Regional Office Copy of Application: ☐ Yes ☒ No Sent cover letter

PART I - ACCEPTANCE CHECKLIST

Acknowledgement Letter: ☐ Already Sent ☒ Please Send
Initial Event(s): ☐ TV-Acknowledgement/Complete ☐ TV-Acknowledgement/Incomplete add info
☒ Acknowledgement Letter due ☐ Application not accepted – add info request

Fee Information:

Amount Due: PSD or NSR/NAA $13,488
PSD and NSR/NAA $26,235
TV Greenfield $8,910
TV $867
Ownership Change $62
Renewal/Name Change – NA
Initial Amount Received: $67.12
Additional Amount Due:

Acceptance Check List:

	Yes	No	NA
Appropriate Number of Apps Submitted (minimum of 2)	X	☐	☐
Application Fee Submitted	X	☐	☐
Zoning Addressed	X	☐	☐
Source Recycling/Reduction Form Submitted	X	☐	☐
Authorized Signature	X	☐	☐
PE Seal	X	☐	☐

PART II - IBEAM UPDATES

Application Type:
☐ Additional Permit
☐ Administrative Amendment
☐ Appeal
☐ Greenfield Facility
☐ Last GACT/Toxics
☐ Last MACT/Toxics
☐ Modification
☐ Name Change
☒ New Permit
☐ Ownership Change
☐ Renewal
☐ Renewal w/Modification

Permit Application Schedule:
☐ Appeal
☐ Expedited State
☐ PSD
☐ Director Administrative Amendment
☐ Permit Applicability Request
☒ State

☐ TV – State Only
☐ TV – Expedited
☐ TV – Greenfield
☐ TV – Reopen for Cause
☐ TV – Administrative
☐ TV – Ownership Change
☐ TV – 502(b)(10)
☐ TV – Minor
☐ TV – Renewal
☐ TV – Significant (2Q .0501(c)(2))
☐ TV – Significant
☐ TV – 1st Time

PART III - COMPLETENESS CHECKLIST

☐ Required Application Forms Submitted and Completed
☐ Supporting Materials & Calculations Received
☐ PE Seal (If 15A NCAC 2Q .0112)
☐ Modeling Protocol Acceptance
☐ Confirmation of Pollutants Modeled
☐ E5 Form (Significant Modifications)

PART IV - GENERAL COMMENTS

Jim Potter has been forwarded a copy of modeling
New Permit No 10121

PART V - SUPERVISOR REVIEW CHECKLIST

ESM Updated (by Engineer): KVG 11-30-10 ESM Verified: 12/9/10 Supervisor: Chief

PART VI - CLOSEOUT INFORMATION

Regulations Applicable to This Application (indicate all new regulations):

☒ NESHAPS/MACT
☐ NESHAPS/GACT
☒ NSPS
☒ 2D .1100
☒ 2Q .0711
☐ 2Q .0705 Last MACT/Toxics

☐ PSD/NSR
☐ PSD/NSR Avoidance
☐ Existing Source RACT/LAER
☐ New Source RACT/LAER
☐ RACT/LAER Added Fee
☐ RACT Avoidance

☐ SIP Regulations (list all new):
2D .0515
2D .0516
2D .0521

Permit Class Information

Before	After
☐ Small	☒ Title V
☐ Syn Minor	
☐ Title V	
☐ Proh Small	
☐ General	
☐ Transportation	

HAP Major Status (after) ☐ Major ☒ Minor ☐ Not Determined
PSD or NSR Status (after) ☐ Major ☒ Minor
Miscellaneous ☐ Multiple Permits at Facility ☐ Multi-Site Permit ☐ Recycled Oil Condition

Dates Issue 12-7-10 Effective 12-7-10 Expiration 11-30-2015

IBEAM Closed Out By: KVG Permit Number: 10121 Revision Number: R00

☐ Public Notice Published ☐ Public Notice Affidavit

Document Manager Updated by Engineer: KVG Date: 12-7-10

1309 East Cary Street, Suite 200
Richmond, VA 23219

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www.envivabiomass.com

December 3, 2010

Mr. John C. Evans
NCDENR, Division of Air Quality
1641 Mail Service Center
Raleigh, NC 27604

Re: Addendum to Air Quality Construction and Operating Permit Application Enviva Pellets Ahoskie, LLC

Dear Mr. Evans:

We are aware that during your final review of the permit being prepared for the Enviva Pellets Ahoskie, LP facility that you noted that emissions of arsenic were omitted from quantification in the application due to use of emission factor data sets that did not include this compound. Our consultant has confirmed the reasonableness of the arsenic calculations provided in your December 2, 2010 email correspondence and the minimal air quality impact (approximately 4 percent of the acceptable ambient level).

It is our understanding that the modeled emission rates for arsenic, based on the aforementioned calculation methodology, will be added to the permit table of other modeled compounds in Section 2.2.A.1 of the permit. It is our understanding that because the modeled concentration is so low that no testing, reporting or recordkeeping will be required for arsenic.

My staff has informed me that the North Carolina Division of Air Quality has provided excellent service throughout the entire application process. Thank you once again for the processing our application in such a timely manner.

Sincerely,

Mat Holland
Chief Operating Officer

Godwin, Kevin

From: Freeman, Jerry
Sent: Thursday, December 02, 2010 1:50 PM
To: Evans, John; Godwin, Kevin
Cc: Roller, Jim
Subject: Enviva Modeling Request Arsenic

Per your direction, I modeled the emission rates and parameters in the table below based on modeling files from the October submission from the facility. The maximum arsenic impact was 1E-5 ug/m3 which is about 4% of the AAL (2.3E-4 ug/m3). Let me know if you require these results prepared in a modeling review memo, or if you need changes to any of the modeled parameters.
DAQ-processed meteorology = Norfolk 1988-1992

Source ID	Stack Height (m)	Temperature (K)	Exit Velocity (m/s)	Stack Diameter (m)	ARSENIC (lb/hr)
DRYER	24.384	354.26	34.518	1.823	1.25E-04
FWPSTACK	9.144	727.59	24.239	0.203	3.00E-06
EMERGEN	9.144	727.59	28.279	0.203	3.60E-06

Jerry Freeman, Meteorologist II
NC DENR, Division of Air Quality
Permitting Section, Air Quality Analysis Branch
1641 Mail Service Center, Raleigh, NC 27699
Phone: 919-715-1814
Fax: 919-733-5317
www.ncair.org

Godwin, Kevin

From: jsullivan@trinityconsultants.com
Sent: Tuesday, November 30, 2010 1:59 PM
To: Godwin, Kevin
Cc: Peter McDonald; Glenn.Gray@envivabiomass.com; CAberg@trinityconsultants.com
Subject: Re: Enviva update
Attachments: enviva-r00-p (2010-11-30 comments).doc; enviva-r00-p.doc; enviva-r00-rev.doc

Hello, Kevin. Here are our comments...just a few things. Probably the other things that are not administrative in nature are the comments regarding semi-annual reporting for the construction and operating permit (in advance of the Title V permit) and tweaks to the requirement for toxics reporting language. You may not be able to make changes to the toxics reporting language (seems like this language has become the boilerplate), but the current verbiage is not exactly clear what is being reported and the requested clarification would help the facility in the future to understand specifically what data is to be reported.

Neither of the specific comments discussed above are terribly important, so if you need to stick with the current reporting requirements, please just move forward with issuing the final permit.

Thanks again!

Regards,
Joe

(See attached file: enviva-r00-p (2010-11-30 comments).doc)

Joe Sullivan, PE, CM
Managing Consultant
Trinity Consultants
One Copley Parkway
Suite 310
Morrisville, NC 27560

Phone: (919) 462-9693
Fax: (919) 462-9694
Mobile: (919) 271-8805

From: "Godwin, Kevin" <kevin.godwin@ncdenr.gov>

To: Joe Sullivan <jsullivan@trinityconsultants.com>

Date: 11/30/2010 09:47 AM

Subject: Enviva update

Updated Information for the Proposed Enviva Pellets Ahoskie

Joe Sullivan to: Godwin, Kevin 11/24/2010 01:23 PM
Cc: Glenn.Gray, Peter McDonald, Chris Aberg

Kevin,

Per our discussion last Friday, this email contains a redline version of the draft permit as well as a description of several changes to the proposed Enviva Pellets Ahoskie, LP plant.

Changes are as follows:

1. One single pass dryer with a single 125 mmBtu/hr burner will be utilized.
2. A simple cyclone instead of two multicyclone will be used to control emissions from the dryer exhaust.
3. Four coarse hammermills with four bagfilters will be used instead of two hammermills.
4. Two bagfilters instead of a single filter will be used on ground wood handling operations.
5. Four pellet coolers with four multicyclones instead of two pellet coolers will be utilized.

Redline of Draft Permit (this probably provides the most concise clarification on process changes):

enviva-r00-p (2010-11-22).doc

Revised application forms. Please note that the authorized official has changed and the legal entity is an "LP" not an "LLC."

Enviva Forms Changes (2010-11-23).pdf

Revised calculations for those sources impacted by process changes. In short, only particulate matter emissions were impacted.

Enviva Calcs Changes (2010-11-24).pdf

A hardcopy will be sent to you by mail so that you will have original signatures for the file. Please do not hesitate to contact me if you have any questions or comments. We are all very appreciative of your hard work in completing the permit for this project so quickly.

Regards,
Joe

Joe Sullivan, PE, CM
Managing Consultant
Trinity Consultants
One Copley Parkway
Suite 310
Morrisville, NC 27560

Phone: (919) 462-9693
Fax: (919) 462-9694
Mobile: (919) 271-8805

TABLE 3-1
PSD APPLICABILITY SUMMARY
ENVIVA PELLETS AHOSKIE, LP

Source Description	Unit ID	CO (tpy)	NOx (tpy)	TSP (tpy)	PM-10 (tpy)	PM-2.5 (tpy)	SO2 (tpy)	VOC (tpy)
Dryer System	ES-DRYER	229.77	163.86	24.48	24.48	24.48	13.69	197.95
Emergency Generator	ES-EG	0.50	0.58	0.03	0.03	0.03	0.00	5.59E-04
Fire Water Pump	ES-FWP	0.43	0.49	0.02	0.02	0.02	0.00	4.79E-04
Coarse Hammermills	ES-CHM-1, -2, -3, & -4	0.00	0.00	14.06	14.06	14.06	0.00	0.00
Pellet Press Silo	ES-PPS	0.00	0.00	5.63	5.63	5.63	0.00	0.00
Ground Wood Handling	ES-GWH-1 & -2	0.00	0.00	1.88	1.88	1.88	0.00	0.00
Pellet Coolers	ES-CLR-1, -2, -3, & -4	0.00	0.00	30.39	30.39	30.39	0.00	0.00
Diesel Storage Tanks	TK1 & TK2	0.00	0.00	0.00	0.00	0.00	0.00	3.79E-03
Total Project Emission Increases		**230.71**	**164.92**	**76.49**	**76.49**	**76.49**	**13.69**	**197.95**
PSD Significant Emission Rates		**250**	**250**	**250**	**250**	**250**	**250**	**250**
PSD Review Required?		**No**	**No**	**No**	**No**	**No**	**No**	**No**

Dust Control Systems PM Emissions

Emission Unit	Emission Source ID	Filter, Vent -or- Cyclone ID	Flowrate[1] (dscfm)	Pollutant Loading[2] (gr/dscf)	Annual Operation (hours)	% PM that is		Potential Emissions					
								PM		PM_{10}[3]		$PM_{2.5}$[3]	
						PM_{10}	$PM_{2.5}$	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Coarse Hammermills Bagfilter 1	ES-CHM-1, -2, -3, & -4	CD-CHM-BV1	9,360	0.01	8,760	100%	100%	0.80	3.51	0.80	3.51	0.80	3.51
Coarse Hammermills Bagfilter 2	ES-CHM-1, -2, -3, & -4	CD-CHM-BV2	9,360	0.01	8,760	100%	100%	0.80	3.51	0.80	3.51	0.80	3.51
Coarse Hammermills Bagfilter 3	ES-CHM-1, -2, -3, & -4	CD-CHM-BV3	9,360	0.01	8,760	100%	100%	0.80	3.51	0.80	3.51	0.80	3.51
Coarse Hammermills Bagfilter 4	ES-CHM-1, -2, -3, & -4	CD-CHM-BV4	9,360	0.01	8,760	100%	100%	0.80	3.51	0.80	3.51	0.80	3.51
Ground Wood Handling Dust Collection System	ES-GWH-1 & -2	CD-GWH-BV1	2,500	0.01	8,760	100%	100%	0.21	0.94	0.21	0.94	0.21	0.94
Ground Wood Handling Dust Collection System	ES-GWH-1 & -2	CD-GWH-BV2	2,500	0.01	8,760	100%	100%	0.21	0.94	0.21	0.94	0.21	0.94
Pellet Press Silo Bin Vent Filter	ES-PPS	CD-PPS-BV	15,000	0.01	8,760	100%	100%	1.29	5.63	1.29	5.63	1.29	5.63
Pellet Coolers Cyclone 1[4]	ES-CLR-1, -2, -3, & -4	CD-CLR-C1	9,200	0.022	8,760	100%	100%	1.73	7.60	1.73	7.60	1.73	7.60
Pellet Coolers Cyclone 2[4]	ES-CLR-1, -2, -3, & -4	CD-CLR-C2	9,200	0.022	8,760	100%	100%	1.73	7.60	1.73	7.60	1.73	7.60
Pellet Coolers Cyclone 3[4]	ES-CLR-1, -2, -3, & -4	CD-CLR-C3	9,200	0.022	8,760	100%	100%	1.73	7.60	1.73	7.60	1.73	7.60
Pellet Coolers Cyclone 4[4]	ES-CLR-1, -2, -3, & -4	CD-CLR-C4	9,200	0.022	8,760	100%	100%	1.73	7.60	1.73	7.60	1.73	7.60
							TOTAL	**11.86**	**51.96**	**11.86**	**51.96**	**11.86**	**51.96**

Note:

1) Filter, Vent, and Cyclone inlet flow rate (cfm) provided by design engineering firm (HGA). The exit flowrate was conservatively assumed to be the same as the inlet flowrate.
2) Unless otherwise specified, pollutant (PM) loading conservatively assumed to be 0.01 gr/dscf
3) It was conservatively assumed that PM_{10} and $PM_{2.5}$ equal PM emissions .
4) Pollutant loadings for pellet coolers are based upon expected emissions from other Enviva pellet plants in Europe. Coolers have expected emissions of 50 mg/N. cu. m. (0.022 gr/cu. ft.).

FORM A1

FACILITY (General Information)

REVISED 11/01/02 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — **A1**

NOTE- APPLICATION WILL NOT BE PROCESSED WITHOUT THE FOLLOWING:

☑ Local Zoning Consistency Determination (if required) ☑ Facility Reduction & Recycling Survey Form (Form A4) ☑ Application Fee
☑ Responsible Official/Authorized Contact Signature ☑ Appropriate Number of Copies of Application ☑ P.E. Seal (if required)

GENERAL INFORMATION

Legal Corporate/Owner Name:	Enviva Pellets, LLC
Site Name:	Enviva Pellets Ahoskie, LP
Site Address (911 Address) Line 1:	142 N.C. Rt 561 East
Site Address Line 2:	
City: Ahoskie	State: North Carolina
Zip Code: 27910	County: Hertford

CONTACT INFORMATION

Permit/Technical Contact:	*Facility/Inspection Contact:*
Name/Title: Glenn Gray / Plant Manager	Name/Title: Glenn Gray / Plant Manager
Mailing Address Line 1: 1309 East Cary Street, Suite 200	Mailing Address Line 1: 1309 East Cary Street, Suite 200
Mailing Address Line 2:	Mailing Address Line 2:
City: Richmond State: VA Zip Code: 23219	City: Richmond State: VA Zip Code: 23219
Phone No. (area code) (804) 412-0227 Fax No. (area code) (804) 412-0229	Phone No. (area code) (804) 412-0227 Fax No. (area code) (804) 412-0229
Email Address: Glenn.Gray@envivabiomass.com	Email Address: Glenn.Gray@envivabiomass.com
Responsible Official/Authorized Contact:	***Invoice Contact:***
Name/Title: Glenn Gray / Plant Manager	Name/Title: Glenn Gray / Plant Manager
Mailing Address Line 1: 1309 East Cary Street, Suite 200	Mailing Address Line 1: 1309 East Cary Street, Suite 200
Mailing Address Line 2:	Mailing Address Line 2:
City: Richmond State: VA Zip Code: 23219	City: Richmond State: VA Zip Code: 23219
Phone No. (area code) (804) 412-0227 Fax No. (area code) (804) 412-0229	Phone No. (area code) (804) 412-0227 Fax No. (area code) (804) 412-0229
Email Address: Glenn.Gray@envivabiomass.com	Email Address: Glenn.Gray@envivabiomass.com

APPLICATION IS BEING MADE FOR

☑ New Non-permitted Facility/Greenfield ☐ Modification of Facility (permitted) ☐ Renewal with Modification
☐ Renewal (TV Only)

FACILITY CLASSIFICATION AFTER APPLICATION (Check Only One)

☐ General ☐ Small ☐ Prohibitory Small ☐ Synthetic Minor ☑ Title V

FACILITY (Plant Site) INFORMATION

Describe nature of (plant site) operation(s): Facility ID No. : N/A (To be assigned)
Wood pellet manufacturing facility

Primary SIC/NAICS Code:	2499 (Wood Products, Not Elsewhere Classified)	Current/Previous Air Permit No. N/A	Expiration Date N/A
Facility Coordinates:	Latitude: 323,525.1 UTM E	Longitude: 4,015,554.4 UTM N	
Does this application contain confidential data?	☐ YES ☑ NO		

PERSON OR FIRM THAT PREPARED APPLICATION

Person Name:	Joe Sullivan	Firm Name:	Trinity Consultants, Inc.
Mailing Address Line 1:	One Copley Parkway	Mailing Address Line 2:	Suite 310
City: Morrisville	State: North Carolina	Zip Code: 27560	County: Wake
Phone No. (919)-462-9693	Fax No. (919)-462-9694	Email Address:	Jsullivan@trinityconsultants.com

SIGNATURE OF RESPONSIBLE OFFICIAL/AUTHORIZED CONTACT

Name (typed): Matt Holland — Title: Chief Operating Officer
X Signature(Blue Ink): — Date: 11/19/10

Attach Additional Sheets As Necessary

FORMs A2, A3

EMISSION SOURCE LISTING FOR THIS APPLICATION - A2

112r APPLICABILITY INFORMATION - A3

REVISED 04/10/07 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate **A2**

EMISSION SOURCE LISTING: New, Modified, Previously Unpermitted, Replaced, Deleted

EMISSION SOURCE ID NO.	EMISSION SOURCE DESCRIPTION	CONTROL DEVICE ID NO.	CONTROL DEVICE DESCRIPTION
Equipment To Be ADDED By This Application (New, Previously Unpermitted, or Replacement)			
ES-DRYER	Green Wood Direct-Fired Dryer System	CD-DC	Single Cyclone
		CD-WESP	Wet Electrostatic Precipitator
ES-CHM-1, -2, -3, & -4	Four Coarse Hammermills	CD-CHM-BV1	Bin vent filter (1,560 s.f. of surface area)
		CD-CHM-BV2	Bin vent filter (1,560 s.f. of surface area)
		CD-CHM-BV3	Bin vent filter (1,560 s.f. of surface area)
		CD-CHM-BV4	Bin vent filter (1,560 s.f. of surface area)
ES-GWH-1 & -2	Ground Wood Handling System	CD-GWH-BV1	Bin vent filter (417 s.f. of surface area)
		CD-GWH-BV2	Bin vent filter (417 s.f. of surface area)
ES-PPS	Pellet Press Silo	CD-PPS-BV	Bin vent filter (2,500 s.f. of surface area)
ES-CLR-1, -2, -3, & -4	Four Pellet Coolers	CD-CLR-C1	High Efficiency Multicyclone
		CD-CLR-C2	High Efficiency Multicyclone
		CD-CLR-C3	High Efficiency Multicyclone
		CD-CLR-C4	High Efficiency Multicyclone
ES-EG	Emergency Generator (250kw, 350bhp)	N/A	N/A
ES-FWP	Fire Water Pump (300bhp)	N/A	N/A
Existing Permitted Equipment To Be MODIFIED By This Application			
Equipment To Be DELETED By This Application			

112(r) APPLICABILITY INFORMATION **A 3**

Is your facility subject to 40 CFR Part 68 "Prevention of Accidental Releases" - Section 112(r) of the Federal Clean Air Act? Yes / (No)

If No, please specify in detail how your facility avoided applicability:

Enviva Pellets Ahoskie, LLC will not handle any of the substances subject to 112(r)

If your facility is Subject to 112(r), please complete the following:

A. Have you already submitted a Risk Management Plan (RMP) to EPA Pursuant to 40 CFR Part 68.10 or Part 68.150?

Yes ☐ No ☐ Specify required RMP submittal date: _____ If submitted, RMP submittal date: _____

B. Are you using administrative controls to subject your facility to a lesser 112(r) program standard?

Yes ☐ No ☐ If yes, please specify: _____

Attach Additional Sheets As Necessary

FORM D

TECHNICAL ANALYSIS TO SUPPORT PERMIT APPLICATION

REVISED: 12/01/01 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate **D5**

PROVIDE DETAILED TECHNICAL CALCULATIONS TO SUPPORT ALL EMISSION, CONTROL, AND REGULATORY DEMONSTRATIONS MADE IN THIS APPLICATION. INCLUDE A COMPREHENSIVE PROCESS FLOW DIAGRAM AS NECESSARY TO SUPPORT AND CLARIFY CALCULATIONS AND ASSUMPTIONS. ADDRESS THE FOLLOWING SPECIFIC ISSUES ON SEPARATE PAGES:

A **SPECIFIC EMISSIONS SOURCE (EMISSION INFORMATION) (FORM B) -** SHOW CALCULATIONS USED, INCLUDING EMISSION FACTORS, MATERIAL BALANCES, AND/OR OTHER METHODS FROM WHICH THE POLLUTANT EMISSION RATES IN THIS APPLICATION WERE DERIVED. INCLUDE CALCULATION OF POTENTIAL BEFORE AND, WHERE APPLICABLE, AFTER CONTROLS. CLEARLY STATE ANY ASSUMPTIONS MADE AND PROVIDE ANY REFERENCES AS NEEDED TO SUPPORT MATERIAL BALANCE CALCULATIONS.

B **SPECIFIC EMISSION SOURCE (REGULATORY INFORMATION)(FORM E2 - TITLE V ONLY) -** PROVIDE AN ANALYSIS OF ANY REGULATIONS APPLICABLE TO INDIVIDUAL SOURCES AND THE FACILITY AS A WHOLE. INCLUDE A DISCUSSION OUTING METHODS (e.g. FOR TESTING AND/OR MONITORING REQUIREMENTS) FOR COMPLYING WITH APPLICABLE REGULATIONS, PARTICULARLY THOSE REGULATIONS LIMITING EMISSIONS BASED ON PROCESS RATES OR OTHER OPERATIONAL PARAMETERS. PROVIDE JUSTIFICATION FOR AVOIDANCE OF ANY FEDERAL REGULATIONS (PREVENTION OF SIGNIFICANT DETERIORATION (PSD), NEW SOURCE PERFORMANCE STANDARDS (NSPS), NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPS), TITLE V), INCLUDING EXEMPTIONS FROM THE FEDERAL REGULATIONS WHICH WOULD OTHERWISE BE APPLICABLE TO THIS FACILITY. SUBMIT ANY REQUIRED TO DOCUMENT COMPLIANCE WITH ANY REGULATIONS. INCLUDE EMISSION RATES CALCULATED IN ITEM "A" ABOVE, DATES OF MANUFACTURE, CONTROL EQUIPMENT, ETC. TO SUPPORT THESE CALCULATIONS.

C **CONTROL DEVICE ANALYSIS (FORM C) -** PROVIDE A TECHNICAL EVALUATION WITH SUPPORTING REFERENCES FOR ANY CONTROL EFFICIENCIES LISTED ON SECTION C FORMS, OR USED TO REDUCE EMISSION RATES IN CALCULATIONS UNDER ITEM "A" ABOVE. INCLUDE PERTINENT OPERATING PARAMETERS (e.g. OPERATING CONDITIONS, MANUFACTURING RECOMMENDATIONS, AND PARAMETERS AS APPLIED FOR IN THIS APPLICATION) CRITICAL TO ENSURING PROPER PERFORMANCE OF THE CONTROL DEVICES). INCLUDE AND LIMITATIONS OR MALFUNCTION POTENTIAL FOR THE PARTICULAR CONTROL DEVICES AS EMPLOYED AT THIS FACILITY. DETAIL PROCEDURES FOR ASSURING PROPER OPERATION OF THE CONTROL DEVICE INCLUDING MONITORING SYSTEMS AND MAINTENANCE TO BE PERFORMED.

D **PROCESS AND OPERATIONAL COMPLIANCE ANALYSIS - (FORM E3 - TITLE V ONLY) -** SHOWING HOW COMPLIANCE WILL BE ACHIEVED WHEN USING PROCESS, OPERATIONAL, OR OTHER DATA TO DEMONSTRATE COMPLIANCE. REFER TO COMPLIANCE REQUIREMENTS IN THE REGULATORY ANALYSIS IN ITEM "B" WHERE APPROPRIATE. LIST ANY CONDITIONS OR PARAMETERS THAT CAN BE MONITORED AND REPORTED TO DEMONSTRATE COMPLIANCE WITH THE APPLICABLE REGULATIONS.

E **PROFESSIONAL ENGINEERING SEAL -** PURSUANT TO 15A NCAC 2Q .0112 "APPLICATION REQUIRING A PROFESSIONAL ENGINEERING SEAL," A PROFESSIONAL ENGINEER REGISTERED IN NORTH CAROLINA SHALL BE REQUIRED TO SEAL TECHNICAL PORTIONS OF THIS APPLICATION FOR NEW SOURCES AND MODIFICATIONS OF EXISTING SOURCES. (SEE INSTRUCTIONS FOR FURTHER APPLICABILITY).

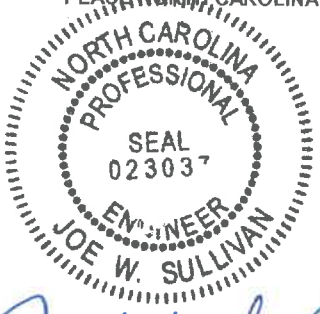
I, Joe W. Sullivan, P.E., attest that this application for Enviva Pellets Ahoskie, LP has been reviewed by me and is accurate, complete and consistent with the information supplied in the engineering plans, calculations, and all other supporting documentation to the best of my knowledge. I further attest that to the best of my knowledge the proposed design has been prepared in accordance with the applicable regulations. Although certain portions of this submittal package may have been developed by other professionals, inclusion of these materials under my seal signifies that I have reviewed this material and have judged it to be consistent with the proposed design. Note: In accordance with NC General Statutes 143-215.6A and 143-215.6B, any person who knowingly makes any false statement, representation, or certification in any application shall be guilty of a Class 2 misdemeanor which may include a fine not to exceed $10,000 as well as civil penalties up to $25,000 per violation.

(PLEASE USE BLUE INK TO COMPLETE THE FOLLOWING)

NAME: Joe W. Sullivan, P.E.
DATE:
COMPANY: Trinity Consultants of NC, PC
ADDRESS: One Copley Parkway, Suite 310 Morrisville, NC 27560
TELEPHONE: 919-462-9693
SIGNATURE:
PAGES CERTIFIED: All changes per 11-24-10 email correspondence

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

PLACE NORTH CAROLINA SEAL HERE



Joe W. Sullivan

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — **B**

EMISSION SOURCE DESCRIPTION: **Green Wood Direct-Fired Dryer System**	EMISSION SOURCE ID NO: **ES-DRYER**
	CONTROL DEVICE ID NO(S): **CD-DC & CD-WESP**
OPERATING SCENARIO 1 OF 1	EMISSION POINT (STACK) ID NO(S): **EP-DRYER**

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):

Green wood is conveyed to either a one rotary dryer system. Direct contact heat is provided to the system via a 125 mmBtu/hr burner system (one burner). Air emissions are controlled by a cyclone for bulk particulate removal and additional particulate is removed utilizing a wet electrostatic precipitator (WESP) operating after the cyclone.

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ■ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Storage silos/bins (Form B6)
- ☐ Manufact. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☐ Other (Form B9)

START CONSTRUCTION DATE:	TBD	OPERATION DATE:	TBD	DATE MANUFACTURED:	TBD
MANUFACTURER / MODEL NO.:	TBD'	EXPECTED OP. SCHEDULE:	24 HR/DAY	7 DAY/WK	52 WK/YR
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):		NESHAP (SUBPART?):		MACT (SUBPART?):	
PERCENTAGE ANNUAL THROUGHPUT (%):	DEC-FEB 25%	MAR-MAY 25%	JUN-AUG 25%	SEP-NOV 25%.	
EXPECTED ANNUAL HOURS OF OPERATION	8,760	VISIBLE STACK EMISSIONS UNDER NORMAL OPERATION:	<20 % OPACITY		

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS EFORE CONTROLS / LIMIT lb/hr	POTENTIAL EMSSIONS EFORE CONTROLS / LIMIT tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	See Emission Calculations in Appendix B						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT AND CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS EFORE CONTROLS / LIMIT lb/hr	POTENTIAL EMSSIONS EFORE CONTROLS / LIMIT tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
	See Emission Calculations in Appendix B						

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS

TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE	lb/hr	lb/day	lb/yr
	See Emission Calculations in Appendix B			

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

OMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURC

Attach Additional Sheets As Necessary

'Final equipment selection has not yet occurred.

FORM B1

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

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — **B1**

EMISSION SOURCE DESCRIPTION: **Green Wood Direct-Fired Dryer System**	EMISSION SOURCE ID NO: **ES-DRYER**
	CONTROL DEVICE ID NO(S): **CD-DC & CD-WESP**
OPERATING SCENARIO: 1 OF 1	EMISSION POINT (STACK) ID NO(S): **EP-DRYER**

DESCRIBE USE: ☝ **PROCESS HEAT** ☐ SPACE HEAT ☐ ELECTRICAL GENERATION ☐ CONTINUOUS US ☐ STAND BY/EMERGENCY ☐ OTHER (DESCRIBE): _____

HEATING MECHANISM: ☐ INDIRECT ☝ **DIRECT**

MAX. FIRING RATE (MMBTU/HOUR): **125**

WOOD-FIRED BURNER

WOOD TYPE: ☐ BARK ☐ WOOD/BARK ☝ **WET WOOD** ☐ DRY WOOD ☐ OTHER (DESCRIBE): _____

PERCENT MOISTURE OF FUEL: **~50%**

☐ UNCONTROLLED ☐ CONTROLLED WITH FLYASH REINJECTION ☝ **CONTROLLED W/O REINJECTION**

FUEL FEED METHOD: **Air Swept Fuel Feeders** HEAT TRANSFER MEDIA: ☐ STEAM ☝ **AIR** ☐ OTHER

METHOD OF TUBE CLEANING **N/A-Process uses highly purified water**

COAL-FIRED BURNER

TYPE OF BOILER — IF OTHER DESCRIBE:

PULVERIZED	OVERFEED STOKER	UNDERFEED STOKER	SPREADER STOKER	FLUIDIZED BED
☐ WET BED	☐ UNCONTROLLED	☐ UNCONTROLLED	☐ UNCONTROLLED	☐ CIRCULATING
☐ DRY BED	☐ CONTROLLED	☐ CONTROLLED	☐ FLYASH REINJECTION	☐ RECIRCULATING
			☐ NO FLYASH REINJECTION	

METHOD OF LOADING: ☐ CYCLONE ☐ HANDFIRED ☐ TRAVELING GRATE ☐ OTHER (DESCRIBE): _____

METHOD OF TUBE CLEANING: — CLEANING SCHEDULE:

OIL/GAS-FIRED BURNER

TYPE OF BOILER: ☐ UTILITY ☐ INDUSTRIAL ☐ COMMERCIAL ☐ RESIDENTIAL

TYPE OF FIRING: ☐ NORMAL ☐ TANGENTIAL ☐ LOW NOX BURNERS ☐ NO LOW NOX BURNER

METHOD OF TUBE CLEANING: — CLEANING SCHEDULE:

OTHER FUEL-FIRED BURNER

TYPE OF FUEL: _____ PERCENT MOISTURE: _____

TYPE OF BOILER: ☐ UTILITY ☐ INDUSTRIAL ☐ COMMERCIAL ☐ RESIDENTIAL

TYPE OF FIRING: _____ TYPE OF CONTROL (IF ANY): _____ FUEL FEED METHOD: _____

METHOD OF TUBE CLEANING: — CLEANING SCHEDULE:

FUEL USAGE (INCLUDE STARTUP/BACKUP FUELS)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)
Wet Wood	**LB**	**Nominal 29,762**	

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	SPECIFIC BTU CONTENT	SULFUR CONTENT (% BY WEIGHT)	ASH CONTENT (% BY WEIGHT)
Wet Wood	**Nominal 4200 BTU/lb**	**0.011**	

SAMPLING PORTS, COMPLIANT WITH EPA METHOD 1 WILL BE INSTALLED ON THE STACKS: ☝ **YES** ☐ NO

COMMENTS:

FORM C4

CONTROL DEVICE (CYCLONE, MULTICYCLONE, OR OTHER MECHANICAL)

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — **C4**

CONTROL DEVICE ID NO: CD-DC	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): ES-DRYER
EMISSION POINT (STACK) ID NO(S): EP-DRYER	POSITION IN SERIES OF CONTROLS NO. 1 OF 2 UNITS
MANUFACTURER: TBD[1]	MODEL NO:
DATE MANUFACTURE TBD	PROPOSED OPERATION DATE: TBD
OPERATING SCENARIO:	PROPOSED START CONSTRUCTION DATE: TBD
1 OF 1	P.E. SEAL REQUIRED (PER 2Q .0112)? ● YES ○ NO

DESCRIBE CONTROL SYSTEM :
One cyclone equipped to the rotary dryer system to capture bulk PM emissions; emissions are routed to the WESP.

POLLUTANT(S) COLLECTED:	PM	PM_{10}	$PM_{2.5}$	
BEFORE CONTROL EMISSION RATE (LB/HR):				
CAPTURE EFFICIENCY:	%	%	%	%
CONTROL DEVICE EFFICIENCY:	%	%	%	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL EMISSION RATE (LB/HR):	Emissions routed to WESP			

PRESSURE DROP (IN. H_20): Nominal 2.5" to 4.0" — WARNING ALARM? ○ YES ● NO

INLET TEMPERATURE (°F): MIN MAX Nominal 400	OUTLET TEMPERATURE (°F): MIN MAX Nominal 400
INLET AIR FLOW RATE (ACFM): 290,000	BULK PARTICLE DENSITY (LB/FT^3): 3E-05
POLLUTANT LOADING RATE (GR/FT^3 0.24	

SETTLING CHAMBER	CYCLONE			MULTICYCLONE
LENGTH (INCHES):	INLET VELOCITY (FT/SEC): 15.9		● CIRCULAR ○ RECTANGLE	NO. TUBES:
WIDTH (INCHES):	*DIMENSIONS (INCHES) See instructions*		*IF WET SPRAY UTILIZED*	DIAMETER OF TUBES:
HEIGHT (INCHES):	H: 117.87"	Dd: 64.5"	LIQUID USED:	HOPPER ASPIRATION SYSTEM?
VELOCITY (FT/SEC.):	W: 46.63"	Lb: 290.72"	FLOW RATE (GPM): N/A	○ YES ○ NO
NO. TRAYS:	De: 80.65"	Lc: 419.28"	MAKE UP RATE (GPM) N/A	LOUVERS?
NO. BAFFLES:	D: 204.72"	S: TBD		○ YES ○ NO
	TYPE OF CYCLONE ● CONVENTIONAL		○ HIGH EFFICIENCY ○ OTHER	

DESCRIBE MAINTENANCE PROCEDURES:
Periodic inspection of mechanical integrity during plant outages as specified by manufacturer or common industry practices

DESCRIBE INCOMING AIR STREAM:
1) The flue gas from the dryer will pass through the Cyclone before entering the WESP
2) Incoming flue gas assumed to be coming in via a circular vent (i.e. H = radius)

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	Unknown	
1-10		
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC:
None

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

Attach Additional Sheets As Necessary

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

FORM C2

CONTROL DEVICE (Electrostatic Precipitator)

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — **C2**

CONTROL DEVICE ID NO: **CD-WESP**	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(**ES-DRYER**
EMISSION POINT (STACK) ID NO(S **EP-DRYER**	POSITION IN SERIES OF CONTROLS: **NO. 2 OF 2 UNITS**
MANUFACTURER: **TBD[1]**	MODEL NO. **TBD[1]**
MANUFACTURE DATE: **TBD**	PROPOSED OPERATION DATE: **TBD**
OPERATING SCENARIO:	PROPOSED START CONSTRUCTION DATE: **TBD**
1 OF 1	P.E. SEAL REQUIRED (PER 2Q .0112)? ◉ YES ○ NO
EQUIPMENT SPECIFICATIONS	GAS DISTRIBUTION GRIDS: ◉ YES ○ NO
TYPE: ◉ WET ○ DRY	◉ SINGLE-STAGE ○ TWO-STAGE
TOTAL COLLECTION PLATE AREA (FT^2): **29,904**	NO. FIELDS **2** NO. COLLECTOR PLATE PER FIELD: **232 tubes**
COLLECTOR PLATES SIZE (FT): LENGTH: WIDTH:	SPACING BETWEEN COLLECTOR PLATES (INCHES) **12" hextube**
TOTAL DISCHARGE ELECTRODE LENGTH(FT): **18'**	GAS VISCOSITY (POISE): **2.054 x 10^-4 POISE.**
NUMBER OF DISCHARGE ELECTRODES: **464**	NUMBER OF COLLECTING ELECTRODE RAPPERS: **none**
MAXIMUM INLET AIR FLOW RATE (ACFM): **190,487**	PARTICLE MIGRATION VELOCITY (FT/SEC): **0.234**
MINIMUM GAS TREATMENT TIME (SEC): **2.3**	BULK PARTICLE DENSITY (LB/FT^3): **45/cu ft**
FIELD STRENGTH (VOLTS) CHARGING: **83kV** COLLECTING: **N/**	CORONA POWER (WATTS/1000 CFM): **4000**
ELECTRICAL USAGE (kw/HOUR): **116**	
CLEANING PROCEDURES: ○ RAPPING ○ PLATE VIBRATING ◉ WASHING ○ OTHER	
OPERATING PARAMETERS PRESSURE DROP (IN. H20): MIN **2"** MAX **2"**	WARNING ALARM? ○ YES ◉ NO
RESISTIVITY OF POLLUTANT (OHM-CM): **N/A**	GAS CONDITIONING: ◉ YES ○ NO TYPE OF AGENT (IF YES): Water
INLET GAS TEMPERATURE (°F): MIN **178** MAX **178**	OUTLET GAS TEMPERATURE (°F): MIN **178** MAX **178**
VOLUME OF GAS HANDLED (ACFM): **192,123**	INLET MOISTURE PERCENT: MIN **48.8%** MAX **48.8%**

POWER REQUIREMENTS — IS AN ENERGY MANAGEMENT SYSTEM USED? ◉ YES ○ NO

FIELD NO.	*NO. OF SETS*	*CHARGING*	*EACH TRANSFORMER (kVA)*	*EACH RECTIFIER Kv Ave/Peak Ma Dc*
1	1		118	83 / 1265
2	1		118	83 / 1265

POLLUTANT(S) COLLECTED:	PM	PM_{10}	$PM_{2.5}$	
BEFORE CONTROL EMISSION RATE (LB/HR):	49.02			
CAPTURE EFFICIENCY:	%	%	%	%
CONTROL DEVICE EFFICIENCY:	88.9 %	%	%	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL EMISSION RATE (LB/HR):	See calculations in Appendix B			

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	Unknown	
1-10		
10-25		
25-50		
50-100		
>100		
TOTAL = 100		

DESCRIBE STARTUP PROCEDURES:
Per manufacturer specifications or common industry practices

DESCRIBE MAINTENANCE PROCEDURES:
Per manufacturer specifications or common industry practices

DESCRIBE ANY AUXILIARY MATERIALS INTRODUCED INTO THE CONTROL SYSTEM:

DESCRIBE ANY MONITORING DEVICES, GAUGES, OR TEST PORTS AS ATTACHMENTS:
PLC

ATTACH A DIAGRAM OF THE TOP VIEW OF THE ESP WITH DIMENSIONS (include at a minimum the plate spacing and wire spacing and indicate the electrode type), AND THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

Attach Additional Sheets As Necessary

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

FORM B

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 12/01/01 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate **B**

EMISSION SOURCE DESCRIPTION: **Four Coarse Hammermills**	EMISSION SOURCE ID NO: ES-CHM-1, -2, -3, & -4
	CONTROL DEVICE ID NO(S): CD-CHM-BV1, CD-CHM-BV2, CD-CHM-BV3, & CD-CHM-BV4
OPERATING SCENARIO 1 OF 1	EMISSION POINT (STACK) ID NO(S): CD-CHM-BV1, CD-CHM-BV2, CD-CHM-BV3, & CD-CHM-BV4

DESCRIBE IN DETAIL THE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
Dried materials are reduced to the appropriate size needed for pelletization using four coarse hammermills

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

☐ Coal,wood,oil, gas, other burner (Form B1) ☐ Woodworking (Form B4) ☐ Manufact. of chemicals/coatings/inks (Form B7)
☐ Int.combustion engine/generator (Form B2) ☐ Coating/finishing/printing (Form B5) ☐ Incineration (Form B8)
☐ Liquid storage tanks (Form B3) ☐ Storage silos/bins (Form B6) ■ Other (Form B9)

START CONSTRUCTION DATE: TBD	OPERATION DATE: TBD	DATE MANUFACTURED: TBD
MANUFACTURER / MODEL NO.: TBD[1]	EXPECTED OP. SCHEDULE: 24 HR/DAY 7 DAY/WK 52 WK/YR	
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):	NESHAP (SUBPART?):	MACT (SUBPART?):
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25%	MAR-MAY 25%	JUN-AUG 25% SEP-NOV 25%.
EXPECTED ANNUAL HOURS OF OPERATIC 8,760	VISIBLE STACK EMISSIONS UNDER NORMAL OPERATION: < 20 % OPACITY	

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	See Emission Calculations in Appendix B						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT AND CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
N/A							

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS

TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE	lb/hr	lb/day	lb/yr
N/A				

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

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

Attach Additional Sheets As Necessary

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

FORM B9

EMISSION SOURCE (OTHER)

REVISED: 12/01/01 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate **B9**

EMISSION SOURCE DESCRIPTION: **Four Coarse Hammermills**	EMISSION SOURCE ID NO: **ES-CHM-1, -2, -3, & -4**
	CONTROL DEVICE ID NO(S): **CD-CHM-BV1, CD-CHM-BV2, CD-CHM-BV3, & CD-CHM-BV4**
OPERATING SCENARIO: 1 OF 1	EMISSION POINT (STACK) ID NO(S): **CD-CHM-BV1, CD-CHM-BV2, CD-CHM-BV3, & CD-CHM-BV4**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

Dried materials are reduced to the appropriate size needed for pelletization using four coarse hammermills

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION(UNIT/HR)
TYPE	UNITS		
Dried Wood	**Tons**	**47.78**	

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN CAPACITY (UNIT/BATCH)	REQUESTED CAPACITY LIMITATION (UNIT/BATCH)
TYPE	UNITS		

MAXIMUM DESIGN (BATCHES / HOUR):	
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/YR):
FUEL USED: **N/A**	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR): **N/A**
MAX. CAPACITY HOURLY FUEL USE: **N/A**	REQUESTED CAPACITY ANNUAL FUEL USE: **N/A**

COMMENTS:

Attach Additional Sheets as Necessary

FORM C1

CONTROL DEVICE (FABRIC FILTER)

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — C1

CONTROL DEVICE ID NO: CD-CHM-BV1, CD-CHM-BV2, CD-CHM-BV3, & CD-CHM-BV4	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): ES-CHM-1, -2, -3, & -4
EMISSION POINT (STACK) ID NO(S): CD-CHM-BV1, CD-CHM-BV2, CD-CHM-BV3, & CD-CHM-BV4	POSITION IN SERIES OF CONTROLS NO. 1 OF 1 UNITS
MANUFACTURER: TBD[1]	MODEL NO: TBD
DATE MANUFACTURED: TBD	PROPOSED OPERATION DATE: TBD
OPERATING SCENARIO:	PROPOSED START CONSTRUCTION DATE: TBD
1 OF 1	P.E. SEAL REQUIRED (PER 2Q .0112)? (•) YES ( ) NO

DESCRIBE CONTROL SYSTEM:

Four bin vent filters equipped to the coarse hammermills. Each coarse hammermill has one bin vent filter.

POLLUTANT(S) COLLECTED:	PM	PM_{10}	$PM_{2.5}$	
BEFORE CONTROL EMISSION RATE (LB/HR):				
CAPTURE EFFICIENCY:	%	%	%	%
CONTROL DEVICE EFFICIENCY:	%	%	%	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL EMISSION RATE (LB/HR):	See calculations in Appendix B			

PRESSURE DROP (IN. H_2O): MIN:	MAX: 8"	GAUGE? (•) YES ( ) NO	WARNING ALARM? ( ) YES (•) NO
BULK PARTICLE DENSITY (LB/FT^3):	53	INLET TEMPERATURE (°F): Ambient	
POLLUTANT LOADING RATE:	0.01 ( ) LB/HR (•) GR/FT^3	OUTLET TEMPERATURE (°F): Ambient	
INLET AIR FLOW RATE (ACFM):	9,360	FILTER MAX OPERATING TEMP. (°F): N/A	
NO. OF COMPARTMENTS: TBD[1]	NO. OF BAGS PER COMPARTMENT: TBD[1]	LENGTH OF BAG (IN.): TBD[1]	
DIAMETER OF BAG (IN.):	DRAFT: (•) INDUCED/NEG ( ) FORCED/POS.	FILTER SURFACE AREA (FT^2): 1,560 each	
AIR TO CLOTH RATIO: 6	FILTER MATERIAL: Polyester or equivalent	( ) WOVEN ( ) FELTED	

DESCRIBE CLEANING PROCEDURES:

( ) AIR PULSE ( ) SONIC
( ) REVERSE FLOW ( ) SIMPLE BAG COLLAPSE
( ) MECHANICAL/SHAKER ( ) RING BAG COLLAPSE
(•) OTHER Cleaning procedure dependent on final design

DESCRIBE INCOMING AIR STREAM:

The air stream will contain wood dust particles

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	Unknown	
1-10		
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

METHOD FOR DETERMINING WHEN TO CLEAN:
(•) AUTOMATIC ( ) TIMED ( ) MANUAL

METHOD FOR DETERMINING WHEN TO REPLACE THE BAGS:
( ) ALARM (•) INTERNAL INSPECTION ( ) VISIBLE EMISSION ( ) OTHER

SPECIAL CONDITIONS: None
( ) MOISTURE BLINDING ( ) CHEMICAL RESISTIVITY ( ) OTHER
EXPLAIN:

DESCRIBE MAINTENANCE PROCEDURES: Per manufacturer recommendations or common industry practices

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

Attach Additional Sheets As Necessary

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

FORM B

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 12/01/01 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate **B**

EMISSION SOURCE DESCRIPTION: **Ground Wood Handling System**	EMISSION SOURCE ID NO: **ES-GWH-1 & -2**
OPERATING SCENARIO 1 OF 1	CONTROL DEVICE ID NO(: **CD-GWH-BV1 & CD-GWH-BV2**
	EMISSION POINT (STACK) ID NO(S): **EP-GWH-1 & EP-GWH-2**

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):

One set of conveyors after the hammermills transports material to the pellet press silo. A second set of conveyors transports the material from the pellet press silo to the pellet presses. Particulate emissions are routed to two bin vent filters. Drop points routed to common control: coarse hammermills to "accepts conveyor", "accepts conveyor" to pellet press silo infeed conveyor, pellet press silo to pellet press feed conveyor, silo bypass to pellet press conveyor, & pellet press distribution conveyors

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

☐ Coal,wood,oil, gas, other burner (Form B1) ☐ Woodworking (Form B4) ☐ Manufact. of chemicals/coatings/inks (Form B7)
☐ Int.combustion engine/generator (Form B2) ☐ Coating/finishing/printing (Form B5) ☐ Incineration (Form B8)
☐ Liquid storage tanks (Form B3) ☐ Storage silos/bins (Form B6) ■ Other (Form B9)

START CONSTRUCTION DA' **TBD**	OPERATION DATE: TBD	DATE MANUFACTURED: TBD
MANUFACTURER / MODEL NO.: **TBD'**		EXPECTED OP. SCHEDULE: 24 HR/DAY 7 DAY/WK 52 WK/YR
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):_____	NESHAP (SUBPART?):_____	MACT (SUBPART?):_____
PERCENTAGE ANNUAL THROUGHPUT (%): **DEC-FEB 25%**	**MAR-MAY 25%**	**JUN-AUG 25%** **SEP-NOV 25%.**
EXPECTED ANNUAL HOURS OF OPERATI(**8,760**	VISIBLE STACK EMISSIONS UNDER NORMAL OPERATION: < 20 % OPACITY	

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	**See Emission Calculations in Appendix B**						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT AND CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
N/A							

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS

TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE	lb/hr	lb/day	lb/yr
N/A				

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

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

Attach Additional Sheets As Necessary

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

FORM B9

EMISSION SOURCE (OTHER)

REVISED: 12/01/01 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate **B9**

EMISSION SOURCE DESCRIPTION: **Ground Wood Handling System**	EMISSION SOURCE ID NO: **ES-GWH-1 & -2**
	CONTROL DEVICE ID NO(S): **CD-GWH-BV1 & CD-GWH-BV2**
OPERATING SCENARIO: 1 OF 1	EMISSION POINT (STACK) ID NO(S): **EP-GWH-1 & EP-GWH-2**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

One set of conveyors after the hammermills transports material to the pellet press silo. A second set of conveyors transports the material from the pellet press silo to the pellet presses. Particulate emissions are routed to two bin vent filters. Drop points routed to common control: coarse hammermills to "accepts conveyor", "accepts conveyor" to pellet press silo infeed conveyor, pellet press silo to pellet press feed conveyor, silo bypass to pellet press conveyor, & pellet press distribution conveyors

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/HR)	LIMITATION(UNIT/HR)
Dried Ground Wood	**Tons**	**47.78**	

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UNIT/BATCH)

MAXIMUM DESIGN (BATCHES / HOUR):	
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/YR):
FUEL USED: **N/A**	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR): **N/A**
MAX. CAPACITY HOURLY FUEL USE: **N/A**	REQUESTED CAPACITY ANNUAL FUEL USE: **N/A**

COMMENTS:

Attach Additional Sheets as Necessary

FORM C1

CONTROL DEVICE (FABRIC FILTER)

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — **C1**

CONTROL DEVICE ID NO: CD-GWH-BV1 & CD-GWH-BV2	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): ES-GWH-1 & -2
EMISSION POINT (STACK) ID NO(S): EP-GWH-1 & EP-GWH-2	POSITION IN SERIES OF CONTROLS NO. 1 OF 1 UNITS
MANUFACTURER: TBD[1]	MODEL NO: TBD
DATE MANUFACTURED: TBD	PROPOSED OPERATION DATE: TBD
OPERATING SCENARIO;	PROPOSED START CONSTRUCTION DATE: TBD
1 OF 1	P.E. SEAL REQUIRED (PER 2Q .0112)? (YES) NO

DESCRIBE CONTROL SYSTEM:

Two (2) bin vent filters will be equipped to collect particulate emissions from the ground wood handling system

	PM	PM_{10}	$PM_{2.5}$	
POLLUTANT(S) COLLECTED:				
BEFORE CONTROL EMISSION RATE (LB/HR):				
CAPTURE EFFICIENCY:	%	%	%	%
CONTROL DEVICE EFFICIENCY:	%	%	%	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL EMISSION RATE (LB/HR):	See calculations in Appendix B			

PRESSURE DROP (IN. H_2O): MIN: MAX: 8" GAUGE? (YES) NO	WARNING ALARM? (YES) NO	
BULK PARTICLE DENSITY (LB/FT^3): 1.43E-06	INLET TEMPERATURE (°F): Ambient	
POLLUTANT LOADING RATE: 0.01 LB/HR (GR/FT^3)	OUTLET TEMPERATURE (°F): Ambient	
INLET AIR FLOW RATE (ACFM): 2500	FILTER MAX OPERATING TEMP. (°F): N/A	
NO. OF COMPARTMENTS: TBD[1]	NO. OF BAGS PER COMPARTMENT: TBD[1]	LENGTH OF BAG (IN.): TBD[1]
DIAMETER OF BAG (IN.):	DRAFT: (INDUCED/NEG) FORCED/POS.	FILTER SURFACE AREA (FT^2): 416.7 each
AIR TO CLOTH RATIO: 6	FILTER MATERIAL: Polyester or equivalent	WOVEN FELTED

DESCRIBE CLEANING PROCEDURES:

AIR PULSE — SONIC
REVERSE FLOW — SIMPLE BAG COLLAPSE
MECHANICAL/SHAKER — RING BAG COLLAPSE
(OTHER) Cleaning procedure dependent on final design

DESCRIBE INCOMING AIR STREAM:

The air stream will contain wood dust particles

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	Unknown	
1-10		
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

METHOD FOR DETERMINING WHEN TO CLEAN:
(AUTOMATIC) TIMED MANUAL

METHOD FOR DETERMINING WHEN TO REPLACE THE BAGS:
ALARM (INTERNAL INSPECTION) VISIBLE EMISSION OTHER

SPECIAL CONDITIONS: None
MOISTURE BLINDING CHEMICAL RESISTIVITY OTHER
EXPLAIN:

DESCRIBE MAINTENANCE PROCEDURES: Per manufacturer recommendations or common industry practices

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

Attach Additional Sheets As Necessary

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

FORM B

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 12/01/01 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate **B**

EMISSION SOURCE DESCRIPTION: **Four Pellet Coolers**	EMISSION SOURCE ID NO **ES-CLR-1, -2, -3, & -4**
	CONTROL DEVICE ID NO(S): **CD-CLR-C1, CD-CLR-C2, CD-CLR-C3, & CD-CLR-C4**
OPERATING SCENARIO 1 OF 1	EMISSION POINT (STACK) ID NO(S): **EP-CLR-1, EP-CLR-2, EP-CLR-3, & EP-CLR-4**

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
Four pellet coolers follow the pellet presses to cool the newly formed pellets down to an acceptable storage temperature.

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

☐ Coal,wood,oil, gas, other burner (Form B1) ☐ Woodworking (Form B4) ☐ Manufact. of chemicals/coatings/inks (Form B7)
☐ Int.combustion engine/generator (Form B2) ☐ Coating/finishing/printing (Form B5) ☐ Incineration (Form B8)
☐ Liquid storage tanks (Form B3) ☐ Storage silos/bins (Form B6) ■ Other (Form B9)

START CONSTRUCTION DA TBD	OPERATION DATE: TBD	DATE MANUFACTURED: TBD
MANUFACTURER / MODEL NO.: TBD[1]	EXPECTED OP. SCHEDULE: 24 HR/DAY 7 DAY/WK 52 WK/YR	
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):	NESHAP (SUBPART?):	MACT (SUBPART?):
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25%	MAR-MAY 25%	JUN-AUG 25% SEP-NOV 25%.
EXPECTED ANNUAL HOURS OF OPERATI(8,760	VISIBLE STACK EMISSIONS UNDER NORMAL OPERATION: < 20 % OPACITY	

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	See Emission Calculations in Appendix B						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT AND CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
N/A							

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS

TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE	lb/hr	lb/day	lb/yr
N/A				

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

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

Attach Additional Sheets As Necessary

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

FORM B9

EMISSION SOURCE (OTHER)

REVISED: 12/01/01 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate **B9**

EMISSION SOURCE DESCRIPTION: **Four Pellet Coolers**	EMISSION SOURCE ID NO: **ES-CLR-1, -2, -3, & -4**
	CONTROL DEVICE ID NO(S) **CD-CLR-C1, CD-CLR-C2, CD-CLR-C3, & CD-CLR-C4**
OPERATING SCENARIO: 1 OF 1	EMISSION POINT (STACK) ID NO(S): **EP-CLR-1, EP-CLR-2, EP-CLR-3, & EP-CLR-4**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

Four pellet coolers follow the pellet presses to cool the newly formed pellets down to an acceptable storage temperature.

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/HR)	LIMITATION(UNIT/HR)
Wood Pellets	**Tons**	**47.78**	

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UNIT/BATCH)

MAXIMUM DESIGN (BATCHES / HOUR):	
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/YR):
FUEL USED: **N/A**	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR): **N/A**
MAX. CAPACITY HOURLY FUEL USE: **N/A**	REQUESTED CAPACITY ANNUAL FUEL USE: **N/A**

COMMENTS:

Attach Additional Sheets as Necessary

FORM C4

CONTROL DEVICE (CYCLONE, MULTICYCLONE, OR OTHER MECHANICAL)

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — C4

CONTROL DEVICE ID NO: CD-CLR-C1, CD-CLR-C2, CD-CLR-C3, & CD-CLR-C4	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID IES-CLR-1, -2, -3, & -4
EMISSION POINT (STACK) ID NO(S): EP-CLR-1, EP-CLR-2, EP-CLR-3, & EP-CLR-4	POSITION IN SERIES OF CONTROLS NO. 1 OF 1 UNITS
MANUFACTURER: TBD[1]	MODEL NO:
DATE MANUFACTURED: TBD	PROPOSED OPERATION DATE: TBD
OPERATING SCENARIO:	PROPOSED START CONSTRUCTION DATE: TBD
1 OF 1	P.E. SEAL REQUIRED (PER 2Q .0112)? ○ YES ○ NO

DESCRIBE CONTROL SYSTEM:
Four identical dual high efficiency cyclones are equipped to the pellet coolers to capture bulk PM emissions.
The parameters presented here are per each dual high efficiency cyclone.

	PM	PM_{10}	$PM_{2.5}$	
POLLUTANT(S) COLLECTED:				
BEFORE CONTROL EMISSION RATE (LB/HR):				
CAPTURE EFFICIENCY:	%	%	%	%
CONTROL DEVICE EFFICIENCY:	%	%	%	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL EMISSION RATE (LB/HR):	See calculations in Appendix B			

PRESSURE DROP (IN. H_20): MIN MAX 6.0" WARNING ALARM? ○ YES ● NO	
INLET TEMPERATURE (°F): MIN MAX Ambient	OUTLET TEMPERATURE (°F): MIN MAX Ambient
INLET AIR FLOW RATE (ACFM): 9,200	BULK PARTICLE DENSITY (LB/FT³): 3E-06
POLLUTANT LOADING RATE (GR/FT³): 0.022	

SETTLING CHAMBER	CYCLONE			MULTICYCLONE
LENGTH (INCHES):	INLET VELOCITY (FT/SEC):		○ CIRCULAR ○ RECTANGLE	NO. TUBES: 2
WIDTH (INCHES):	*DIMENSIONS (INCHES) See instructions*		*IF WET SPRAY UTILIZED*	DIAMETER OF TUBES: 43"
HEIGHT (INCHES):	H:	Dd:	LIQUID USED:	HOPPER ASPIRATION SYSTEM?
VELOCITY (FT/SEC.):	W:	Lb:	FLOW RATE (GPM):	○ YES ● NO
NO. TRAYS:	De:	Lc:	MAKE UP RATE (GPM):	LOUVERS?
NO. BAFFLES:	D:	S:		○ YES ● NO
	TYPE OF CYCLONE:	○ CONVENTIONAL	● HIGH EFFICIENCY	○ OTHER

DESCRIBE MAINTENANCE PROCEDURES:
Periodic inspection of mechanical integrity during plant outages as specified by manufacturer or common industry practices

DESCRIBE INCOMING AIR STREAM:
Fine particulate emissions from cooling pellets

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	Unknown	
1-10		
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC:
None

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

Attach Additional Sheets As Necessary

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

Godwin, Kevin

From: Chen, Yongcheng
Sent: Wednesday, November 17, 2010 1:47 PM
To: Godwin, Kevin
Subject: RE: New Permit Enviva Pellets in Ahoskie

Hi Kevin,

I have reviewed the draft permit and it looks very good.

I just like to make sure with you about the authorized contact (in the application form (A1) it is Glen Gray, plant manager).

Thanks.

Yongcheng

Yongcheng Chen, Ph. D.
Permit Coordinator
North Carolina Division of Air Quality
Washington Regional Office
943 Washington Square Mall
Washington, NC 27889
Phone: 252-948-3831
Fax: 252-975-3716
www.ncair.org

From: Godwin, Kevin
Sent: Friday, November 12, 2010 8:02 AM
To: Chen, Yongcheng
Cc: Fisher, Robert
Subject: New Permit

Yongcheng,
Attached, please find a draft for Enviva Pellets in Ahoskie. I appreciate your review. Please respond with any comments or recommendations. Thanks.

Kevin Godwin, Environmental Engineer
NC DENR, Division of Air Quality
Permits
1641 MSC, Raleigh, NC 27699-1641
Phone: (919) 715-6255
Fax: (919) 733-5317
www.ncair.org

Division of Air Quality
October 26, 2010

MEMORANDUM

TO: Kevin Godwin, Permit Engineer, Raleigh Central Office
Permit Coordinator, Washington Regional Office

THROUGH: Jim Roller, Supervisor, Air Quality Analysis Branch

FROM: Jerry Freeman, Meteorologist II, Air Quality Analysis Branch

SUBJECT: Dispersion Modeling Review for Enviva Pellets, LLC
Ahoskie, Bertie County, Facility ID: 4600107

I reviewed the dispersion modeling analysis for the planned Enviva Pellets (EP) facility to be located in Ahoskie, NC. The analysis was received in this office on October 11, 2010, and was submitted to support the installation and operation of this new wood pellets, manufacturing facility. Five pollutants were modeled from three sources with the parameters and rates noted in Attachment 1 to this memo, and the rates shown were modeled as occurring continuously. The four toxic pollutants (acrolein, benzene, formaldehyde, and phenol) exceeded their TPER and thus were modeled, while NO2 (1 hr eval period) was modeled by special request from NCDAQ. In the NO2 modeling, EP chose a conservative modeling approach as described in the next paragraph. Attachment 2 is the layout of the facility as modeled. The modeling did demonstrate compliance with the NC Acceptable Ambient Levels (AAL) and the National Ambient Air Quality Standards (NAAQS).

EP used AERMOD with regulatory defaults, and with five years of DAQ-processed meteorology from Norfolk/Wallops Island (1988-1992) to model the emissions. The toxic pollutants required only the latest year of meteorology, per NCDAQ guidance, since impacts were less than 50 percent of the AAL, while the NO2 modeling used all five years. EP modeled NO2 in a conservative fashion, using the tier 2, 75 percent conversion factor approach along with an overall H8H impact instead of the perscribed (postprocessing) statistical method. Added to this modeled impact was a high background concentration provided by NCDAQ, which by itself consumed 49 percent of the NAAQS. When the modeled impact and the background concentration were summed, the total impact reached 94 percent of the NAAQS. I corroborated their results by rerunning the NO2 modeling with the proper processing techniques (actually obtained the same answer). This review assumes all emission information as provided is accurate.

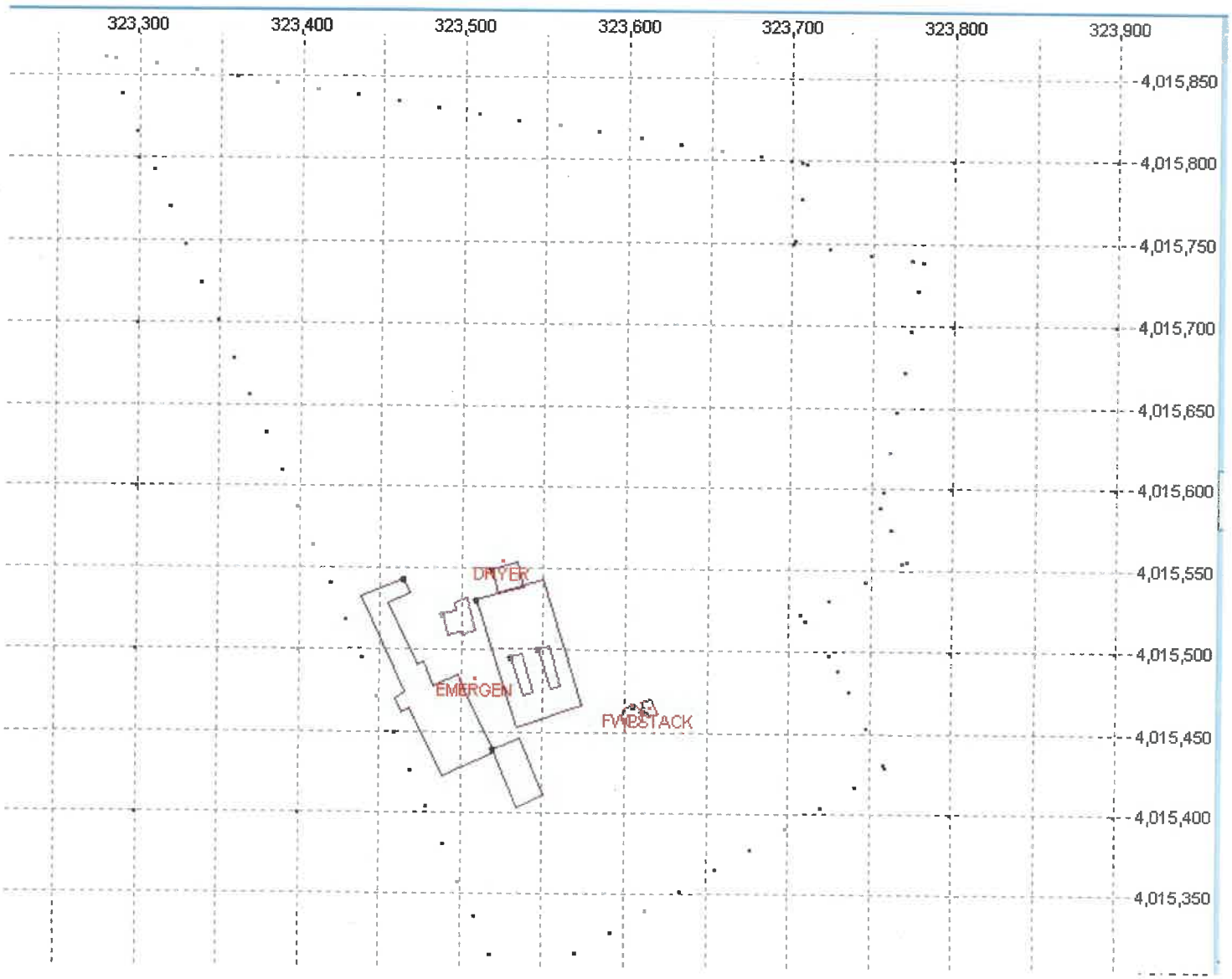
Pollutant / Eval Period	Modeled Impact (ug/m3)	Back-ground (ug/m3)	AAL (ug/m^3)	% of AAL
acrolein / 1hr	2.2	N/A	80	3
benzene / annual	0.02	N/A	0.12	13
formaldehyde / 1hr	13.39	N/A	150	9
phenol / 1hr	2.68	N/A	950	< 1
NO2 / 1hr	84.44	92.1	188	94

2 Atch: *1) Source parameters and emission rates (1 page)*
2) Modeled site layout (1 page)

cc: *Jim Roller, RCO*
Lori Cherry, RCO
Jerry Freeman, RCO

Source ID	Stack Height (m)	Temperature (K)	Exit Velocity (m/s)	Stack Diameter (m)	Acrolein (lb/hr)	Benzene (lb/hr)	Formald (lb/hr)	Phenol (lb/hr)	NO2 (lb/hr)
DRYER	24.4	354.3	34.5	1.8	0.989	0.327	6.020	1.204	37.413
FWPSTACK	9.1	727.6	24.2	0.2	1.94E-04	0.002	0.002	0.000	1.970
EMERGEN	9.1	727.6	28.3	0.2	2.27E-04	0.002	0.003	0.000	2.298

Atch 1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4,015,350
DRYER
EMERGEN
FWPSTACK

Atch 2

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Air Quality

Beverly Eaves Perdue
Governor

Sheila C. Holman
Director

Dee Freeman
Secretary

October 12, 2010

Mr. Glenn Gray
Plant Manager
Enviva Pellets Ahoskie, LLC
1309 east Cary Street, Suite 200
Richmond, VA 23219

SUBJECT: Receipt of Permit Application
New Permit
Application No. 4600107.10A
Enviva Pellets Ahoskie, LLC
Facility ID: 4600107, Ahoskie, Hertford County

Dear Mr. Gray:

Your air permit application (4600107.10A) for Enviva Pellets Ahoskie, LLC, located in Hertford County, North Carolina was received by this Division on October 1, 2010.

Submittal of your air permit application request must include the following items:

A permit application processing fee:

Under the new permit application processing fee schedule effective January 1, 2010, your required fee is $867.00.

The appropriate application fee amount **was** received.

Pending review of your application and based on the required fee amount indicated above, you may be required to pay an additional amount.

Number of Copies of Application:

The appropriate number of copies of the application **was** received.

Local zoning and subdivision ordinances consistency determination:

Your application **did** contain the complete request for consistency determination.

A Survey of Facility Reduction and Recycling Activities (Form: A4):

Your application **did** contain a Reduction and Recycling Air Form.

Signature of An Authorized Official:

Your application **was** signed by an authorized official as defined by 15A NCAC 2Q.0304(j).

PE Seal Requirement:

The appropriate PE Seal **was** received.

In summary, this application submittal **did** contain all the required elements as indicated and has been accepted for processing. Your application will be considered complete as of October 1, 2010, unless informed otherwise by this office within 45 days.

Should you have any questions concerning this matter, please contact Kevin Godwin at (919) 715-6255.

Sincerely,

for Donald van der Vaart, Ph.D., P.E.
Chief

cc: Washington Regional Office Files
Central Files

Comprehensive Application Report for 4600107.10A

10/12/2010

Enviva Pellets Ahoskie, LLC - Ahoskie (4600107)

Hertford County

General Information: Permit/Latest Revision: 10121/

Permit code:	State
Application type:	New Permit
Engineer/Rev. location:	Kevin Godwin/RCO
Regional Contact:	Yongcheng Chen
Facility location:	Washington Regional Office
Facility classification:	Unknown
Clock is ON	Application is COMPLETE
Status is :	In progress

Application Dates

Received	Completeness Due	Clock Start	Calculated Issue Due
10/01/2010	11/15/2010	10/01/2010	12/30/2010

Fee Information

Initial amount:	Date received:	Amount Due:	Add. Amt Rcv'd:	Date Rcv'd:
$867.00	10/01/2010			

Fund type:	Deposit Slip #:	Location rec'd:	Location deposited:
2331			

Contact Information

Type	Name	Address	City State ZIP	Telephone
Authorized	Glenn Gray, Plant Manager	1309 east Cary Street, Suite 200	Richmond, VA 23219	(804) 412-0227
Technical/Permit	Glenn Gray, Plant Manager	1309 east Cary Street, Suite 200	Richmond, VA 23219	(804) 412-0227

Acceptance Criteria

Received?	Acceptance Criteria Description
Yes	Application fee
Yes	Appropriate number of apps submitted
Yes	Zoning Addressed
Yes	Source recycling/reduction form
Yes	Authorized signature
Yes	PE Seal

Completeness Criteria

Received?	Complete Item Description

Application Events

Event	Start	Due	Complete	Comments	Staff
Acknowledgment letter due	10/01/2010	10/11/2010	10/12/2010		mjcuilla

Regulations Pertaining to this Permit

Reference Rule	Regulation Description

Audit Information Pertaining to this Application

Column Name	Date Changed	Old Value	New Value	Editor
dt_App_Rec	10/12/2010	10/11/2010	10/01/2010	Mark Cuilla
permit_No	10/11/2010		10121	Mark Cuilla

Trinity Consultants

One Copley Parkway, Suite 310, Morrisville, North Carolina 27560 U.S.A. ■ (919) 462-9693 ■ Fax (919) 462-9694

September 30, 2010

Dr. Donald van der Vaart
Permit Chief
NC Division of Air Quality
2728 Capital Blvd.
Raleigh, NC 27604

Re: **Air Quality Construction and Operating Permit Application**
Enviva Pellets Ahoskie, LLC

Dear Dr. van der Vaart,

As you will recall, on September 8, 2010, Enviva Pellets Ahoskie, LLC (Enviva) and Trinity Consultants (Trinity) participated in a pre-application meeting with the Division of Air Quality (DAQ), regarding the proposed Ahoskie wood pellet manufacturing facility. Trinity has since prepared this air quality construction and operating permit application on behalf of Enviva. Enclosed please find three (3) copies of the full application along with the required application fee. Trinity is also providing two (2) additional copies of the application to the Washington regional office.

If you have any questions regarding this permit application, please do not hesitate to call Joe Sullivan or me at (919) 462-9693.

Sincerely,

Dale Overcash
Principal Consultant
Trinity Consultants

Enclosures

cc: Mr. Robert Fisher, DAQ Washington Regional Office
Mr. Glenn Gray, Enviva
Mr. Peter MacDonald, Enviva

Intrinergy Operating, L.P.
1309 E. Cary Street, Suite 200
Richmond, VA 23219
USA

Wachovia
1021 East Cary Street
Richmond, VA 23219

No. 0000000400

68-54/514

CHECK DATE	PAY THIS AMOUNT
9/29/2010	**********867.00

PAY Eight hundred sixty-seven and xx / 100 Dollars

TO THE ORDER OF NC Division of Air Quality
,
USA

AUTHORIZED SIGNATURE

Details on Back. Security Features Included

⑈0000000400⑈ ⑆051400549⑆ 2000048297721⑈

VENDOR: NCDIVI Intrinergy Operating, L.P.
REMIT TO: NC Division of Air Quality

CHECK: 0000000400
COMMENT:

DATE: 9/29/2010

INVOICE	DATE	VOUCHER	COMMENT	AMOUNT	DISCOUNT	NET AMOUNT
09291001	9/29/2010	0000000574		867.00	0.00	867.00
			TOTALS:	867.00	0.00	867.00

AIR QUALITY CONSTRUCTION AND OPERATING PERMIT APPLICATION
ENVIVA PELLETS AHOSKIE, LLC • AHOSKIE, NORTH CAROLINA

Prepared by:

TRINITY CONSULTANTS
One Copley Parkway, Suite 310
Morrisville, North Carolina 27560
919.463.9693
Fax: 919.462.9694
trinityconsultants.com

Prepared for:

ENVIVA PELLETS, LLC
1309 East Cary Street
Suite 200
Richmond, VA 23219

September 2010

Project 103401.0073

Trinity Consultants

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APPENDIX A – NCDAQ Application Forms
APPENDIX B – Emissions Calculations
APPENDIX C – Local Zoning Consistency Determination
APPENDIX D – Dispersion Modeling Support

1.1 EXECUTIVE SUMMARY

Enviva Pellets, LLC (Enviva) is planning to construct and operate a wood pellets manufacturing plant in the town of Ahoskie, NC. The plant will be built on the site of a former sawmill plant owned by Georgia Pacific.

This document in its entirety comprises an air quality construction and operating permit application and for the project. The project will result in air quality emissions below levels triggering the Prevention of Significant Deterioration (PSD) preconstruction permit program and the Plywood and Composite Wood Products (PCWP) National Emissions Standards for Hazardous Air Pollutants (NESHAP). Emissions of several compounds regulated under 15A NCAC 2Q .0700 will exceed de minimis values requiring permitting and corresponding air dispersion modeling has been conducted to demonstrate compliance with ambient allowable levels. Finally, the NCDAQ requested that nitrogen dioxide (NO_2) modeling be conducted and results of that evaluation are provided in this application.

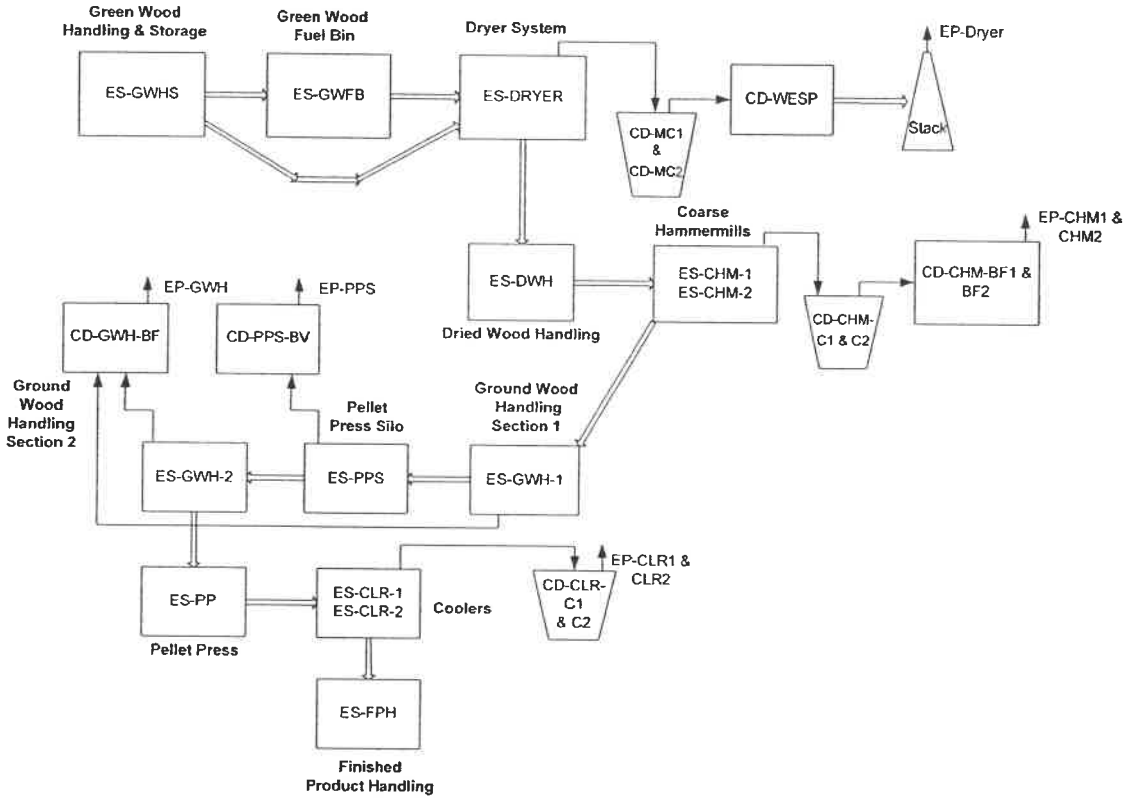
1.2 ORGANIZATION OF APPLICATION

Three copies of the application have been provided along with the $867 permit application processing fee. This application contains the following:

- Section 2 provides a project description and discusses air emissions,
- Section 3 discusses regulatory applicability,
- Section 4 contains the air dispersion modeling summary,
- Appendix A contains air permit application forms,
- Appendix B presents air emissions calculations,
- Appendix C contains the required local zoning consistency determination, and
- Appendix D contains supporting air dispersion modeling support information.

The proposed wood pellets plant is designed to produce up to 418,533 tons per year of wood pellets. Pellets will typically consist of hardwoods, but could contain up to 10 percent softwoods on an annual basis. This section discusses the Ahoskie Plant's pelletizing process and associated air emissions. Detailed air emissions calculations are presented for each source discussed in this section in Appendix B. A process flow diagram is presented in Figure 2-1.

FIGURE 2-1. PROCESS FLOW DIAGRAM



2.1 GREEN WOOD HANDLING AND STORAGE (ES-GWHS) AND FUEL STORAGE BIN (ES-GWFB)

"Green" (i.e., wet) wood will be delivered to the facility via trucks as whole logs or as chipped wood. Logs will be chipped and debarked to specification for drying. Pre-chipped wood will be screened and oversized chips will undergo additional chipping. Chipped wood for drying is conveyed to wood storage and wood/bark is conveyed to a green wood dryer fuel storage bin. Green wood contains a high moisture content approaching 50 percent by weight and handling

operations for wet wood therefore has negligibly small emissions. The moisture content of wet wood is well above the applicability range of aggregate handling emissions estimation methodologies provided in AP-42, so no emission calculations are included for green wood transfer. Likewise, there are no applicable emissions factors for debarking or chipping.

2.2 Wood Dryer (ES-Dryer)

Green wood is conveyed to either a one or two rotary dryer system. Direct contact heat is provided to the system via a 125 mmBtu/hr total heat input burner system (one or two burners). Air emissions are controlled by multiclones for bulk particulate removal and additional particulate is removed utilizing a wet electrostatic precipitator (WESP) operating after the cyclones.

Emissions are calculated using a combination of dryer vendor emission guarantees (criteria pollutants only) and AP-42 emissions factors.

2.3 Dried Wood Handling (ES-DWH)

Dried materials are transferred from the dryer via conveyors to coarse hammermills for further size reduction prior to pelletization. There are five dried wood transfer points occurring prior to the Coarse Hammermills. As shown in the calculations in Appendix B, emissions from any source within the Dried Wood Handling emission grouping are insignificant.

2.4 Coarse Hammermills (ES-CHM)

Prior to pellitization, dried materials are reduced to the appropriate size needed for pelletization using two Coarse Hammermills operating in parallel. A conveyor system receives the ground wood from the Coarse Hammermills and sends the ground wood to an "accepts conveyor."

Particulate emissions from the Coarse Hammermill are controlled using two cyclones in series with two bagfilters. Appendix B summarizes the emissions from each hammermill bagfilter system.

2.5 Pellet Press Silo (ES-PPS) and Ground Wood Handling (ES-GWH)

Ground wood from the hammermills is conveyed on a set of conveyors (the first section of ES-GWH) to the Pellet Press Silo prior to pelletization. Another set of conveyors transports the ground wood to the pelletizers (the second section of ES-GWH). Particulate matter emissions from the associated conveyors prior to and after the Pellet Press Silo are controlled using a bagfilter. Emissions from the Pellet Press Silo are controlled using a separate bagfilter.

2.6 Pellet Press System and Conveyors (ES-PP)

Dried ground wood is mechanically compacted in the presence of water in several screw presses in the Pellet Press System. Exhaust from the Pellet Press and Pellet Presses conveyors are vented to the atmosphere with negligible particulate matter emissions, as shown in Appendix B. No chemical binding agents are needed for pelletization.

2.7 Pellet Coolers (ES-CLR1 and ES-CLR2)

Pellet Press conveyors discharge wood pellets through one of two Pellet Coolers. Cooling air is passed through the pellets. At this point, the Pellets contain a small amount of wood fines, which are swept out with the cooling air and are controlled utilizing dual high efficiency cyclones operating in parallel (one for each cooler) prior to discharge to the atmosphere.

2.8 Finished Product Handling (ES-FPH)

Pelletized product is conveyed to storage and loadout operations with no air emissions to the atmosphere.

2.9 Emergency Generator (ES-EG), Fire Water Pump (ES-FWP) and Associated Fuel Oil Storage Tanks

The plant will utilize a 350 brake horsepower emergency generator for emergency operations and a 300 brake horsepower fire water pump engine. Both engines will combust diesel fuel. Aside from maintenance and readiness testing, these sources will only be utilized for emergency operations. Diesel for the emergency generator will be stored in up to a 2,500 gallon storage tank and diesel for the fire water pump will be stored in up to a 500 gallon storage tank. Emissions from both fuel oil storage tanks are insignificant.

This section discusses the applicability of key federal and state regulations.

3.1 FEDERAL REGULATIONS

3.1.1 PREVENTION OF SIGNIFICANT DETERIORATION (PSD), 40 CFR PART 51.166

North Carolina has implemented the federal PSD requirements of 40 CFR 51.166 under North Carolina Regulation 15A NCAC 2D .0530. Under the PSD regulations, a major stationary source for PSD is defined as any source in one of the 28 named source categories with the potential to emit 100 tpy or more of any regulated pollutant, or any source not in one of the 28 named source categories with the potential to emit 250 tpy or more of any regulated pollutant.[1] Neither wood pellet production nor operation of associated combustion sources qualifies the facility for classification in one of the 28 listed source categories.

As shown in Table 3-1, the proposed project is a minor source for all regulated pollutants.

TABLE 3-1. PSD APPLICABILITY SUMMARY

Source Description	Unit ID	CO (tpy)	NOx (tpy)	TSP (tpy)	PM-10 (tpy)	PM-2.5 (tpy)	SO2 (tpy)	VOC (tpy)
Dryer System	ES-DRYER	229.77	163.86	24.48	24.48	24.48	13.69	197.95
Emergency Generator	ES-EG	0.50	0.58	0.03	0.03	0.03	0.00	5.59E-04
Fire Water Pump	ES-FWP	0.43	0.49	0.02	0.02	0.02	0.00	4.79E-04
Coarse Hammermills	ES-CHM-1 & -2	0.00	0.00	28.53	28.53	28.53	0.00	0.00
Pellet Press Silo	ES-PPS	0.00	0.00	5.63	5.63	5.63	0.00	0.00
Ground Wood Handling	ES-GWH-1 & -2	0.00	0.00	1.88	1.88	1.88	0.00	0.00
Pellet Coolers	ES-CLR-1 & -2	0.00	0.00	33.04	33.04	33.04	0.00	0.00
Diesel Storage Tanks	TK1 & TK2	0.00	0.00	0.00	0.00	0.00	0.00	3.79E-03
Total Project Emission Increases		**230.71**	**164.92**	**93.61**	**93.61**	**93.61**	**13.69**	**197.95**
PSD Significant Emission Rates		**250**	**250**	**250**	**250**	**250**	**250**	**250**
PSD Review Required?		**No**	**No**	**No**	**No**	**No**	**No**	**No**

3.1.2 TITLE V OPERATING PERMIT PROGRAM, 40 CFR PART 70

40 CFR Part 70 establishes the federal Title V operating permit program. North Carolina has incorporated the provisions of this federal program in its Title V operating permit program under 15A NCAC 2Q .0500. The major source thresholds with respect to the North Carolina Title V operating permit program regulations are 10 tons per year of a single HAP, 25 tpy of any combination of HAP, and 100 tpy of certain other regulated pollutants.

[1] 40 CFR §52.21(b)(1)(i)

The site will be a major Title V source for only criteria pollutants. Enviva is requesting that the procedures of 15A NCAC 2Q .0504 be applied to this project allowing direct issuance of a construction and operating permit under 15A NCAC 2D .0300. Enviva will submit a permit application for a Title V permit within one year after commencement of operation.

3.1.3 New Source Performance Standards, 40 CFR Part 60 (15A NCAC 2D .0524 New Source Performance Standards)

New Source Performance Standards (NSPS), located in 40 CFR Part 60 and implemented in North Carolina Regulation 15A NCAC 2D .0524, require certain categories of new, modified, or reconstructed sources to control emissions to specified levels. Three potentially applicable NSPS are addressed below.

3.1.3.1 NSPS Subpart IIII

NSPS Subpart IIII applies to owners or operators of compression ignition (CI) internal combustion engines (ICE) manufactured after April 1, 2006 that are not fire pump engines, and fire pump engines manufactured after July 1, 2006. As noted in Section 2, the plant will have a 350 hp emergency generator and a 300 hp fire pump. The emergency generator and fire pump will be manufactured after the dates specified above. Therefore, the emergency generator and fire pump are subject to the provisions of NSPS Subpart IIII.

Under NSPS Subpart IIII, owners and operators of emergency generators manufactured in CY 2007 or later with a maximum engine power greater than or equal to 50 hp are required to comply with the emission limits referenced in 40 CFR §60.4205(b). These limits are as follows: 0.20 g/kW for PM, 3.5 g/kW for CO, and 4 g/kW for NO_x + nonmethane hydrocarbons (NMHC).

Enviva will comply with the emission limits by operating the generator as instructed in the manufacturer's operating manual in accordance with 40 CFR §60.4211(a), and purchasing an engine certified to meet the referenced emission limits in accordance with 40 CFR §60.4211(c). The engine will be equipped with a non-resettable hour meter in accordance with 40 CFR §60.4209(a). Emergency and readiness testing of the unit will be limited to 100 hours per year.

In accordance with NSPS Subpart IIII, owners and operators of fire pump engines manufactured after July 1, 2006 must comply with the emission limits in Table 4 of NSPS Subpart IIII, which are organized based on the size of the unit. These limits are as follows: 0.20 g/kW for PM, 3.5 g/kW for CO, and 4 g/kW for NO_x + nonmethane hydrocarbons (NMHC).

Enviva will comply with these emission limits by operating the fire pump as instructed in the manufacturer's operating manual in accordance with 40 CFR §60.4211(a), and purchasing an engine certified to meet the referenced emission limits in accordance with 40 CFR §60.4211(b). The engine will be equipped with a non-resettable hour meter in accordance with 40 CFR §60.4209(a). Emergency and readiness testing of the unit will be limited to 100 hours per year.

In addition, both the proposed emergency generator and fire pump will be required to comply with the fuel requirements in 40 CFR §60.4207, which limit sulfur to a maximum of 15 ppmw and a cetane index of at least 40.

3.1.3.2 NSPS Subparts Db and Kb

The proposed plant will utilize direct fired drying of chipped wood and, therefore, will not trigger the NSPS Subpart Db (Industrial-Commercial-Institutional Steam Generating Units) regulations. Diesel fuel oil storage tank capacities are well below the NSPS Subpart Kb (Volatile Organic Liquid Storage Vessels, for which construction, reconstruction, or modification commenced after 7/23/1984) applicability storage capacity threshold of approximately 20,000 gallons.

3.1.4 National Emission Standards for Hazardous Air Pollutants, 40 CFR Part 63 (15A NCAC 2D .1111 Maximum Achievable Control Technology)

The National Emission Standards for Hazardous Air Pollutants (NESHAP) listed in 40 CFR Part 63 and implementing North Carolina regulation 15A NCAC 2D .1111 are source category-specific regulations that limit emissions of HAPs. Two potentially applicable NESHAPs are addressed below.

3.1.4.1 40 CFR Part 63 Subpart ZZZZ

40 CFR 63 Subpart ZZZZ applies to reciprocating internal combustion engines (RICE) located at a major or area source of HAP emissions. An affected source is any existing, new, or reconstructed stationary RICE located at a major or area source of HAP emissions. Emergency power and limited use units are subject to limited requirements under 40 CFR 63.6590(b)(i) and 40 CFR 63.6590(b)(ii). Emergency stationary RICE are defined in 40 CFR 63.6675 as any stationary RICE that operates in an emergency situation. These situations include engines used for power generation when power from the local utility is interrupted, or engines used to pump water in the case of fire or flood.

The proposed emergency generator and the emergency fire pump at the site will be classified as emergency stationary RICE under the NESHAP and will comply with the requirements listed under this subpart.

3.1.4.2 40 CFR Part 63 Subpart DDDD

40 CFR Subpart DDDD applies to Plywood and Composite Wood Products facilities classified as major sources of hazardous air pollutants (HAPs), having the potential to emit of 10 tons per year of a single HAP or 25 tons per year aggregate HAP. As indicated in Table 3-2, facility-wide potential HAP emissions are less than the major source threshold.

TABLE 3-2. FACILITY-WIDE HAP EMISSION SUMMARY

HAP Pollutant	Dryers (tpy)	EG-1 (tpy)	FWP-1 (tpy)	TOTAL (tpy)
1,3-Butadiene	--	2.39E-05	2.05E-05	4.45E-05
Acetaldehyde	2.29	4.70E-04	4.03E-04	2.29E+00
Acrolein	0.70	5.67E-05	4.86E-05	7.03E-01
Benzene	0.23	5.71E-04	4.90E-04	2.33E-01
Chloroform	0.00	--	--	3.05E-03
Cumene	0.06	--	--	6.11E-02
Formaldehyde	4.28	7.23E-04	6.20E-04	4.28E+00
m-,p-Xylene	0.15	1.75E-04	1.50E-04	1.47E-01
Methanol	3.36	--	--	3.36E+00
Methyl isobutyl ketone	0.21	--	--	2.11E-01
Methylene chloride	0.05	--	--	5.50E-02
o-Xylene	0.01	--	--	1.37E-02
Phenol	0.86	--	--	8.55E-01
Propionaldehyde	0.40	--	--	3.97E-01
Styrene	0.01	--	--	1.10E-02
Toluene	0.40	2.51E-04	2.15E-04	3.98E-01
Total PAH (POM)	--	1.03E-04	8.82E-05	1.91E-04
TOTAL HAP	**13.01**	**2.37E-03**	**2.03E-03**	**13.02**

3.2 NORTH CAROLINA REGULATIONS

For the sources that are included for review in this application package, the North Carolina State Implementation Plan (SIP) rules and regulations have been evaluated for applicability. Applicable rules are identified below.

3.2.1 15A NCAC 02D .0515 PARTICULATES FROM MISCELLANEOUS INDUSTRIAL PROCESSES

Particulate emissions from all emissions sources subject to permitting, including the wood pellet dryer are regulated under 15A NCAC 2D .0515. This regulation limits the particulate emissions based on total throughput. This regulation limits the particulate emissions based on process throughput using the equation $E = 4.10 \times P^{0.67}$, for process rates (P) less than 30 tons per hour (ton/hr) and $E=55 \times P^{0.11}-40$ for process rates greater than 30 tons per hour.

All emissions from particulate matter sources are either negligible or well-controlled. The most significant emission unit at the site, the process dryer operating at 57.9 ton/hr input (43 ODT/hr + 14.9 ton fuel/hr), has an emissions limit of 46.0 lb/hr. Maximum emissions from the dryer are approximately 5.6 lb/hr, well below the standard.

3.2.2 15A NCAC 02D .0516 SULFUR DIOXIDE EMISSIONS FROM COMBUSTION SOURCES

Under this regulation, emissions of sulfur dioxide from combustion sources cannot exceed 2.3 pounds of sulfur dioxide per million Btu input. Low sulfur diesel is

combusted in the dryer and two emergency engines, resulting in operation well below regulatory limits.

3.2.3 15A NCAC 02D .0521 Control of Visible Emissions

Under this regulation, for sources manufactured after July 1, 1971, visible emissions cannot be more than 20 percent opacity when averaged over a six-minute period. However, six-minute averaging periods may exceed 20 percent opacity under the following conditions:

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

This rule applies to all processes that may have a visible emission, including the dryer, other particulate matter emissions sources controlled by cyclone and/or baghouse, and the diesel-fired engines.

3.2.4 15A NCAC 02Q .0700 Toxic Air Pollutant Procedures

This regulation requires that new and modified sources of toxic air pollutants with emissions exceeding specified de minimis values apply for an air toxics permit. Facility-wide emissions of several compounds emitted from the site exceed the permitting de minimis level. A comparison of emissions to de minimis values are summarized in Table 3-3. Modeling for compounds triggering permitting is discussed in Section 4.

TABLE 3-3. DETERMINATION OF POLLUTANTS SUBJECT TO AIR TOXICS PERMITTING

TAP Emissions

Pollutant	CAS Number	Dryer(s)			Emergency Generator			Fire Water Pump			Total		
		(lb/hr)	(lb/day)	(lb/yr)	(lb/hr)	(lb/day)	(lb/yr)	(lb/hr)	(lb/day)	(lb/yr)	(lb/hr)	(lb/day)	(lb/yr)
1,3-Butadiene	106-99-0						4.79E-02			4.11E-02			8.90E-02
Acetaldehyde	75-07-0	3.23E+00			1.88E-03			1.61E-03			3.23E+00		
Acrolein	107-02-8	9.89E-01			2.27E-04			1.94E-04			9.89E-01		
Benzene	71-43-2			4.64E+02			1.14E+00			9.80E-01			4.66E+02
Benzo(a)pyrene	50-32-8						2.30E-04			1.97E-04			4.28E-04
Chloroform	67-66-3			6.11E+00									6.11E+00
Formaldehyde	50-00-0	6.02E+00			2.89E-03			2.48E-03			6.03E+00		
Xylene	1330-20-7	2.26E-01	5.42E+00	2.93E+02	6.98E-04	1.68E-02	3.49E-01	5.99E-04	1.44E-02	2.99E-01	2.27E-01	5.45E+00	
Methyl isobutyl ketone	108-10-1	2.97E-01	7.12E+00	4.22E+02							2.97E-01	7.12E+00	
Methylene chloride	75-09-2	7.74E-02	1.86E+00	1.10E+02							7.74E-02		1.10E+02
Phenol	108-95-2	1.20E+00	2.89E+01								1.20E+00		
Styrene	100-42-5	1.55E-02	3.72E-01								1.55E-02		
Toluene	108-88-3		1.34E+01			2.40E-02			2.06E-02			1.35E+01	

TPER Comparison Table

Pollutant	CAS Number	Total			TPER (2Q .0711)			Modeling Required?
		(lb/hr)	(lb/day)	(lb/yr)	(lb/hr)	(lb/day)	(lb/yr)	
1,3-Butadiene	106-99-0			8.90E-02			1.10E+01	N
Acetaldehyde	75-07-0	3.23E+00			6.80E+00			N
Acrolein	107-02-8	9.89E-01			2.00E-02			Y
Benzene	71-43-2			4.66E+02			8.10E+00	Y
Benzo(a)pyrene	50-32-8			4.28E-04			2.20E+00	N
Chloroform	67-66-3			6.11E+00			2.90E+02	N
Formaldehyde	50-00-0	6.03E+00			4.00E-02			Y
Xylene	1330-20-7	2.27E-01	5.45E+00		1.64E+01	5.70E+01		N
Methyl isobutyl ketone	108-10-1	2.97E-01	7.12E+00		7.60E+00	5.20E+01		N
Methylene chloride	75-09-2	7.74E-02		1.10E+02	3.90E-01		1.60E+03	N
Phenol	108-95-2	1.20E+00			2.40E-01			Y
Styrene	100-42-5	1.55E-02			2.70E+00			N
Toluene	108-88-3		1.35E+01			9.80E+01		N

This section presents the methodology and results of the air quality dispersion modeling conducted for the proposed Enviva Wood Pellet Plant to be located in Ahoskie, NC (Ahoskie Plant). The modeling methodology used to demonstrate compliance with the NC air toxics acceptable ambient levels (AAL) conforms to the *Guidelines for Evaluating the Air Quality Impacts of Toxic Pollutants in North Carolina* (December 2009). During the pre-application meeting, NCDAQ also requested that Enviva perform a National Ambient Air Quality Standard (NAAQS) compliance demonstration for the new, 1-hour NO_2 standard.[2] The NAAQS modeling methodology generally conforms to both the NC *Guidelines* and U.S. EPA *Guideline on Air Quality Models*. In lieu of a modeling protocol a protocol checklist is provided in Appendix D.

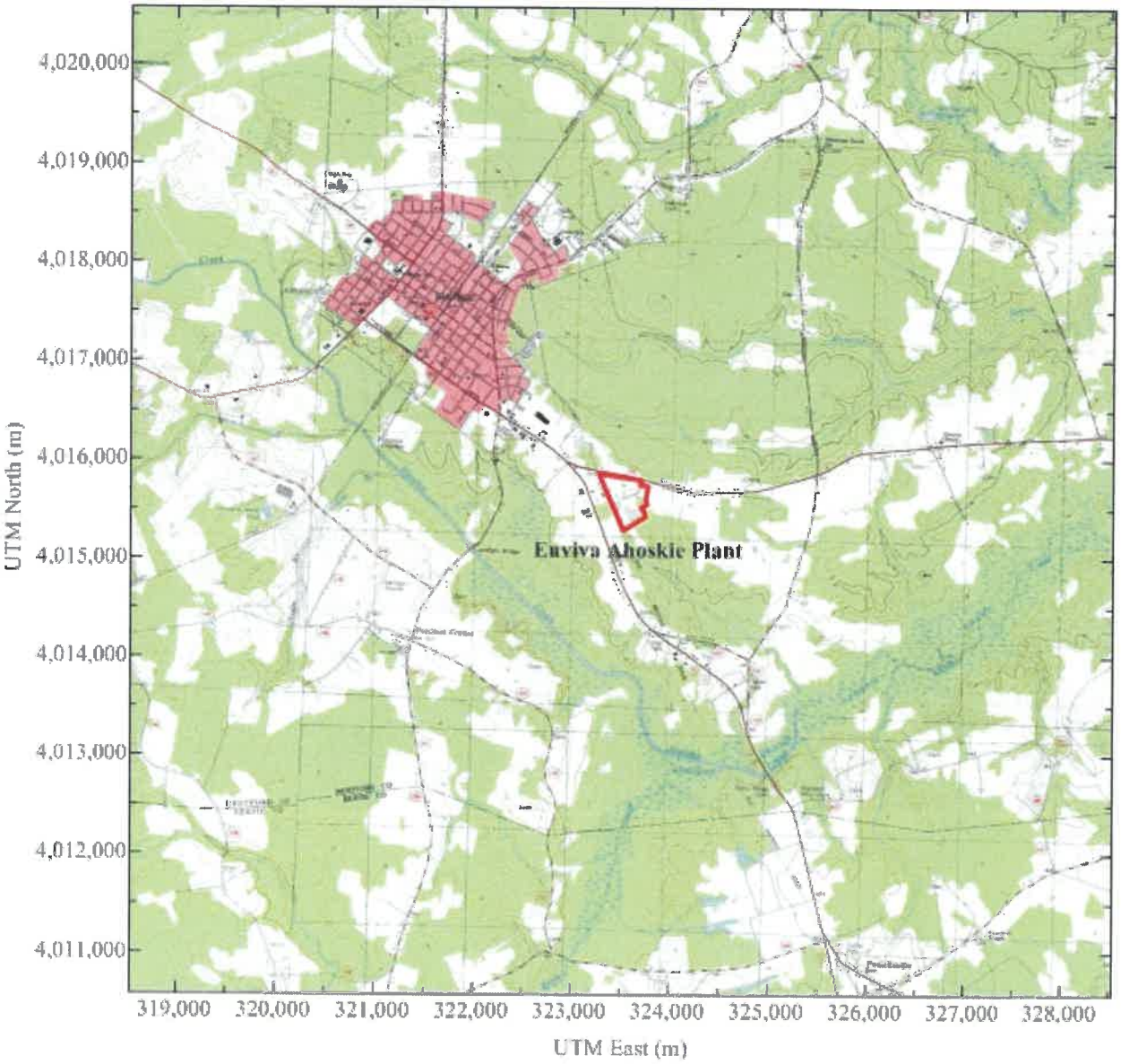
4.1 FACILITY AND PROJECT DESCRIPTION

Enviva is planning to construct and operate a wood pellet manufacturing plant in the city of Ahoskie, NC. The plant will be built on a 39 acre parcel, along NC 561, near the intersection with US Highway 13. The site was formerly a sawmill plant owned by Georgia Pacific. The approximate Universal Transverse Mercator (UTM) coordinates for the facility are 323.6 km East and 4,015.6 km North, Zone 18, in the North American 1983 Datum (NAD83). A signed survey of the facility property boundary will shortly be submitted under separate cover.

For modeling purposes, the appropriate urban/rural land use classification for the area was determined using the Auer technique, which is recommended in the *Guideline on Air Quality Models*. In accordance with this technique, the area within a 3-km radius of the facility was identified on US Geological Survey (USGS) topographic maps and was delineated by land use type. More than 50 percent of the surrounding land use can be classified as undeveloped rural (i.e., Auer's A4 classification), therefore the area is classified as rural. A map showing the location of the facility on the 7.5 minute USGS topographic maps is presented in Figure 4-1.

[2] Pre-Application Meeting between NCDAQ, Enviva and Trinity on September 8, 2010.

FIGURE 4-1. TOPOGRAPHIC MAP OF THE ENVIVA AHOSKIE PLANT



As previously described, the project will result in air quality emissions below levels triggering the Prevention of Significant Deterioration (PSD) preconstruction permit program and the Plywood and Composite Wood Products (PCWP) National Emissions Standards for Hazardous Air Pollutants (NESHAP). Potential emissions of several compounds regulated under 15A NCAC 2Q .0700 (NC Air Toxics) exceed de minimis values requiring permitting and this air dispersion modeling evaluation has been conducted to demonstrate compliance with the AAL. In addition a 1-hour NO_2 analysis was conducted to demonstrate compliance with the recently promulgated NAAQS.

4.2 Model Selection

The AERMOD dispersion model (version 09292) was used to calculate off-property concentrations in the modeling analysis. AERMOD was promulgated as the preferred model in 40 CFR 51, Appendix W on November 9, 2005 and is recommended by the NCDAQ for evaluating criteria and toxic air pollutant concentrations from industrial facilities such as Enviva's proposed Ahoskie plant.[3] AERMOD was run using the regulatory default option, which automatically implements NCDAQ and U.S. EPA recommended model options.

4.3 Source Description

Table 4-1 presents a table of the modeled sources and their locations at the Ahoskie plant. All locations are expressed in UTM Zone 18 (NAD83) coordinates.

Table 4-1. Modeled Source Locations

AERMOD ID	Description	UTM East (m)	UTM North (m)	Base Elevation (m)
DRYER	Main Dryer Stack	323,525.1	4,015,554.4	15.52
FWPSTACK	Firewater Pump Stack	323,615.3	4,015,465.0	15.28
EMERGEN	Emergency Generator Stack	323,508.7	4,015,483.0	15.23

Tables 4-2 and 4-3 present the stack parameters and emission rates input to the model for each of the sources.

Table 4-2. Modeled Source Parameters

AERMOD ID	Stack Ht. (m)	Stack Temp. (K)	Stack Vel. (m/s)	Stack Diam. (m)
DRYER	24.38	354.26	34.52	1.82
FWPSTACK	9.14	727.59	24.24	0.20
EMERGEN	9.14	727.59	28.28	0.20

[3] 40 CFR 51, Appendix W–*Guideline on Air Quality Models*, Appendix A.1– AMS/EPA Regulatory Model (AERMOD).

TABLE 4-3. MODELED EMISSION RATES

AERMOD ID	Modeled Emission Rates (g/s)				
	Acrolein	Benzene	Formaldehyde	Phenol	NO_x
DRYER	1.25E-01	4.12E-02	7.59E-01	1.52E-01	4.71E+00
FWPSTACK	2.45E-05	2.47E-04	3.12E-04	0.00E+00	2.48E-01
EMERGEN	2.86E-05	2.88E-04	3.64E-04	0.00E+00	2.90E-01

4.4 METEOROLOGICAL DATA

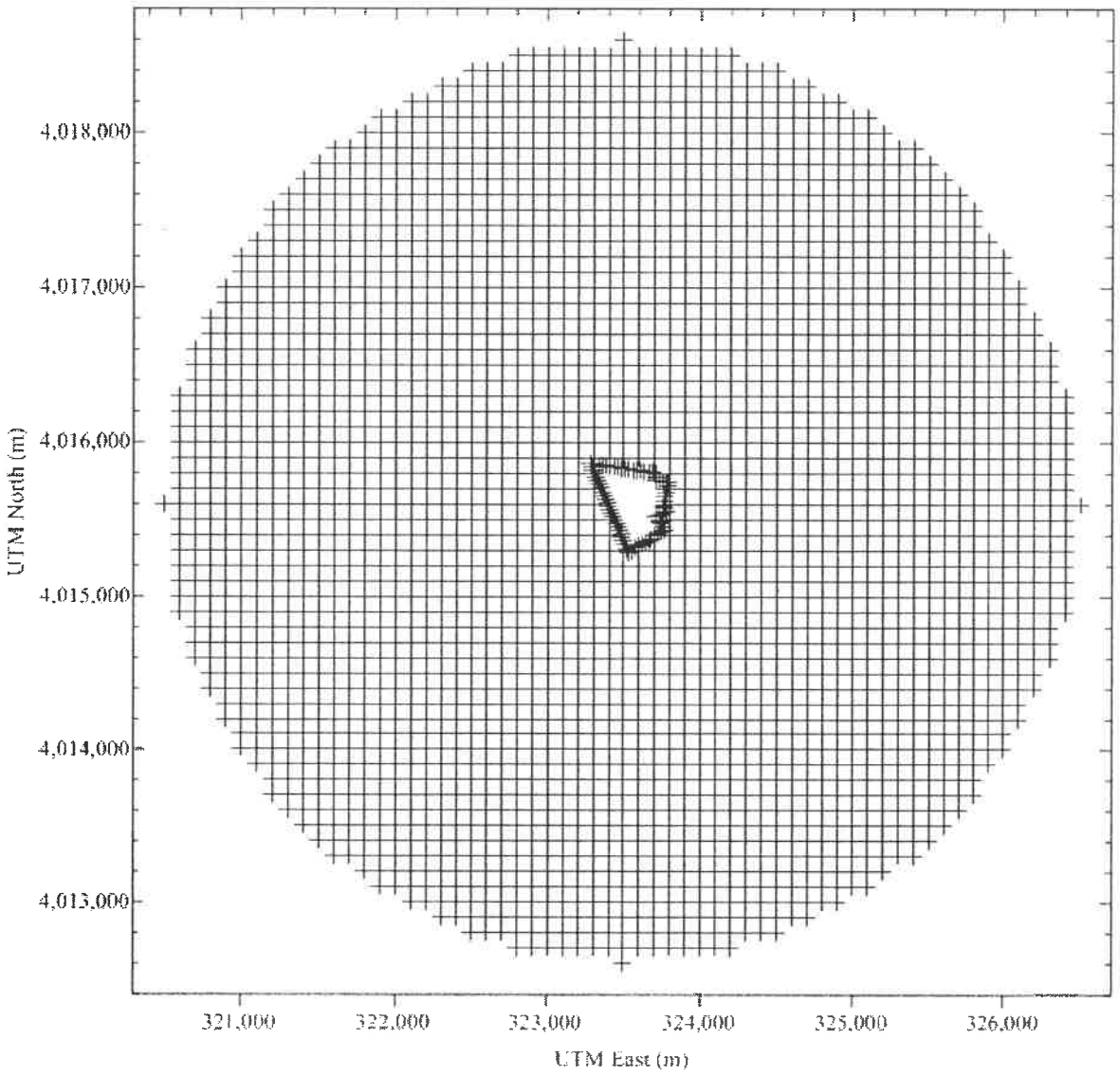
The AERMOD modeling analysis utilized sequential hourly surface observations from Norfolk, VA and upper air data from Wallops Island, VA. These stations are recommended by NCDAQ for modeling facilities located in Hertford County. The five (5) most recent, model-ready years (1988-1992) were downloaded from the NCDAQ website.[4] As shown in section 4.8, the TAP model impacts were all less than 50% of the AAL, so only the most recent year (1992) was input to AERMOD. For the 1-hour NO_2 NAAQS analysis, all 5 years were modeled.

4.5 MODELED RECEPTORS

The receptors included in the modeling analysis consisted of property line receptors, spaced 25 meters (m) apart, and Cartesian receptor points spaced every 100 m, extending out 3 kilometers (km) from the facility. There are no public right-of-ways (e.g. roads, railways) traversing the property line, so the same receptor grid was modeled for the one-hour (1-hr) and annual TAP analyses, as well as for the 1-hour NO_2 NAAQS modeling. The impacts were reviewed to ensure that the maximum impacts were captured within the 100 m spaced grid. Figure 4-2 shows the receptors included in the modeling analysis.

[4] http://www.ncair.org/permits/mets/metdata.shtml

FIGURE 4-2. MODELED RECEPTOR GRID



The AERMOD model is capable of handling both simple and complex terrain. Through the use of the AERMOD terrain preprocessor (AERMAP), AERMOD incorporates not only the receptor heights, but also an effective height (hill height scale) that represents the significant terrain features surrounding a given receptor that could lead to plume recirculation and other terrain interaction.[5]

Receptor terrain elevations input to the model were interpolated from National Elevation Database (NED) data obtained from the USGS. NED data consist of arrays of regularly spaced elevations. The array elevations are at a resolution of 1 arcsecond (approximately 30 m intervals)

5 US EPA. *Users Guide for the AERMOD Terrain Preprocessor (AERMAP)*, EPA-454/B-03-003, Research Triangle Park, NC.

and were interpolated using the latest version of AERMAP (version 09040) to determine elevations at the defined receptor intervals. The data obtained from the NED files were checked for completeness and spot-checked for accuracy against elevations on corresponding USGS 1:24,000 scale topographical quadrangle maps. AERMAP was also used to establish the base elevation of all Enviva structures and emission sources.

4.6 BUILDING DOWNWASH

A Good Engineering Practice (GEP) stack height evaluation was conducted to determine if inclusion of building wake effects will be required in the modeling analysis. The latest version of Building Profile Input Program for PRIME (BPIP PRIME, version 04274) was used to calculate downwash values for input into the PRIME algorithm. Building heights and any other significant structures were specified for modeling purposes to facilitate the calculation of downwash, GEP stack heights, and building wake effects by the model. Figure 4-3 illustrates the modeled stacks and downwash structures planned at the Ahoskie Plant.

FIGURE 4-3. AHOSKIE PLANT LAYOUT

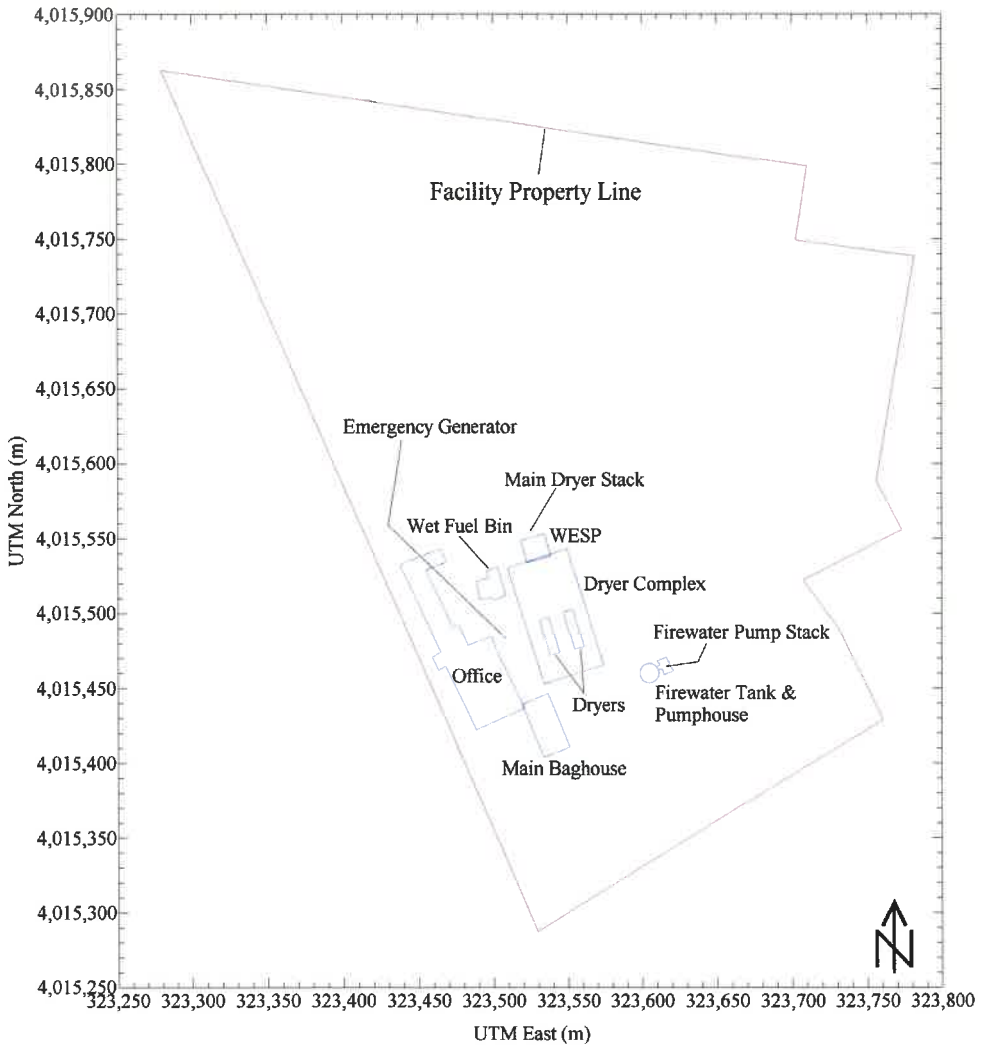


Table 4-4 presents the buildings and dimensions input to BPIP PRIME for downwash evaluation purposes. The dryer buildings are the governing structures for each of the modeled sources.

TABLE 4-4. MODELED DOWNWASH STRUCTURES

BPIP Structure ID	Height (m)	Length (m)	Width (m)	Projected Width (m)	L (m)	Formula GEP (m)
OFFICE	7.3	121.1	35.1	126.1	7.3	18.3
FWTANK	3.7	11.2	11.2	15.8	3.7	9.1
FUELBIN	12.6	17.9	16.5	24.3	12.6	31.5
FWPHOUSE	3.7	10.0	7.9	12.7	3.7	9.1
DRYER1	24.9	24.9	6.5	25.7	24.9	62.3
DRYER2	24.9	25.9	6.5	26.7	24.9	62.3
BHOUSE	12.2	38.6	18.3	42.7	12.2	30.5
WESP	20.4	15.5	16.4	22.6	20.4	51.1
EQUIPPAD	6.1	81.2	42.0	91.4	6.1	15.2

L - lessor of the structure height or projected width

Formula GEP = Height + (1.5 x L)

4.7 1-HOUR NO_2 NAAQS MODELING APPROACH

The form of the new probabilistic NAAQS standard, as it applies to modeling, is written as the 5-year average of the 98th percentile [High-8th-High (H8H)] daily maximum 1-hour concentration. The current version of the AERMOD model will not output daily maximum values directly, so the Enviva Ahoskie modeling analysis was conservatively performed using the H8H 1-hour NO_2 concentration overall as output from AERMOD. The following sections describe the NO_2-specific options used in the 1-hour NO_2 NAAQS modeling analysis.

4.7.1 BACKGROUND CONCENTRATION

A NAAQS compliance demonstration requires that a representative background concentration be added to the modeled impact prior to comparing to the NAAQS. The state of NC currently has two (2), NO_2 monitors in operation, in Forsyth and Mecklenburg counties, both of which are in high-traffic and/or urban settings. Forsyth County is the closest monitor to the Ahoskie Plant, and NCDAQ provided Trinity with the H8H daily maximum 1-hour concentration for 2009, from that site.[6] Trinity believes that the Forsyth County background value is overly conservative [92.1 $\mu g/m^3$ (49% of the standard)], given the urban nature of the site, however, the 1-hour NO_2 NAAQS compliance demonstration utilized that value in order to maintain conservatism.

[6] Email from Jim Roller (NCDAQ) to Jon Hill (Trinity) on August 31, 2010.

4.7.2 AMBIENT RATIO METHOD

The *Guideline on Air Quality Models* includes a three-tiered approach for demonstrating compliance with the NO_2 NAAQS. While the tiered approach was originally developed for use with the annual NO_2 standard, recent U.S. EPA guidance has stated that the tiers are generally appropriate for use with the 1-hour NO_2 NAAQS as well.[7] The first tier approach is to assume that 100% of NO_x stack emissions are comprised of NO_2. That tier is overly conservative for many types of combustion sources (including the dryer and emergency engines at the Ahoskie plant). The second tier, commonly referred to as the Ambient Ratio Method (ARM), involves applying a default national average NO_2/NO_x ratio of 75% to the NO_x model impacts prior to determining compliance with the NAAQS. That ratio was determined to be conservative for Enviva's Ahoskie plant based on the following rationale:

- The modeled sources have relatively low stack heights (especially the emergency generator and fire pump stacks which drive the impacts);
- The maximum concentrations typically occur during nighttime hours when ambient ozone concentrations are generally low, providing limited opportunity for NO_x-to-NO_2 conversion; and
- The localized nature of the impacts (within 300 m of the property) providing limited opportunity for NO_x-to-NO_2 conversion.

4.8 TAP MODELING RESULTS

Table 4-5 presents the results for each of the modeled TAPs. Since the impacts for each TAP were less than 50% of the AAL, only the most recent year of meteorological data (1992) was modeled.

TABLE 4-5. TAP MODELING RESULTS

Pollutant	Averaging Period	UTM East (m)	UTM North (m)	Date/Time (YYMMDDHH)	Max. Modeled Concentration ($\mu g/m^3$)	AAL ($\mu g/m^3$)	Percent of AAL (%)
Acrolein	1-Hour	323,399.3	4,015,587.3	92121017	2.20	80	2.75%
Benzene	Annual	323,300.0	4,015,300.0	92123123	0.02	0.12	13.25%
Formaldehyde	1-Hour	323,399.3	4,015,587.3	92121017	13.39	150	8.93%
Phenol	1-Hour	323,399.3	4,015,587.3	92121017	2.68	950	0.28%

[7] http://www.epa.gov/ttn/scram/ClarificationMemo_AppendixW_Hourly-NO2-NAAQS_FINAL_06-28-2010.pdf

The maximum impacts occur within 300 m of the property line. As shown, all modeled impacts are below their respective AAL and as such, the proposed facility will be in compliance with all applicable NC TAP regulations.

4.9 1-Hour NO_2 Modeling Results

Table 4-6 presents the results for the 1-hour NO_2 NAAQS analysis. As described in section 4.7, the total impact shown is based on a conservative estimate of the facility's contribution to the NAAQS, using the maximum 5-year average of the H8H, 1-hour concentrations overall rather than the daily maximum 1-hour values.

Table 4-6. 1-Hour NO_2 NAAQS Modeling Results

Pollutant	Averaging Period	5-year Avg. High-8th-High[1] ($\mu g/m^3$)	Background Concentration[2] ($\mu g/m^3$)	Total ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Percent of NAAQS (%)
NO_2	1-Hour	84.44	92.10	176.54	188	93.90%

[1] The impact shown includes the ambient ratio method ($NO_2 = NO_x * 0.75$)

[2] Background Concentration from Forsyth County, NC Monitor as provided by Jim Roller (DAQ) via email on 8/31/10

The maximum impacts again occur within 300 m of the property line. The results demonstrate that the Enviva Ahoskie plant will not cause a violation of the 1-hour NO_2 NAAQS. The electronic modeling files used in the TAP and NAAQS analyses are contained on the CD-ROM in Appendix D.

FORM A1

FACILITY (General Information)

Received OCT - 1 2010 Air Permits Section

REVISED 11/01/02 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — A1

NOTE: APPLICATION WILL NOT BE PROCESSED WITHOUT THE FOLLOWING:

☑ Local Zoning Consistency Determination (if required) ☑ Facility Reduction & Recycling Survey Form (Form A4) ☑ Application Fee
☑ Responsible Official/Authorized Contact Signature ☑ Appropriate Number of Copies of Application ☑ P.E. Seal (if required)

GENERAL INFORMATION:

Legal Corporate/Owner Name:	Enviva Pellets, LLC
Site Name:	Enviva Pellets Ahoskie, LLC
Site Address (911 Address) Line 1:	142 N.C. Rt 561 East
Site Address Line 2:	
City: Ahoskie	State: North Carolina
Zip Code: 27910	County: Hertford

CONTACT INFORMATION

Permit/Technical Contact:	*Facility/Inspection Contact:*
Name/Title: Glenn Gray / Plant Manager	Name/Title: Glenn Gray / Plant Manager
Mailing Address Line 1: 1309 East Cary Street, Suite 200	Mailing Address Line 1: 1309 East Cary Street, Suite 200
Mailing Address Line 2:	Mailing Address Line 2:
City: Richmond State: VA Zip Code: 23219	City: Richmond State: VA Zip Code: 23219
Phone No. (area code) (804) 412-0227 Fax No. (area code) (804) 412-0229	Phone No. (area code) (804) 412-0227 Fax No. (area code) (804) 412-0229
Email Address: Glenn.Gray@envivabiomass.com	Email Address: Glenn.Gray@envivabiomass.com
Responsible Official/Authorized Contact:	***Invoice Contact:***
Name/Title: Glenn Gray / Plant Manager	Name/Title: Glenn Gray / Plant Manager
Mailing Address Line 1: 1309 East Cary Street, Suite 200	Mailing Address Line 1: 1309 East Cary Street, Suite 200
Mailing Address Line 2:	Mailing Address Line 2:
City: Richmond State: VA Zip Code: 23219	City: Richmond State: VA Zip Code: 23219
Phone No. (area code) (804) 412-0227 Fax No. (area code) (804) 412-0229	Phone No. (area code) (804) 412-0227 Fax No. (area code) (804) 412-0229
Email Address: Glenn.Gray@envivabiomass.com	Email Address: Glenn.Gray@envivabiomass.com

APPLICATION IS BEING MADE FOR

✓ New Non-permitted Facility/Greenfield ☐ Modification of Facility (permitted) ☐ Renewal with Modification
☐ Renewal (TV Only)

FACILITY CLASSIFICATION AFTER APPLICATION (Check Only One)

☐ General ☐ Small ☐ Prohibitory Small ☐ Synthetic Minor ☑ Title V

FACILITY (Plant Site) INFORMATION

Describe nature of (plant site) operation(s): Facility ID No. : N/A (To be assigned)

Wood pellet manufacturing facility

Primary SIC/NAICS Code:	2499 (Wood Products, Not Elsewhere Classified)	Current/Previous Air Permit No N/A	Expiration Date N/A
Facility Coordinates: Latitude:	323,525.1 UTM E	Longitude:	4,015,554.4 UTM N
Does this application contain confidential data?	☐ YES	☑ NO	

PERSON OR FIRM THAT PREPARED APPLICATION

Person Name:	Joe Sullivan	Firm Name:	Trinity Consultants, Inc.
Mailing Address Line 1:	One Copley Parkway	Mailing Address Line 2:	Suite 310
City: Morrisville	State: North Carolina	Zip Code: 27560	County: Wake
Phone No. (919)-462-9693	Fax No. (919)-462-9694	Email Address:	Jsullivan@trinityconsultants.com

SIGNATURE OF RESPONSIBLE OFFICIAL/AUTHORIZED CONTACT

Name (typed):	Norb Hintz	Title:	Vice President, Engineering
X Signature(Blue Ink):		Date:	Sept 29 - 2010

Attach Additional Sheets As Necessary

FORMs A2, A3

EMISSION SOURCE LISTING FOR THIS APPLICATION - A2

112r APPLICABILITY INFORMATION - A3

REVISED 04/10/07 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate **A2**

EMISSION SOURCE LISTING: New, Modified, Previously Unpermitted, Replaced, Deleted

EMISSION SOURCE ID NO.	EMISSION SOURCE DESCRIPTION	CONTROL DEVICE ID NO.	CONTROL DEVICE DESCRIPTION
Equipment To Be ADDED By This Application (New, Previously Unpermitted, or Replacement)			
ES-DRYER	Green Wood Direct-Fired Dryer System	CD-MC1	Multiclone 1
		CD-MC2	Multiclone 2
		CD-WESP	Wet Electrostatic Precipitator
ES-CHM-1 & -2	Two Coarse Hammermills	CD-CHM-C1	Cyclone
		CD-CHM-C2	Cyclone
		CD-CHM-BF1	Bagfilter
		CD-CHM-BF2	Bagfilter
ES-GWH-1 & -2	Ground Wood Handling System	CD-GWH-BF	Dust Collection System Bagfilter
ES-PPS	Pellet Press Silo	CD-PPS-BV	Bin vent filter (2,500 s.f. of surface area)
ES-CLR-1 & -2	Two Pellet Coolers	CD-CLR-C1	Dual High Efficiency Cyclone
		CD-CLR-C2	Dual High Efficiency Cyclone
ES-EG	Emergency Generator (250kw, 350bhp)	N/A	N/A
ES-FWP	Fire Water Pump (300bhp)	N/A	N/A
Existing Permitted Equipment To Be MODIFIED By This Application			
Equipment To Be DELETED By This Application			

112(r) APPLICABILITY INFORMATION — A 3

Is your facility subject to 40 CFR Part 68 "Prevention of Accidental Releases" - Section 112(r) of the Federal Clean Air Act? Yes / (No)

If No, please specify in detail how your facility avoided applicability:

Enviva Pellets Ahoskie, LLC will not handle any of the substances subject to 112(r)

If your facility is Subject to 112(r), please complete the following:

A. Have you already submitted a Risk Management Plan (RMP) to EPA Pursuant to 40 CFR Part 68.10 or Part 68.150?

Yes ☐ No ☐ Specify required RMP submittal date: _____ If submitted, RMP submittal date: _____

B. Are you using administrative controls to subject your facility to a lesser 112(r) program standard?

Yes ☐ No ☐ If yes, please specify: _____

Attach Additional Sheets As Necessary

FORM A4

SURVEY OF AIR EMISSIONS AND FACILITY - WIDE REDUCTION & RECYCLING ACTIVITIES

DATE: Does facility have an environmental mangement system in place? ( ) YES (X) NO If so, is facility ISO 14000 Certified? ( ) YES (X) NO

Facility Name:	Enviva Pellets Ahoskie, LLC			Permit Number:	N/A		
Facility ID:	N/A (to be assigned)	County:	Hertford	Environmental Contact:	Glenn Gray / Plant Manager		
Mailing Address Line 1:	142 N.C. Rt 561 East			Phone No. ( )	(804) 412-0227	Fax No. ( )	(804) 412-0229
Mailing Address Line 2:				Zip Code:	27910	County:	Hertford
City:	Ahoskie	State:	North Carolina	Email Address:	Glenn.Gray@envivabiomass.com		

AIR EMISSIONS SOURCE REDUCTIONS - Any Air Emissions Source Reductions in the past year? ( ) YES (X) NO

Source Description and ID	Air Pollutant	Enter Code for Emission Reduction Option (See Codes)	Date Reduction Option Implemented (mo/yr)	Quantity Emitted from prior annual report to DAQ (lb/yr)	Quantity Emitted from current annual report to DAQ (lb/yr)	Has reduction activity been discontinued? If so, when was it discontinued? (mo/yr)	Addition detail about source
N/A							

Comments:

FACILITY - WIDE REDUCTIONS & RECYCLING ACTIVITIES - Any Reductions or Recycling Activities in the past year? ( ) YES (X) NO

Source Description or Activity	Pollutant or Recycled or Reduced Materials	Enter Code for Emission Reduction Option (See Codes)	Date Reduction Option Implemented (mo/yr)	Quantity Emitted from prior annual report	Quantity Emitted from current annual report	Has reduction activity been discontinued? If so, when was it discontinued? (mo/yr)	Addition detail about source
N/A							

Comments:

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

N.C. Division of Pollution Prevention and Environmental Assistance

POLLUTION PREVENTION PAYS

REVISED 1/07

Attach Additional Sheets As Necessary

FORM D1

FACILITY-WIDE EMISSIONS SUMMARY

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — **D1**

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

AIR POLLUTANT EMITTED	EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITATIONS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITATIONS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITATIONS) tons/yr
PARTICULATE MATTER (PM)	See Table 3-1 in the accompanying application document		
PARTICULATE MATTER < 10 MICRONS (PM_{10})			
PARTICULATE MATTER < 2.5 MICRONS ($PM_{2.5}$)			
SULFUR DIOXIDE (SO2)			
NITROGEN OXIDES (NOx)			
CARBON MONOXIDE (CO)			
VOLATILE ORGANIC COMPOUNDS (VOC)			
LEAD			
OTHER			

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

HAZARDOUS AIR POLLUTANT EMITTED	CAS NO.	EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITATIONS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITATIONS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITATIONS) tons/yr
		See Table 3-2 in the accompanying application document		

TOXIC AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

INDICATE REQUESTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS. EMISSIONS ABOVE THE TOXIC PERMIT EMISSION RATE (TPER) IN 15A NCAC 2Q .0711 MAY REQUIRE AIR DISPERSION MODELING. USE NETTING FORM D2 IF NECESSARY.

TOXIC AIR POLLUTANT EMITTED	CAS NO.	lb/hr	lb/day	lb/year	Modeling Required ? Yes	No
		See Table 3-3 in the accompanying application document				

COMMENTS:

Attach Additional Sheets As Necessary

FORM D4

EXEMPT AND INSIGNIFICANT ACTIVITIES SUMMARY

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

	DESCRIPTION OF EMISSION SOURCE	SIZE OR PRODUCTION RATE	BASIS FOR EXEMPTION OR INSIGNIFICANT ACTIVITY
1.	Green Wood Handling and Storage ES-GWHS	716,304 tpy	15A NCAC 02Q .0102 (c)(2)(E)
2.	Green Wood Fuel Storage Bin ES-GWFB	130,357 tpy	15A NCAC 02Q .0102 (c)(2)(E)
3.	Dried Wood Handling ES-DWH	418,533 tpy	15A NCAC 02Q .0102 (c)(2)(E)
4.	10 Pelletizers (Pellet Presses) ES-PP	418,533 tpy	15A NCAC 02Q .0102 (c)(2)(E)
5.	Final Product Handling ES-FPH	418,533 tpy	15A NCAC 02Q .0102 (c)(2)(E)
6.	Emergency Generator Diesel Fuel Tank TK1	2,500 gallons	15A NCAC 02Q .0102 (c)(1)(D)
7.	Fire Water Pump Diesel Fuel Tank TK2	500 gallons	15A NCAC 02Q .0102 (c)(1)(D)
8.			
9.			
10.			

FORM D

TECHNICAL ANALYSIS TO SUPPORT PERMIT APPLICATION

REVISED: 12/01/01 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operat

D5

PROVIDE DETAILED TECHNICAL CALCULATIONS TO SUPPORT ALL EMISSION, CONTROL, AND REGULATORY DEMONSTRATIONS MADE IN THIS APPLICATION. INCLUDE A COMPREHENSIVE PROCESS FLOW DIAGRAM AS NECESSARY TO SUPPORT AND CLARIFY CALCULATIONS AND ASSUMPTIONS. ADDRESS THE FOLLOWING SPECIFIC ISSUES ON SEPARATE PAGES:

A **SPECIFIC EMISSIONS SOURCE (EMISSION INFORMATION) (FORM B)** - SHOW CALCULATIONS USED, INCLUDING EMISSION FACTORS, MATERIAL BALANCES, AND/OR OTHER METHODS FROM WHICH THE POLLUTANT EMISSION RATES IN THIS APPLICATION WERE DERIVED. INCLUDE CALCULATION OF POTENTIAL BEFORE AND, WHERE APPLICABLE, AFTER CONTROLS. CLEARLY STATE ANY ASSUMPTIONS MADE AND PROVIDE ANY REFERENCES AS NEEDED TO SUPPORT MATERIAL BALANCE CALCULATIONS.

B **SPECIFIC EMISSION SOURCE (REGULATORY INFORMATION)(FORM E2 - TITLE V ONLY)** - PROVIDE AN ANALYSIS OF ANY REGULATIONS APPLICABLE TO INDIVIDUAL SOURCES AND THE FACILITY AS A WHOLE. INCLUDE A DISCUSSION OUTING METHODS (e.g. FOR TESTING AND/OR MONITORING REQUIREMENTS) FOR COMPLYING WITH APPLICABLE REGULATIONS, PARTICULARLY THOSE REGULATIONS LIMITING EMISSIONS BASED ON PROCESS RATES OR OTHER OPERATIONAL PARAMETERS. PROVIDE JUSTIFICATION FOR AVOIDANCE OF ANY FEDERAL REGULATIONS (PREVENTION OF SIGNIFICANT DETERIORATION (PSD), NEW SOURCE PERFORMANCE STANDARDS (NSPS), NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPS), TITLE V). INCLUDING EXEMPTIONS FROM THE FEDERAL REGULATIONS WHICH WOULD OTHERWISE BE APPLICABLE TO THIS FACILITY. SUBMIT ANY REQUIRED TO DOCUMENT COMPLIANCE WITH ANY REGULATIONS. INCLUDE EMISSION RATES CALCULATED IN ITEM "A" ABOVE. DATES OF MANUFACTURE, CONTROL EQUIPMENT, ETC. TO SUPPORT THESE CALCULATIONS.

C **CONTROL DEVICE ANALYSIS (FORM C)** - PROVIDE A TECHNICAL EVALUATION WITH SUPPORTING REFERENCES FOR ANY CONTROL EFFICIENCIES LISTED ON SECTION C FORMS, OR USED TO REDUCE EMISSION RATES IN CALCULATIONS UNDER ITEM "A" ABOVE. INCLUDE PERTINENT OPERATING PARAMETERS (e.g. OPERATING CONDITIONS, MANUFACTURING RECOMMENDATIONS, AND PARAMETERS AS APPLIED FOR IN THIS APPLICATION) CRITICAL TO ENSURING PROPER PERFORMANCE OF THE CONTROL DEVICES). INCLUDE AND LIMITATIONS OR MALFUNCTION POTENTIAL FOR THE PARTICULAR CONTROL DEVICES AS EMPLOYED AT THIS FACILITY. DETAIL PROCEDURES FOR ASSURING PROPER OPERATION OF THE CONTROL DEVICE INCLUDING MONITORING SYSTEMS AND MAINTENANCE TO BE PERFORMED.

D **PROCESS AND OPERATIONAL COMPLIANCE ANALYSIS - (FORM E3 - TITLE V ONLY)** - SHOWING HOW COMPLIANCE WILL BE ACHIEVED WHEN USING PROCESS, OPERATIONAL, OR OTHER DATA TO DEMONSTRATE COMPLIANCE. REFER TO COMPLIANCE REQUIREMENTS IN THE REGULATORY ANALYSIS IN ITEM "B" WHERE APPROPRIATE. LIST ANY CONDITIONS OR PARAMETERS THAT CAN BE MONITORED AND REPORTED TO DEMONSTRATE COMPLIANCE WITH THE APPLICABLE REGULATIONS.

E **PROFESSIONAL ENGINEERING SEAL** - PURSUANT TO 15A NCAC 2Q .0112 "APPLICATION REQUIRING A PROFESSIONAL ENGINEERING SEAL," A PROFESSIONAL ENGINEER REGISTERED IN NORTH CAROLINA SHALL BE REQUIRED TO SEAL TECHNICAL PORTIONS OF THIS APPLICATION FOR NEW SOURCES AND MODIFICATIONS OF EXISTING SOURCES. (SEE INSTRUCTIONS FOR FURTHER APPLICABILITY).

I, M. Dale Overcash, attest that this application for Enviva Pellets Ahoskie, LLC has been reviewed by me and is accurate, complete and consistent with the information supplied in the engineering plans, calculations, and all other supporting documentation to the best of my knowledge. I further attest that to the best of my knowledge the proposed design has been prepared in accordance with the applicable regulations. Although certain portions of this submittal package may have been developed by other professionals, inclusion of these materials under my seal signifies that I have reviewed this material and have judged it to be consistent with the proposed design. Note: In accordance with NC General Statutes 143-215.6A and 143-215.6B, any person who knowingly makes any false statement, representation, or certification in any application shall be guilty of a Class 2 misdemeanor which may include a fine not to exceed $10,000 as well as civil penalties up to $25,000 per violation.

(PLEASE USE BLUE INK TO COMPLETE THE FOLLOWING)

NAME:	M. Dale Overcash, P.E.
DATE:	9/30/10
COMPANY:	Trinity Consultants of NC, PC
ADDRESS:	One Copley Parkway, Suite 310 Morrisville, NC 27560
TELEPHONE:	919-462-9693
SIGNATURE:	
PAGES CERTIFIED:	Entire application

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

PLACE NORTH CAROLINA SEAL HERE

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — **B**

EMISSION SOURCE DESCRIPTION: **Green Wood Direct-Fired Dryer System**	EMISSION SOURCE ID NO: **ES-DRYER**
	CONTROL DEVICE ID NO(S): **CD-MC1, CD-MC2, & CD-WESP**
OPERATING SCENARIO **1** OF **1**	EMISSION POINT (STACK) ID NO(S): **EP-DRYER**

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):

Green wood is conveyed to either a one or two rotary dryer system. Direct contact heat is provided to the system via a 125 mmBtu/hr burner system (one or two burners). Air emissions are controlled by cyclones for bulk particulate removal and additional particulate is removed utilizing a wet electrostatic precipitator (WESP) operating after the cyclones.

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ■ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Storage silos/bins (Form B6)
- ☐ Manufact. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☐ Other (Form B9)

START CONSTRUCTION DATE:	TBD	OPERATION DATE:	TBD	DATE MANUFACTURED:	TBD
MANUFACTURER / MODEL NO.:	TBD[1]	EXPECTED OP. SCHEDULE:	24 HR/DAY	7 DAY/WK	52 WK/YR
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):		NESHAP (SUBPART?):		MACT (SUBPART?):	
PERCENTAGE ANNUAL THROUGHPUT (%):	DEC-FEB 25%	MAR-MAY 25%	JUN-AUG 25%	SEP-NOV 25%.	
EXPECTED ANNUAL HOURS OF OPERATION	8,760	VISIBLE STACK EMISSIONS UNDER NORMAL OPERATION:	<20	% OPACITY	

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS EFORE CONTROLS / LIMIT: lb/hr	POTENTIAL EMSSIONS EFORE CONTROLS / LIMIT: tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	See Emission Calculations in Appendix B						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT AND CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS EFORE CONTROLS / LIMIT: lb/hr	POTENTIAL EMSSIONS EFORE CONTROLS / LIMIT: tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
	See Emission Calculations in Appendix B						

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS

TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE	lb/hr	lb/day	lb/yr
	See Emission Calculations in Appendix B			

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

OMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURC

Attach Additional Sheets As Necessary

[1] Final equipment selection has not yet occurred.

FORM B1

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

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — **B1**

EMISSION SOURCE DESCRIPTION: **Green Wood Direct-Fired Dryer System**	EMISSION SOURCE ID NO: **ES-DRYER**
OPERATING SCENARIO: 1 OF 1	CONTROL DEVICE ID NO(S): **CD-MC1, CD-MC2, & CD-WESP**
	EMISSION POINT (STACK) ID NO(S): **EP-DRYER**

DESCRIBE USE: ◉ **PROCESS HEAT** ○ SPACE HEAT ○ ELECTRICAL GENERATION
○ CONTINUOUS US ○ STAND BY/EMERGENCY ○ OTHER (DESCRIBE): _____

HEATING MECHANISM: ○ INDIRECT ◉ **DIRECT**

MAX. FIRING RATE (MMBTU/HOUR): **125**

WOOD-FIRED BURNER

WOOD TYPE: ○ BARK ○ WOOD/BARK ◉ **WET WOOD** ○ DRY WOOD ○ OTHER (DESCRIBE): _____

PERCENT MOISTURE OF FUEL: **~50%**

○ UNCONTROLLED ○ CONTROLLED WITH FLYASH REINJECTION ◉ **CONTROLLED W/O REINJECTION**

FUEL FEED METHOD: **Air Swept Fuel Feeders** HEAT TRANSFER MEDIA: ○ STEAM ◉ AIR ○ OTHER

METHOD OF TUBE CLEANING **N/A-Process uses highly purified water**

COAL-FIRED BURNER

TYPE OF BOILER — IF OTHER DESCRIBE:

PULVERIZED	OVERFEED STOKER	UNDERFEED STOKER	SPREADER STOKER	FLUIDIZED BED
☐ WET BED	○ UNCONTROLLED	○ UNCONTROLLED	○ UNCONTROLLED	○ CIRCULATING
☐ DRY BED	○ CONTROLLED	○ CONTROLLED	○ FLYASH REINJECTION	○ RECIRCULATING
			○ NO FLYASH REINJECTION	

METHOD OF LOADING: ○ CYCLONE ○ HANDFIRED ○ TRAVELING GRATE ○ OTHER (DESCRIBE): _____

METHOD OF TUBE CLEANING: CLEANING SCHEDULE:

OIL/GAS-FIRED BURNER

TYPE OF BOILER: ☐ UTILITY ☐ INDUSTRIAL ☐ COMMERCIAL ☐ RESIDENTIAL

TYPE OF FIRING: ☐ NORMAL ☐ TANGENTIAL ☐ LOW NOX BURNERS ☐ NO LOW NOX BURNER

METHOD OF TUBE CLEANING: CLEANING SCHEDULE:

OTHER FUEL-FIRED BURNER

TYPE OF FUEL: _____ PERCENT MOISTURE: _____

TYPE OF BOILER: ☐ UTILITY ☐ INDUSTRIAL ☐ COMMERCIAL ☐ RESIDENTIAL

TYPE OF FIRING: _____ TYPE OF CONTROL (IF ANY): _____ FUEL FEED METHOD: _____

METHOD OF TUBE CLEANING: CLEANING SCHEDULE:

FUEL USAGE (INCLUDE STARTUP/BACKUP FUELS)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)
Wet Wood	**LB**	**Nominal 29,762**	

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	SPECIFIC BTU CONTENT	SULFUR CONTENT (% BY WEIGHT)	ASH CONTENT (% BY WEIGHT)
Wet Wood	**Nominal 4200 BTU/lb**	**0.011**	

SAMPLING PORTS, COMPLIANT WITH EPA METHOD 1 WILL BE INSTALLED ON THE STACKS: ◉ YES ○ NO

COMMENTS:

FORM C4

CONTROL DEVICE (CYCLONE, MULTICYCLONE, OR OTHER MECHANICAL)

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — C4

CONTROL DEVICE ID NO: CD-MC1 & CD-MC2	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): ES-DRYER
EMISSION POINT (STACK) ID NO(S): EP-DRYER	POSITION IN SERIES OF CONTROLS NO. 1 OF 2 UNITS
MANUFACTURER: TBD[1]	MODEL NO:
DATE MANUFACTURE TBD	PROPOSED OPERATION DATE: TBD
OPERATING SCENARIO:	PROPOSED START CONSTRUCTION DATE: TBD
1 OF 1	P.E. SEAL REQUIRED (PER 2Q .0112)? (•) YES ( ) NO

DESCRIBE CONTROL SYSTEM:
Two identical multi-cyclones (multiclones) are equipped to the rotary dryer system to capture bulk PM emissions; emissions are routed to the WESP. The parameters presented here are per each multiclone.

	PM	PM_{10}	$PM_{2.5}$	
POLLUTANT(S) COLLECTED:				
BEFORE CONTROL EMISSION RATE (LB/HR):				
CAPTURE EFFICIENCY:	%	%	%	%
CONTROL DEVICE EFFICIENCY:	%	%	%	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL EMISSION RATE (LB/HR):	Emissions routed to WESP			

PRESSURE DROP (IN. H_2O): MIN 2.5" MAX 4.0" WARNING ALAF ( ) YES (•) NO

INLET TEMPERATURE (°F): MIN MAX Nominal 400	OUTLET TEMPERATURE (°F): MIN MAX Nominal 400
INLET AIR FLOW RATE (ACFM): 145,000	BULK PARTICLE DENSITY (LB/FT³): 3E-05
POLLUTANT LOADING RATE (GR/FT³) 0.24	

SETTLING CHAMBER	CYCLONE			MULTICYCLONE
LENGTH (INCHES):	INLET VELOCITY (FT/SEC):		( ) CIRCULAR ( ) RECTANGLE	NO. TUBES: 30
WIDTH (INCHES):	*DIMENSIONS (INCHES) See instructions*		*IF WET SPRAY UTILIZED*	DIAMETER OF TUBES: 24"
HEIGHT (INCHES):	H:	Dd:	LIQUID USED:	HOPPER ASPIRATION SYSTEM?
VELOCITY (FT/SEC.):	W:	Lb:	FLOW RATE (GPM):	( ) YES (•) NO
NO. TRAYS:	De:	Lc:	MAKE UP RATE (GPM):	LOUVERS?
NO. BAFFLES:	D:	S:		( ) YES (•) NO

TYPE OF CYCLONE (•) CONVENTIONAL ( ) HIGH EFFICIENCY ( ) OTHER

DESCRIBE MAINTENANCE PROCEDURES:
Periodic inspection of mechanical integrity during plant outages as specified by manufacturer or common industry practices

DESCRIBE INCOMING AIR STREAM:
The flue gas from the dryer will pass through the multiclones before entering the WESP

PARTICLE SIZE DISTRIBUTION		
SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	Unknown	
1-10		
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC:
None

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

Attach Additional Sheets As Necessary

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

FORM C2

CONTROL DEVICE (Electrostatic Precipitator)

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — **C2**

CONTROL DEVICE ID NO: **CD-WESP**	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO: **ES-DRYER**
EMISSION POINT (STACK) ID NO(S: **EP-DRYER**	POSITION IN SERIES OF CONTROLS: NO. 2 OF 2 UNITS
MANUFACTURER: TBD[1]	MODEL NO. TBD[1]
MANUFACTURE DATE: TBD	PROPOSED OPERATION DATE: TBD
OPERATING SCENARIO:	PROPOSED START CONSTRUCTION DATE: TBD
1 OF 1	P.E. SEAL REQUIRED (PER 2Q .0112)? (●) YES ( ) NO
EQUIPMENT SPECIFICATIONS	GAS DISTRIBUTION GRIDS: (●) YES ( ) NO
TYPE: (●) WET ( ) DRY	(●) SINGLE-STAGE ( ) TWO-STAGE
TOTAL COLLECTION PLATE AREA (FT^2): 29,904	NO. FIELDS 2 NO. COLLECTOR PLATE PER FIELD: 232 tubes
COLLECTOR PLATES SIZE (FT): LENGTH: WIDTH:	SPACING BETWEEN COLLECTOR PLATES (INCHES) 12" hextube
TOTAL DISCHARGE ELECTRODE LENGTH(FT): 18'	GAS VISCOSITY (POISE): 2.054 x 10^-4 POISE.
NUMBER OF DISCHARGE ELECTRODES: 464	NUMBER OF COLLECTING ELECTRODE RAPPERS: none
MAXIMUM INLET AIR FLOW RATE (ACFM): 190,487	PARTICLE MIGRATION VELOCITY (FT/SEC): 0.234
MINIMUM GAS TREATMENT TIME (SEC): 2.3	BULK PARTICLE DENSITY (LB/FT^3): 45/cu ft
FIELD STRENGTH (VOLTS) CHARGING: 83kV COLLECTING: N/	CORONA POWER (WATTS/1000 CFM): 4000
ELECTRICAL USAGE (kw/HOUR): 116	
CLEANING PROCEDURES: ( ) RAPPING ( ) PLATE VIBRATING (●) WASHING ( ) OTHER	
OPERATING PARAMETERS PRESSURE DROP (IN. H20): MIN 2" MAX 2"	WARNING ALARM? ( ) YES (●) NO
RESISTIVITY OF POLLUTANT (OHM-CM): N/A	GAS CONDITIONING: (●) YES ( ) NO TYPE OF AGENT (IF YES): Water
INLET GAS TEMPERATURE (°F): MIN 178 MAX 178	OUTLET GAS TEMPERATURE (°F): MIN 178 MAX 178
VOLUME OF GAS HANDLED (ACFM): 192,123	INLET MOISTURE PERCENT: MIN 48.8% MAX 48.8%
POWER REQUIREMENTS	IS AN ENERGY MANAGEMENT SYSTEM USED? (●) YES ( ) NO

FIELD NO.	*NO. OF SETS*	*CHARGING*	*EACH TRANSFORMER (kVA)*	*EACH RECTIFIER Kv Ave/Peak Ma Dc*
1	1		118	83 / 1265
2	1		118	83 / 1265

POLLUTANT(S) COLLECTED:	PM	PM_{10}	$PM_{2.5}$	
BEFORE CONTROL EMISSION RATE (LB/HR):	49.02			
CAPTURE EFFICIENCY:	%	%	%	%
CONTROL DEVICE EFFICIENCY:	88.9 %	%	%	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL EMISSION RATE (LB/HR):	See calculations in Appendix B			

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	Unknown	
1-10		
10-25		
25-50		
50-100		
>100		
TOTAL = 100		

DESCRIBE STARTUP PROCEDURES:
Per manufacturer specifications or common industry practices

DESCRIBE MAINTENANCE PROCEDURES:
Per manufacturer specifications or common industry practices

DESCRIBE ANY AUXILIARY MATERIALS INTRODUCED INTO THE CONTROL SYSTEM:

DESCRIBE ANY MONITORING DEVICES, GAUGES, OR TEST PORTS AS ATTACHMENTS:
PLC

ATTACH A DIAGRAM OF THE TOP VIEW OF THE ESP WITH DIMENSIONS (include at a minimum the plate spacing and wire spacing and indicate the electrode type), AND THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

Attach Additional Sheets As Necessary

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

FORM B

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 12/01/01 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate **B**

EMISSION SOURCE DESCRIPTION: **Two Coarse Hammermills**	EMISSION SOURCE ID NO: **ES-CHM-1 & -2**
	CONTROL DEVICE ID NO(S): **CD-CHM-C1, CD-CHM-C2, CD-CHM-BF1, & CD-CHM-BF2**
OPERATING SCENARIO 1 OF 1	EMISSION POINT (STACK) ID NO(S): **EP-CHM1 & EP-CHM2**

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
Dried materials are reduced to the appropriate size needed for pelletization using two coarse hammermills

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

☐ Coal,wood,oil, gas, other burner (Form B1) ☐ Woodworking (Form B4) ☐ Manufact. of chemicals/coatings/inks (Form B7)
☐ Int.combustion engine/generator (Form B2) ☐ Coating/finishing/printing (Form B5) ☐ Incineration (Form B8)
☐ Liquid storage tanks (Form B3) ☐ Storage silos/bins (Form B6) ■ Other (Form B9)

START CONSTRUCTION DA' TBD	OPERATION DATE: TBD	DATE MANUFACTURED: TBD
MANUFACTURER / MODEL NO.: TBD[1]	EXPECTED OP. SCHEDULE: 24 HR/DAY 7 DAY/WK 52 WK/YR	
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):	NESHAP (SUBPART?):	MACT (SUBPART?):
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25%	MAR-MAY 25%	JUN-AUG 25% SEP-NOV 25%.
EXPECTED ANNUAL HOURS OF OPERATI(8,760	VISIBLE STACK EMISSIONS UNDER NORMAL OPERATION: < 20 % OPACITY	

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	See Emission Calculations in Appendix B						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT AND CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
N/A							

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS

TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE	lb/hr	lb/day	lb/yr
N/A				

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

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

Attach Additional Sheets As Necessary

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

FORM B9

EMISSION SOURCE (OTHER)

REVISED: 12/01/01 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate **B9**

EMISSION SOURCE DESCRIPTION: **Two Coarse Hammermills**	EMISSION SOURCE ID NO: **ES-CHM-1 & -2**
	CONTROL DEVICE ID NO(S): **CD-CHM-C1, CD-CHM-C2, CD-CHM BF1, & CD-CHM-BF2**
OPERATING SCENARIO: 1 OF 1	EMISSION POINT (STACK) ID NO(S): **EP-CHM1 & EP-CHM2**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

Dried materials are reduced to the appropriate size needed for pelletization using two coarse hammermills

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/HR)	LIMITATION(UNIT/HR)
Dried Wood	**Tons**	**47.78**	

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UNIT/BATCH)

MAXIMUM DESIGN (BATCHES / HOUR):

REQUESTED LIMITATION (BATCHES / HOUR): (BATCHES/YR):

FUEL USED: **N/A**	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR): **N/A**
MAX. CAPACITY HOURLY FUEL USE: **N/A**	REQUESTED CAPACITY ANNUAL FUEL USE: **N/A**

COMMENTS:

Attach Additional Sheets as Necessary

FORM C4

CONTROL DEVICE (CYCLONE, MULTICYCLONE, OR OTHER MECHANICAL)

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — C4

CONTROL DEVICE ID NO: CD-CHM-C1 & CD-CHM-C2	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): ES-CHM-1 & -2
EMISSION POINT (STACK) ID NO(S): EP-CHM1 & EP-CHM2	POSITION IN SERIES OF CONTROLS NO. 1 OF 2 UNITS
MANUFACTURER: TBD[1]	MODEL NO: TBD[1]
DATE MANUFACTURED: TBD	PROPOSED OPERATION DATE: TBD
OPERATING SCENARIO:	PROPOSED START CONSTRUCTION DATE: TBD
1 OF 1	P.E. SEAL REQUIRED (PER 2Q .0112)? ○ YES ○ NO

DESCRIBE CONTROL SYSTEM:

Two identical cyclones are equipped to the coarse hammermills to capture bulk PM emissions; emissions are routed to two bagfilters. The parameters presented here are per each multiclone.

POLLUTANT(S) COLLECTED:	PM	PM_{10}	$PM_{2.5}$	
BEFORE CONTROL EMISSION RATE (LB/HR):				
CAPTURE EFFICIENCY:	%	%	%	%
CONTROL DEVICE EFFICIENCY:	%	%	%	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL EMISSION RATE (LB/HR):	Emissions routed to bagfilters			

PRESSURE DROP (IN. H_2O): MIN MAX 6.0" WARNING ALARM? ○ YES ● NO

INLET TEMPERATURE (°F): MIN MAX Ambient	OUTLET TEMPERATURE (°F): MIN MAX Ambient
INLET AIR FLOW RATE (ACFM): 38,000	BULK PARTICLE DENSITY (LB/FT³): 1E-06
POLLUTANT LOADING RATE (GR/FT³): 0.01	

SETTLING CHAMBER	CYCLONE			MULTICYCLONE
LENGTH (INCHES):	INLET VELOCITY (FT/SEC): 50	○ CIRCULAR ○ RECTANGLE		NO. TUBES:
WIDTH (INCHES):	DIMENSIONS (INCHES) See instructions [2]		IF WET SPRAY UTILIZED	DIAMETER OF TUBES:
HEIGHT (INCHES):	H:	Dd:	LIQUID USED:	HOPPER ASPIRATION SYSTEM?
VELOCITY (FT/SEC.):	W:	Lb:	FLOW RATE (GPM):	○ YES ○ NO
NO. TRAYS:	De:	Lc:	MAKE UP RATE (GPM):	LOUVERS?
NO. BAFFLES:	D:	S:		○ YES ○ NO
	TYPE OF CYCLONE: ● CONVENTIONAL	○ HIGH EFFICIENCY	○ OTHER	

DESCRIBE MAINTENANCE PROCEDURES:

Periodic inspection of mechanical integrity during plant outages as specified by manufacturer or common industry practices

DESCRIBE INCOMING AIR STREAM:

The particulates from the hammermills will pass through the cyclones before entering the bagfilters

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	Unknown	
1-10		
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC:

None

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

Attach Additional Sheets As Necessary

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

[2] Dimensions of cyclones TBD, but bagfilter is primary control device

FORM C1

CONTROL DEVICE (FABRIC FILTER)

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — C1

CONTROL DEVICE ID NO: CD-CHM-BF1 & CD-CHM-BF2	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): ES-CHM-1 & -2
EMISSION POINT (STACK) ID NO(S): EP-CHM1 & EP-CHM2	POSITION IN SERIES OF CONTROLS NO. 2 OF 2 UNITS
MANUFACTURER: TBD[1]	MODEL NO: TBD
DATE MANUFACTURED: TBD	PROPOSED OPERATION DATE: TBD
OPERATING SCENARIO:	PROPOSED START CONSTRUCTION DATE: TBD
1 OF 1	P.E. SEAL REQUIRED (PER 2Q .0112)? (YES) NO

DESCRIBE CONTROL SYSTEM:

Two bagfilters equipped to the coarse hammermills following the cyclones.

POLLUTANT(S) COLLECTED:	PM	PM_{10}	$PM_{2.5}$	
BEFORE CONTROL EMISSION RATE (LB/HR):				
CAPTURE EFFICIENCY:	%	%	%	%
CONTROL DEVICE EFFICIENCY:	%	%	%	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL EMISSION RATE (LB/HR):	See calculations in Appendix B			

PRESSURE DROP (IN. H_2O): MIN:	MAX: 8"	GAUGE? (YES) NO	WARNING ALARM? (YES) NO
BULK PARTICLE DENSITY (LB/FT^3):	53	INLET TEMPERATURE (°F): Ambient	
POLLUTANT LOADING RATE: 0.01	LB/HR (GR/FT^3)	OUTLET TEMPERATURE (°F): Ambient	
INLET AIR FLOW RATE (ACFM): 38,000		FILTER MAX OPERATING TEMP. (°F): N/A	
NO. OF COMPARTMENTS: TBD[1]	NO. OF BAGS PER COMPARTMENT: TBD[1]	LENGTH OF BAG (IN.): TBD[1]	
DIAMETER OF BAG (IN.):	DRAFT: (INDUCED/NEG) FORCED/POS.	FILTER SURFACE AREA (FT^2): 6,333	
AIR TO CLOTH RATIO: 6	FILTER MATERIAL: Polyester or equivalent	WOVEN FELTED	

DESCRIBE CLEANING PROCEDURES:

- AIR PULSE
- SONIC
- REVERSE FLOW
- SIMPLE BAG COLLAPSE
- MECHANICAL/SHAKER
- RING BAG COLLAPSE
- (OTHER) Cleaning procedure dependent on final design

DESCRIBE INCOMING AIR STREAM:

The air stream will contain wood dust particles

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	Unknown	
1-10		
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

METHOD FOR DETERMINING WHEN TO CLEAN:

(AUTOMATIC) TIMED MANUAL

METHOD FOR DETERMINING WHEN TO REPLACE THE BAGS:

ALARM (INTERNAL INSPECTION) VISIBLE EMISSION OTHER

SPECIAL CONDITIONS: None

MOISTURE BLINDING CHEMICAL RESISTIVITY OTHER

EXPLAIN:

DESCRIBE MAINTENANCE PROCEDURES: Per manufacturer recommendations or common industry practices

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

Attach Additional Sheets As Necessary

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

FORM B

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — **B**

EMISSION SOURCE DESCRIPTION: **Ground Wood Handling System**	EMISSION SOURCE ID NO: **ES-GWH-1 & -2**
	CONTROL DEVICE ID NO(S): **CD-GWH-BF**
OPERATING SCENARIO 1 OF 1	EMISSION POINT (STACK) ID NO(S): **EP-GWH**

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):

One set of conveyors after the hammermills transports material to the pellet press silo. A second set of conveyors transports the material from the pellet press silo to the pellet presses. Particulate emissions are routed to a common dust collection system. Drop points routed to common control: coarse hammermills to "accepts conveyor", "accepts conveyor" to pellet press silo infeed conveyor, pellet press silo to pellet press feed conveyor, silo bypass to pellet press conveyor, & pellet press distribution conveyors

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

☐ Coal,wood,oil, gas, other burner (Form B1) ☐ Woodworking (Form B4) ☐ Manufact. of chemicals/coatings/inks (Form B7)
☐ Int.combustion engine/generator (Form B2) ☐ Coating/finishing/printing (Form B5) ☐ Incineration (Form B8)
☐ Liquid storage tanks (Form B3) ☐ Storage silos/bins (Form B6) ■ Other (Form B9)

START CONSTRUCTION DA TBD	OPERATION DATE: TBD	DATE MANUFACTURED: TBD
MANUFACTURER / MODEL NO.: TBD*	EXPECTED OP. SCHEDULE: 24 HR/DAY 7 DAY/WK 52 WK/YR	
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):	NESHAP (SUBPART?):	MACT (SUBPART?):
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25%	MAR-MAY 25%	JUN-AUG 25% SEP-NOV 25%.
EXPECTED ANNUAL HOURS OF OPERATI(8,760	VISIBLE STACK EMISSIONS UNDER NORMAL OPERATION: < 20 % OPACITY	

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	See Emission Calculations in Appendix B						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT AND CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
N/A							

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS

TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE	lb/hr	lb/day	lb/yr
N/A				

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

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

Attach Additional Sheets As Necessary

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

FORM B9

EMISSION SOURCE (OTHER)

REVISED: 12/01/01 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate **B9**

EMISSION SOURCE DESCRIPTION: Ground Wood Handling System	EMISSION SOURCE ID NO: ES-GWH-1 & -2
OPERATING SCENARIO: 1 OF 1	CONTROL DEVICE ID NO(S): CD-GWH-BF
	EMISSION POINT (STACK) ID NO(S): EP-GWH

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

One set of conveyors after the hammermills transports material to the pellet press silo. A second set of conveyors transports the material from the pellet press silo to the pellet presses. Particulate emissions are routed to a common dust collection system. Drop points routed to common control: coarse hammermills to "accepts conveyor", "accepts conveyor" to pellet press silo infeed conveyor, pellet press silo to pellet press feed conveyor, silo bypass to pellet press conveyor, & pellet press distribution conveyors

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/HR)	LIMITATION(UNIT/HR)
Dried Ground Wood	Tons	47.78	

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UNIT/BATCH)

MAXIMUM DESIGN (BATCHES / HOUR):	
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/YR):
FUEL USED: N/A	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR): N/A
MAX. CAPACITY HOURLY FUEL USE: N/A	REQUESTED CAPACITY ANNUAL FUEL USE: N/A

COMMENTS:

Attach Additional Sheets as Necessary

FORM C1

CONTROL DEVICE (FABRIC FILTER)

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — C1

CONTROL DEVICE ID NO: CD-GWH-BF	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): ES-GWH-1 & -2
EMISSION POINT (STACK) ID NO(S): EP-GWH	POSITION IN SERIES OF CONTROLS NO. 1 OF 1 UNITS
MANUFACTURER: TBD[1]	MODEL NO: TBD
DATE MANUFACTURED: TBD	PROPOSED OPERATION DATE: TBD
OPERATING SCENARIO:	PROPOSED START CONSTRUCTION DATE: TBD
1 OF 1	P.E. SEAL REQUIRED (PER 2Q .0112)? (YES) NO

DESCRIBE CONTROL SYSTEM:

A fabric filter dust collector system will be equipped collect particulate emissions from the ground wood handling system

POLLUTANT(S) COLLECTED:	PM	PM_{10}	$PM_{2.5}$	
BEFORE CONTROL EMISSION RATE (LB/HR):				
CAPTURE EFFICIENCY:	%	%	%	%
CONTROL DEVICE EFFICIENCY:	%	%	%	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL EMISSION RATE (LB/HR):	See calculations in Appendix B			

PRESSURE DROP (IN. H_2O): MIN:	MAX: 8"	GAUGE? (YES) NO	WARNING ALARM? (YES) NO
BULK PARTICLE DENSITY (LB/FT^3):	1.43E-06	INLET TEMPERATURE (°F): Ambient	
POLLUTANT LOADING RATE: 0.01	LB/HR (GR/FT^3)	OUTLET TEMPERATURE (°F): Ambient	
INLET AIR FLOW RATE (ACFM): 5000		FILTER MAX OPERATING TEMP. (°F): N/A	
NO. OF COMPARTMENTS: TBD[1]	NO. OF BAGS PER COMPARTMENT: TBD[1]	LENGTH OF BAG (IN.): TBD[1]	
DIAMETER OF BAG (IN.):	DRAFT: (INDUCED/NEG) FORCED/POS.	FILTER SURFACE AREA (FT^2): 833	
AIR TO CLOTH RATIO: 6	FILTER MATERIAL: Polyester or equivalent	WOVEN FELTED	

DESCRIBE CLEANING PROCEDURES:

- AIR PULSE
- SONIC
- REVERSE FLOW
- SIMPLE BAG COLLAPSE
- MECHANICAL/SHAKER
- RING BAG COLLAPSE
- (OTHER) Cleaning procedure dependent on final design

PARTICLE SIZE DISTRIBUTION:

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	Unknown	
1-10		
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

DESCRIBE INCOMING AIR STREAM:

The air stream will contain wood dust particles

METHOD FOR DETERMINING WHEN TO CLEAN:

(AUTOMATIC) TIMED MANUAL

METHOD FOR DETERMINING WHEN TO REPLACE THE BAGS:

ALARM (INTERNAL INSPECTION) VISIBLE EMISSION OTHER

SPECIAL CONDITIONS: None

MOISTURE BLINDING CHEMICAL RESISTIVITY OTHER

EXPLAIN:

DESCRIBE MAINTENANCE PROCEDURES: Per manufacturer recommendations or common industry practices

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

Attach Additional Sheets As Necessary

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

FORM B

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 12/01/01 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate **B**

EMISSION SOURCE DESCRIPTION: **Pellet Press Silo**	EMISSION SOURCE ID NO: **ES-PPS**
	CONTROL DEVICE ID NO(S): **CD-PPS-BV**
OPERATING SCENARIO 1 OF 1	EMISSION POINT (STACK) ID NO(S): **EP-PPS**

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
A pellet press silo stores dried ground wood prior to transport to the pellet presses.

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

☐ Coal,wood,oil, gas, other burner (Form B1) ☐ Woodworking (Form B4) ☐ Manufact. of chemicals/coatings/inks (Form B7)
☐ Int.combustion engine/generator (Form B2) ☐ Coating/finishing/printing (Form B5) ☐ Incineration (Form B8)
☐ Liquid storage tanks (Form B3) ■ Storage silos/bins (Form B6) ☐ Other (Form B9)

START CONSTRUCTION DA TBD	OPERATION DATE: TBD	DATE MANUFACTURED: TBD	
MANUFACTURER / MODEL N TBD	EXPECTED OP. SCHEDULE: 24 HR/DAY 7 DAY/WK 52 WK/YR		
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):	NESHAP (SUBPART?):	MACT (SUBPART?):	
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25%	MAR-MAY 25%	JUN-AUG 25%	SEP-NOV 25%.
EXPECTED ANNUAL HOURS OF OPERATI(8,760	VISIBLE STACK EMISSIONS UNDER NORMAL OPERATION: < 20 % OPACITY		

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	See Emission Calculations in Appendix B						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT AND CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
N/A							

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS

TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE	lb/hr	lb/day	lb/yr
N/A				

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

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

Attach Additional Sheets As Necessary

FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — **B6**

EMISSION SOURCE DESCRIPTION: Pellet Press Silo	EMISSION SOURCE ID NO: ES-PPS
	CONTROL DEVICE ID NO(S): CD-PPS-BV
OPERATING SCENARIO: 1 OF 1	EMISSION POINT(STACK) ID NO(S): EP-PPS

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

A pellet press silo stores dried ground wood prior to transport to the pellet presses.

MATERIAL STORED:				DENSITY OF MATERIAL (LB/FT3): 40		
CAPACITY	CUBIC FEET 4778			TONS: 95.6		
DIMENSIONS (FEET)	HEIGHT:	DIAMETER:	*(OR)*	LENGTH:	WIDTH:	HEIGHT:
ANNUAL PRODUCT THROUGHPUT (TONS)	ACTUAL:			MAXIMUM DESIGN CAPACITY:		

PNEUMATICALLY FILLED	MECHANICALLY FILLED		FILLED FROM
☐ BLOWER	☐ SCREW CONVEYOR		☐ RAILCAR
☐ COMPRESSOR	☑ BELT CONVEYOR	MOTOR HP:	☐ TRUCK
☐ OTHER:	☐ BUCKET ELEVATOR		☐ STORAGE PILE
	☐ OTHER:		☑ OTHER: Conveyor

NO. FILL TUBES:

MAXIMUM ACFM:

MATERIAL IS FILLED TO: Ground wood handling conveyors on way to pellet press

BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO?

Gravity with wood to dropping to conveyor. Conveyor part of ES-GWH (controlled by dust collection system

MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): 47.78

MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR): 47.78

COMMENTS:

Silo sized to provide 2 hours of hold up capacity in the event of dryer downtime (47.78 tph * 2 hours)

Attach Additional Sheets As Necessary

FORM C1

CONTROL DEVICE (FABRIC FILTER)

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — C1

CONTROL DEVICE ID NO: CD-PPS-BV	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): ES-PPS
EMISSION POINT (STACK) ID NO(S): EP-PPS	POSITION IN SERIES OF CONTROLS NO. 1 OF 1 UNITS
MANUFACTURER: TBD[1]	MODEL NO: TBD
DATE MANUFACTURED: TBD	PROPOSED OPERATION DATE: TBD
OPERATING SCENARIO:	PROPOSED START CONSTRUCTION DATE: TBD
1 OF 1	P.E. SEAL REQUIRED (PER 2Q .0112)? (YES) NO

DESCRIBE CONTROL SYSTEM:

A bin vent filter collects dust from when wood enters or exits the silo and displaces air.

POLLUTANT(S) COLLECTED:	PM	PM_{10}	$PM_{2.5}$	
BEFORE CONTROL EMISSION RATE (LB/HR):				
CAPTURE EFFICIENCY:	%	%	%	%
CONTROL DEVICE EFFICIENCY:	%	%	%	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL EMISSION RATE (LB/HR):	See calculations in Appendix B			

PRESSURE DROP (IN. H_2O): MIN:	MAX: 4"	GAUGE? (YES) NO	WARNING ALARM? (YES) NO
BULK PARTICLE DENSITY (LB/FT^3):	1.43E-06	INLET TEMPERATURE (°F):	Ambient
POLLUTANT LOADING RATE: 0.01	LB/HR (GR/FT^3)	OUTLET TEMPERATURE (°F):	Ambient
INLET AIR FLOW RATE (ACFM):	15,000	FILTER MAX OPERATING TEMP. (°F):	N/A
NO. OF COMPARTMENTS: TBD[1]	NO. OF BAGS PER COMPARTMENT: TBD[1]	LENGTH OF BAG (IN.): TBD[1]	
DIAMETER OF BAG (IN.):	DRAFT: INDUCED/NEG. (FORCED/POS.)	FILTER SURFACE AREA (FT^2):	2500
AIR TO CLOTH RATIO: 6	FILTER MATERIAL: Polyester or equivalent	WOVEN FELTED	

DESCRIBE CLEANING PROCEDURES:

- AIR PULSE
- SONIC
- REVERSE FLOW
- SIMPLE BAG COLLAPSE
- MECHANICAL/SHAKER
- RING BAG COLLAPSE
- (OTHER) Cleaning procedure dependent on final design

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	Unknown	
1-10		
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

DESCRIBE INCOMING AIR STREAM:

The air stream will contain wood dust particles

METHOD FOR DETERMINING WHEN TO CLEAN:

(AUTOMATIC) TIMED MANUAL

METHOD FOR DETERMINING WHEN TO REPLACE THE BAGS:

ALARM (INTERNAL INSPECTION) VISIBLE EMISSION OTHER

SPECIAL CONDITIONS: None

MOISTURE BLINDING CHEMICAL RESISTIVITY OTHER

EXPLAIN:

DESCRIBE MAINTENANCE PROCEDURES: Per manufacturer recommendations or common industry practices

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

Attach Additional Sheets As Necessary

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

FORM B

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 12/01/01 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate **B**

EMISSION SOURCE DESCRIPTION: Two Pellet Coolers	EMISSION SOURCE ID NO: ES-CLR-1 & -2
OPERATING SCENARIO 1 OF 1	CONTROL DEVICE ID NO(S): CD-CLR-C1 & CD-CLR-C2
	EMISSION POINT (STACK) ID NO(S): EP-CLR-C1 & EP-CLR-C2

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):

Two pellet coolers follow the pellet presses to cool the newly formed pellets down to an acceptable storage temperature.

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

☐ Coal,wood,oil, gas, other burner (Form B1) ☐ Woodworking (Form B4) ☐ Manufact. of chemicals/coatings/inks (Form B7)
☐ Int.combustion engine/generator (Form B2) ☐ Coating/finishing/printing (Form B5) ☐ Incineration (Form B8)
☐ Liquid storage tanks (Form B3) ☐ Storage silos/bins (Form B6) ■ Other (Form B9)

START CONSTRUCTION DA TBD	OPERATION DATE: TBD	DATE MANUFACTURED: TBD
MANUFACTURER / MODEL NO.: TBD[1]	EXPECTED OP. SCHEDULE: 24 HR/DAY 7 DAY/WK 52 WK/YR	
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):	NESHAP (SUBPART?):	MACT (SUBPART?):
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25%	MAR-MAY 25%	JUN-AUG 25% SEP-NOV 25%.
EXPECTED ANNUAL HOURS OF OPERATI 8,760	VISIBLE STACK EMISSIONS UNDER NORMAL OPERATION: < 20 % OPACITY	

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	See Emission Calculations in Appendix B						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT AND CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
N/A							

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS

TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE	lb/hr	lb/day	lb/yr
N/A				

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

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

Attach Additional Sheets As Necessary

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

FORM B9

EMISSION SOURCE (OTHER)

REVISED: 12/01/01 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate **B9**

EMISSION SOURCE DESCRIPTION: **Two Pellet Coolers**	EMISSION SOURCE ID NO: **ES-CLR-1 & -2**
	CONTROL DEVICE ID NO(S): **CD-CLR-C1 & CD-CLR-C2**
OPERATING SCENARIO: 1 OF 1	EMISSION POINT (STACK) ID NO(S): **EP-CLR-C1 & EP-CLR-C2**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

Two pellet coolers follow the pellet presses to cool the newly formed pellets down to an acceptable storage temperature.

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/HR)	LIMITATION(UNIT/HR)
Wood Pellets	**Tons**	**47.78**	

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UNIT/BATCH)

MAXIMUM DESIGN (BATCHES / HOUR):	
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/YR):
FUEL USED: **N/A**	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR): **N/A**
MAX. CAPACITY HOURLY FUEL USE: **N/A**	REQUESTED CAPACITY ANNUAL FUEL USE: **N/A**

COMMENTS:

Attach Additional Sheets as Necessary

FORM C4

CONTROL DEVICE (CYCLONE, MULTICYCLONE, OR OTHER MECHANICAL)

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — C4

CONTROL DEVICE ID NO: CD-CLR-C1 & CD-CLR-C2	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): ES-CLR-1 & -2
EMISSION POINT (STACK) ID NO(S): EP-CLR-C1 & EP-CLR-C2	POSITION IN SERIES OF CONTROLS NO. 1 OF 1 UNITS
MANUFACTURER: TBD[1]	MODEL NO:
DATE MANUFACTURED: TBD	PROPOSED OPERATION DATE: TBD
OPERATING SCENARIO:	PROPOSED START CONSTRUCTION DATE: TBD
1 OF 1	P.E. SEAL REQUIRED (PER 2Q .0112)? ○ YES ○ NO

DESCRIBE CONTROL SYSTEM:
Two identical dual high efficiency cyclones are equipped to the pellet coolers to capture bulk PM emissions.
The parameters presented here are per each dual high efficiency cyclone.

POLLUTANT(S) COLLECTED:	PM	PM_{10}	$PM_{2.5}$	
BEFORE CONTROL EMISSION RATE (LB/HR):				
CAPTURE EFFICIENCY:	%	%	%	%
CONTROL DEVICE EFFICIENCY:	%	%	%	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL EMISSION RATE (LB/HR):	See calculations in Appendix B			

PRESSURE DROP (IN. H_2O): MIN MAX 6.0" WARNING ALARM? ○ YES ● NO

INLET TEMPERATURE (°F): MIN MAX Ambient	OUTLET TEMPERATURE (°F): MIN MAX Ambient
INLET AIR FLOW RATE (ACFM): 20,000	BULK PARTICLE DENSITY (LB/FT³): 3E-06
POLLUTANT LOADING RATE (GR/FT³): 0.022	

SETTLING CHAMBER	CYCLONE			MULTICYCLONE
LENGTH (INCHES):	INLET VELOCITY (FT/SEC): 50		○ CIRCULAR ○ RECTANGLE	NO. TUBES: 2
WIDTH (INCHES):	DIMENSIONS (INCHES) See instructions		IF WET SPRAY UTILIZED	DIAMETER OF TUBES: 43"
HEIGHT (INCHES):	H:	Dd:	LIQUID USED:	HOPPER ASPIRATION SYSTEM?
VELOCITY (FT/SEC.):	W:	Lb:	FLOW RATE (GPM):	○ YES ● NO
NO. TRAYS:	De:	Lc:	MAKE UP RATE (GPM):	LOUVERS?
NO. BAFFLES:	D:	S:		○ YES ● NO
	TYPE OF CYCLONE: ○ CONVENTIONAL		● HIGH EFFICIENCY	○ OTHER

DESCRIBE MAINTENANCE PROCEDURES:
Periodic inspection of mechanical integrity during plant outages as specified by manufacturer or common industry practices

DESCRIBE INCOMING AIR STREAM:
Fine particulate emissions from cooling pellets

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	Unknown	
1-10		
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC:
None

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

Attach Additional Sheets As Necessary

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

FORM B

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — **B**

EMISSION SOURCE DESCRIPTION: **Emergency Generator (250kw, 350bhp)**	EMISSION SOURCE ID NO: **ES-EG**
	CONTROL DEVICE ID NO(S): **N/A**
OPERATING SCENARIO 1 OF 1	EMISSION POINT (STACK) ID NO(S): **EP-EG**

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
Diesel-fired internal combustion generator to provide power in the case of an emergency.

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☐ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Woodworking (Form B4)
- ☐ Manufact. of chemicals/coatings/inks (Form B7)
- ■ Int.combustion engine/generator (Form B2)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Incineration (Form B8)
- ☐ Liquid storage tanks (Form B3)
- ☐ Storage silos/bins (Form B6)
- ☐ Other (Form B9)

START CONSTRUCTION DA*	TBD	OPERATION DATE:	TBD	DATE MANUFACTURED:	TBD
MANUFACTURER / MODEL NO.:	TBD*	EXPECTED OP. SCHEDULE: 1 HR/DAY	7	DAY/WK 52	WK/YR
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?): IIII		NESHAP (SUBPART?):		MACT (SUBPART?): ZZZZ	
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25%		MAR-MAY 25%		JUN-AUG 25%	SEP-NOV 25%.
EXPECTED ANNUAL HOURS OF OPERATI(	500	VISIBLE STACK EMISSIONS UNDER NORMAL OPERATION: <20		% OPACITY	

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	See Emission Calculations in Appendix B						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT AND CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
	See Emission Calculations in Appendix B						

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS

TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE	lb/hr	lb/day	lb/yr
	See Emission Calculations in Appendix B			

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

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

Attach Additional Sheets As Necessary

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

FORM B2

EMISSION SOURCE (INTERNAL COMBUSTION ENGINES/GENERATORS)

REVISED 12/01/01 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate **B2**

EMISSION SOURCE DESCRIPTIO Emergency Generator (250kw, 350bhp)	EMISSION SOURCE ID NO: ES-EG
	CONTROL DEVICE ID NO(S): N/A
OPERATING SCENARIO: 1 OF 1	EMISSION POINT (STACK) ID NO(S): EP-EG

CHECK ALL THAT APPLY ☐ EMERGENCY ☐ SPACE HEAT ☐ ELECTRICAL GENERATION ☐ PEAK SHAVER ☐ OTHER (DESCRIBE): _____

GENERATOR OUTPUT (KW): 250	ANTICIPATED ACTUAL HOURS OF OPERATION AS PEAK SHAVER (HRS/YR): N/A
ENGINE OUTPUT (HP): 350	

TYPE ICE: ☐ GASOLINE ENGINE ☐ DIESEL ENGINE UP TO 600 H ☐ DIESEL ENGINE GREATER THAN 600 ☐ DUAL FUEL ENGINE ☐ OTHER (DESCRIBE): _____ (complete below)

ENGINE TYPE ☐ RICH BURN ☐ LEAN BURN N/A

EMISSION REDUCTION MODIFICATIONS ☐ INJECTION TIMING RETAF ☐ PREIGNITION CHAMBER COMBUSTION ☐ OTHER _____

OR ☐ STATIONARY GAS TURBINE (complete below) ☐ NATURAL GAS PIPELINE COMPRESSOR OR TURBINE (complete below)

FUEL ☐ NATURAL GAS ☐ OIL ☐ OTHER (DESCRIBE): _____

CYCLE: ☐ COGENERATION ☐ SIMPLE ☐ REGENERATIVE ☐ COMBINED

CONTROLS: ☐ WATER-STEAM INJECTION ☐ UNCONTROLLED ☐ LEAN-PREMIX

ENGINE TYPE: ☐ 2-CYCLE LEAN BURN ☐ 4-CYCLE LEAN ☐ TURBINE ☐ 4-CYCLE RICH BURN ☐ OTHER (DESCRIBE): _____

CONTROLS: ☐ COMBUSTION MODIFICATIONS (DESCRIBE): _____ ☐ NONSELECTIVE CATALYTIC REDUCTION ☐ SELECTIVE CATALYTIC REDUCTION ☐ CLEAN BURN AND PRECOMBUSTION CHAMBER ☐ UNCONTROLLED

FUEL USAGE (INCLUDE STARTUP/BACKUP FUEL)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)
No. 2 Fuel Oil	gal	6.55	6.55

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	BTU/UNIT	UNITS	SULFUR CONTENT (% BY WEIGHT)
No. 2 Fuel Oil	19,300	lb	<15 ppmw

MANUFACTURER'S SPECIFIC EMISSION FACTORS (IF AVAILABLE)

POLLUTANT	NOX	CO	PM	PM10	VOC	OTHER
EMISSION FACTOR LB/UNIT						
UNIT						

DESCRIBE METHODS TO MINIMIZE VISIBLE EMISSIONS DURING IDLING, OR LOW LOAD OPERATIONS:

Periodic equipment maintenance will minimize opacity by following manufacturers specifications or common industry practices.

COMMENTS:

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — **B**

EMISSION SOURCE DESCRIPTION: **Fire Water Pump (300bhp)**	EMISSION SOURCE ID NO: **ES-FWP**
OPERATING SCENARIO 1 OF 1	CONTROL DEVICE ID NO(S): **N/A**
	EMISSION POINT (STACK) ID NO(S): **EP-FWP**

DESCRIBE IN DETAIL THE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
Diesel-fired internal combustion pump to provide water in the case of a fire emergency.

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☐ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Woodworking (Form B4)
- ☐ Manufact. of chemicals/coatings/inks (Form B7)
- ■ Int.combustion engine/generator (Form B2)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Incineration (Form B8)
- ☐ Liquid storage tanks (Form B3)
- ☐ Storage silos/bins (Form B6)
- ☐ Other (Form B9)

START CONSTRUCTION DA TBD	OPERATION DATE: TBD	DATE MANUFACTURED: TBD
MANUFACTURER / MODEL N TBD	EXPECTED OP. SCHEDULE: 2 HR/DAY 1 DAY/WK 52 WK/YR	
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?): IIII	NESHAP (SUBPART?):	MACT (SUBPART?): ZZZZ
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25%	MAR-MAY 25%	JUN-AUG 25% SEP-NOV 25%
EXPECTED ANNUAL HOURS OF OPERATI 100	VISIBLE STACK EMISSIONS UNDER NORMAL OPERATION: <20 % OPACITY	

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	See Emission Calculations in Appendix B						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT AND CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
	See Emission Calculations in Appendix B						

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS

TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE	lb/hr	lb/day	lb/yr
	See Emission Calculations in Appendix B			

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

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

Attach Additional Sheets As Necessary

FORM B2

EMISSION SOURCE (INTERNAL COMBUSTION ENGINES/GENERATORS)

REVISED 12/01/01 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate **B2**

EMISSION SOURCE DESCRIPTIC Fire Water Pump (300bhp)	EMISSION SOURCE ID NO: ES-FWP
	CONTROL DEVICE ID NO(S): N/A
OPERATING SCENARIO: 1 OF 1	EMISSION POINT (STACK) ID NO(S) EP-FWP

CHECK ALL THAT APPLY ☐ EMERGENCY ☐ SPACE HEAT ☐ ELECTRICAL GENERATION ☐ PEAK SHAVER ☐ OTHER (DESCRIBE): _____

GENERATOR OUTPUT (KW): 300	ANTICIPATED ACTUAL HOURS OF OPERATION AS PEAK SHAVER (HRS/YR): N/A
ENGINE OUTPUT (HP): 300	

TYPE ICE: ☐ GASOLINE ENGINE ☐ DIESEL ENGINE UP TO 600 HP ☐ DIESEL ENGINE GREATER THAN 600 ☐ DUAL FUEL ENGINE ☐ OTHER (DESCRIBE): _____ (complete below)

ENGINE TYPE ☐ RICH BURN ☐ LEAN BURN (N/A)

EMISSION REDUCTION MODIFICATIONS ☐ INJECTION TIMING RETARI ☐ PREIGNITION CHAMBER COMBUSTION ☐ OTHER _____

OR ☐ STATIONARY GAS TURBINE (complete below) ☐ NATURAL GAS PIPELINE COMPRESSOR OR TURBINE (complete below)

FUEL ☐ NATURAL GAS ☐ OIL ☐ OTHER (DESCRIBE): _____

CYCLE: ☐ COGENERATION ☐ SIMPLE ☐ REGENERATIVE ☐ COMBINED

CONTROLS: ☐ WATER-STEAM INJECTION ☐ UNCONTROLLED ☐ LEAN-PREMIX

ENGINE TYPE: ☐ 2-CYCLE LEAN BURN ☐ 4-CYCLE LEAN ☐ TURBINE ☐ 4-CYCLE RICH BURN ☐ OTHER (DESCRIBE): _____

CONTROLS: ☐ COMBUSTION MODIFICATIONS (DESCRIBE): _____ ☐ NONSELECTIVE CATALYTIC REDUCTION ☐ SELECTIVE CATALYTIC REDUCTION ☐ CLEAN BURN AND PRECOMBUSTION CHAMBER ☐ UNCONTROLLED

FUEL USAGE (INCLUDE STARTUP/BACKUP FUEL)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)
No. 2 Fuel Oil	gal	5.61	5.61

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	BTU/UNIT	UNITS	SULFUR CONTENT (% BY WEIGHT)
No. 2 Fuel Oil	19,300	lb	<15 ppmw

MANUFACTURER'S SPECIFIC EMISSION FACTORS (IF AVAILABLE)

POLLUTANT	NOX	CO	PM	PM10	VOC	OTHER
EMISSION FACTOR LB/UNIT						
UNIT						

DESCRIBE METHODS TO MINIMIZE VISIBLE EMISSIONS DURING IDLING, OR LOW LOAD OPERATIONS:

Periodic equipment maintenance will minimize opacity by following manufacturers specifications or common industry practices.

COMMENTS:

Attach Additional Sheets As Necessary

APPENDIX B – EMISSIONS CALCULATIONS

Rotary Dryer - Criteria Pollutant Emissions

Dryer Inputs:

Dryer Production	418,533	tons/year
Annual Dried Wood Throughput of Dryer	376,680	ODT/year
Hourly Dried Wood Throughput of Dryer	43.0	ODT/hr
Burner Heat Input	125.0	MMBtu/hr
Percent Hardwood	90%	
Percent Softwood	10%	
Potential Operation	8,760	hr/yr

Criteria Pollutant Calculations:

Pollutant	Biomass Emission Factor (lb/ODT)	Units	Emission Factor Source	Total Potential Emissions	
				(lb/hr)	(tpy)
CO	1.22	lb/ODT	Vendor[1]	52.46	229.8
NO_X	0.87	lb/ODT	Vendor[1]	37.41	163.9
TSP	0.13	lb/ODT	Calculated from Guaranteed WESP Specifications[2]	5.59	24.5
Total PM_{10}	0.13	lb/ODT	Calculated from Guaranteed WESP Specifications[2]	5.59	24.5
Total $PM_{2.5}$	0.13	lb/ODT	Calculated from Guaranteed WESP Specifications[2]	5.59	24.5
SO_2	0.025	lb/MMBtu	AP-42, Section 1.6[3]	3.13	13.7
VOC	1.051	lb/ODT	Vendor[1]	45.19	197.9
Lead	0.00	N/A	N/A	0.00	0.0

Note:

1) CO, NO_x, and VOC emission factors were provided by the dryer system vendor.

2) WESP Outlet Air Flowrate 81,509 dSCFM
PM Grain Loading 0.008 gr/dSCF
Emissions: 652.07 gr/min
0.093 lb/min
5.59 lb/hr

3) No emission factor is provided in AP-42, Section 10.6.2 for SO_2 for rotary dryers. Enviva has conservatively calculated SO2 emissions based upon the heat input of the dryer burners using an emission factor for wood from AP-42, Section 1.6.

Rotary Dryer - Federal Hazardous Air Pollutant (HAP) and North Carolina Toxic Air Pollutant (TAP) Emissions

Calculation Inputs:

Dryer Production (Ton/yr)	418,533
ODT/yr	376,680
ODT/hr	43.0
Hardwood Composition	90%
Softwood Composition	10%

HAP & TAP Emission Calculations:

HAP/TAP Pollutant	CAS Number	HAP (Yes/No)	NC TAP (Yes/No)	Direct wood-fired, hardwood			Green, Direct wood-fired (inlet moisture content >50%, dry basis), softwood[1]			MAXIMUM TOTAL EMISSIONS	
				Emission Factor[2] (lb/ODT)	Emissions[3] (lb/hr)	Emissions[3] (tpy)	Emission Factor (lb/ODT)	Emissions[3] (lb/hr)	Emissions[3] (tpy)	(lb/hr)	(tpy)
Acetaldehyde	75-07-0	Yes	Yes	3.83E-03	1.65E-01	7.21E-01	7.50E-02	3.23E+00	1.57E+00	3.23E+00	2.29E+00
Acrolein	107-02-8	Yes	Yes	1.17E-03	5.05E-02	2.21E-01	2.30E-02	9.89E-01	4.81E-01	9.89E-01	7.03E-01
Benzene	71-43-2	Yes	Yes	3.88E-04	1.67E-02	7.31E-02	7.60E-03	3.27E-01	1.59E-01	3.27E-01	2.32E-01
Chloroform	67-66-3	Yes	Yes	5.11E-06	2.20E-04	9.62E-04	1.00E-04	4.30E-03	2.09E-03	4.30E-03	3.05E-03
Cumene	98-82-8	Yes	No	1.02E-04	4.39E-03	1.92E-02	2.00E-03	8.60E-02	4.19E-02	8.60E-02	6.11E-02
Formaldehyde	50-00-0	Yes	Yes	7.15E-03	3.07E-01	1.35E+00	1.40E-01	6.02E+00	2.93E+00	6.02E+00	4.28E+00
m-,p-Xylene	1330-20-7	Yes	Yes	2.45E-04	1.05E-02	4.62E-02	4.80E-03	2.06E-01	1.00E-01	2.06E-01	1.47E-01
Methanol	67-56-1	Yes	No	5.62E-03	2.42E-01	1.06E+00	1.10E-01	4.73E+00	2.30E+00	4.73E+00	3.36E+00
Methyl isobutyl ketone	108-10-1	Yes	Yes	3.52E-04	1.52E-02	6.64E-02	6.90E-03	2.97E-01	1.44E-01	2.97E-01	2.11E-01
Methylene chloride	75-09-2	Yes	Yes	9.19E-05	3.95E-03	1.73E-02	1.80E-03	7.74E-02	3.77E-02	7.74E-02	5.50E-02
o-Xylene	95-47-6	Yes	No	2.30E-05	9.88E-04	4.33E-03	4.50E-04	1.94E-02	9.42E-03	1.94E-02	1.37E-02
Phenol	108-95-2	Yes	Yes	1.43E-03	6.15E-02	2.69E-01	2.80E-02	1.20E+00	5.86E-01	1.20E+00	8.55E-01
Propionaldehyde	123-38-6	Yes	No	6.64E-04	2.85E-02	1.25E-01	1.30E-02	5.59E-01	2.72E-01	5.59E-01	3.97E-01
Styrene	100-42-5	Yes	Yes	1.84E-05	7.90E-04	3.46E-03	3.60E-04	1.55E-02	7.53E-03	1.55E-02	1.10E-02
Toluene	108-88-3	Yes	Yes	6.64E-04	2.85E-02	1.25E-01	1.30E-02	5.59E-01	2.72E-01	5.59E-01	3.97E-01
									Total HAP	1.83E+01	1.30E+01

Note:

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

2) To account for hardwood HAP & TAP emissions, factors were conservatively calculated by taking the AP-42 HAP factors for 100% softwood (green) and multipling by the ratio of the total listed VOC emission factors for hardwood and softwood (0.24 / 4.7).

3) Short-term HAP & TAP emissions were calculated based upon a worst-case scenario of 100% hardwood or softwood firing (in which case, softwood is always the overall worst case).

Emergency Generator Emissions (ES-EG)

Equipment and Fuel Characteristics		
Engine Output	0.26	MW
Engine Power	350	hp (brake)
Hours of Operation	500	hr/yr[1]
Heating Value of Diesel	19,300	Btu/lb
Power Conversion	2.545	Btu/hr/hp

Criteria Pollutant Emissions					
Pollutant	Category	Emission Factor	Units	Potential Emissions	
				lb/hr	tpy
TSP	PSD	4.41E-04	lb/kW-hr (2)	0.12	2.88E-02
PM_{10}	PSD	4.41E-04	lb/kW-hr (2)	0.12	2.88E-02
$PM_{2.5}$	PSD	4.41E-04	lb/kW-hr (2)	0.12	2.88E-02
NO_x	PSD	8.82E-03	lb/kW-hr (5)	2.30	5.75E-01
SO_2	PSD	15	ppmw (3)	1.38E-03	3.46E-04
CO	PSD	7.72E-03	lb/kW-hr (2)	2.01	5.03E-01
VOC (NMHC)	PSD	2.51E-03	lb/MMBtu (4)	2.24E-03	5.59E-04
Toxic/Hazardous Air Pollutant Emissions					
Acetaldehyde	HAP/TAP	5.37E-06	lb/hp-hr (4)	1.88E-03	4.70E-04
Acrolein	HAP/TAP	6.48E-07	lb/hp-hr (4)	2.27E-04	5.67E-05
Benzene	HAP/TAP	6.53E-06	lb/hp-hr (4)	2.29E-03	5.71E-04
Benzo(a)pyrene[6]	HAP/TAP	1.32E-09	lb/hp-hr (4)	4.61E-07	1.15E-07
1,3-Butadiene	HAP/TAP	2.74E-07	lb/hp-hr (4)	9.58E-05	2.39E-05
Formaldehyde	HAP/TAP	8.26E-06	lb/hp-hr (4)	2.89E-03	7.23E-04
Total PAH (POM)	HAP	1.18E-06	lb/hp-hr (4)	4.12E-04	1.03E-04
Toluene	HAP/TAP	2.86E-06	lb/hp-hr (4)	1.00E-03	2.51E-04
Xylene	HAP/TAP	2.00E-06	lb/hp-hr (4)	6.98E-04	1.75E-04
Highest HAP (Formaldehyde)		8.26E-06	lb/hp-hr (4)	2.89E-03	7.23E-04
Total HAPs				9.49E-03	2.37E-03

Note:

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

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

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

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

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

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

Firewater Pump Emissions (ES-FWP)

Equipment and Fuel Characteristics		
Engine Output	0.22	MW
Engine Power	300.00	hp
Hours of Operation	500	hr/yr[1]
Heating Value of Diesel	19,300	Btu/lb
Power Conversion	2.545	Btu/hr/hp

Criteria Pollutant Emissions					
Pollutant	Category	Emission Factor	Units	Potential Emissions	
				lb/hr	tpy
TSP	PSD	4.41E-04	lb/kW-hr (2)	0.10	2.47E-02
PM_{10}	PSD	4.41E-04	lb/kW-hr (2)	0.10	2.47E-02
$PM_{2.5}$	PSD	4.41E-04	lb/kW-hr (2)	0.10	2.47E-02
NO_x	PSD	8.82E-03	lb/kW-hr (5)	1.97	4.93E-01
SO_2	PSD	15	ppmw (3)	1.19E-03	2.97E-04
CO	PSD	7.72E-03	lb/kW-hr (2)	1.73	4.32E-01
VOC (NMHC)	PSD	2.51E-03	lb/MMBtu (4)	1.92E-03	4.79E-04
Toxic/Hazardous Air Pollutant Emissions					
Acetaldehyde	HAP/TAP	5.37E-06	lb/hp-hr (4)	1.61E-03	4.03E-04
Acrolein	HAP/TAP	6.48E-07	lb/hp-hr (4)	1.94E-04	4.86E-05
Benzene	HAP/TAP	6.53E-06	lb/hp-hr (4)	1.96E-03	4.90E-04
Benzo(a)pyrene[6]	HAP/TAP	1.32E-09	lb/hp-hr (4)	3.95E-07	9.87E-08
1,3-Butadiene	HAP/TAP	2.74E-07	lb/hp-hr (4)	8.21E-05	2.05E-05
Formaldehyde	HAP/TAP	8.26E-06	lb/hp-hr (4)	2.48E-03	6.20E-04
Total PAH (POM)	HAP	1.18E-06	lb/hp-hr (4)	3.53E-04	8.82E-05
Toluene	HAP/TAP	2.86E-06	lb/hp-hr (4)	8.59E-04	2.15E-04
Xylene	HAP/TAP	2.00E-06	lb/hp-hr (4)	5.99E-04	1.50E-04
Highest HAP (Formaldehyde)		8.26E-06	lb/hp-hr (4)	2.48E-03	6.20E-04
Total HAPs				8.13E-03	2.03E-03

Note:

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

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

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

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

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

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

Dust Control Systems PM Emissions

Emission Unit	Emission Source ID	Filter, Vent -or- Cyclone ID	Flowrate[1] (dscfm)	Pollutant Loading[2] (gr/dscf)	Annual Operation (hours)	% PM that is		Potential Emissions					
								PM		PM_{10}[3]		$PM_{2.5}$[3]	
						PM_{10}	$PM_{2.5}$	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Coarse Hammermills Bagfilter 1	ES-CHM-1 & -2	CD-CHM-BF1	38,000	0.01	8,760	100%	100%	3.26	14.27	3.26	14.27	3.26	14.27
Coarse Hammermills Bagfilter 2	ES-CHM-1 & -2	CD-CHM-BF2	38,000	0.01	8,760	100%	100%	3.26	14.27	3.26	14.27	3.26	14.27
Pellet Press Silo Bin Vent Filter	ES-PPS	CD-PPS-BV	15,000	0.01	8,760	100%	100%	1.29	5.63	1.29	5.63	1.29	5.63
Ground Wood Handling Dust Collection System	ES-GWH-1 & -2	CD-GWH-BF	5,000	0.01	8,760	100%	100%	0.43	1.88	0.43	1.88	0.43	1.88
Pellet Coolers Cyclone 1[4]	ES-CLR-1 & -2	CD-CLR-C1	20,000	0.022	8,760	100%	100%	3.77	16.52	3.77	16.52	3.77	16.52
Pellet Coolers Cyclone 2[4]	ES-CLR-1 & -2	CD-CLR-C2	20,000	0.022	8,760	100%	100%	3.77	16.52	3.77	16.52	3.77	16.52
							TOTAL	**15.77**	**69.08**	**15.77**	**69.08**	**15.77**	**69.08**

Note:

1) Filter, Vent, and Cyclone inlet flow rate (cfm) provided by design engineering firm (HGA). The exit flowrate was conservatively assumed to be the same as the inlet flowrate.
2) Unless otherwise specified, pollutant (PM) loading conservatively assumed to be 0.01 gr/dscf
3) It was conservatively assumed that PM_{10} and $PM_{2.5}$ equal PM emissions .
4) Pollutant loadings for pellet coolers are based upon expected emissions from other Enviva pellet plants in Europe. Coolers have expected emissions of 50 mg/N. cu. m. (0.022 gr/cu. ft.).

Fugitive PM Emissions[1]

ID	Emission Source Group	Description	Control	Control Description	Throughput		Potential Uncontrolled Emissions for PM[3]		Potential Uncontrolled Emissions for PM_{10}[3]		Potential Uncontrolled Emissions for $PM_{2.5}$[3]	
					Max. Hourly[2]	Max. Annual						
					(tph)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
DP1	ES-DWH	Dryer Discharger to Dryer No. 1 Outfeed Conveyor	Enclosed	Reduction to 2 mph mean wind speed	23.89	209,266.67	1.6E-03	6.9E-03	7.5E-04	3.3E-03	1.1E-04	5.0E-04
DP2	ES-DWH	Dryer Discharger to Dryer No. 2 Outfeed Conveyor	Enclosed	Reduction to 2 mph mean wind speed	23.89	209,266.67	1.6E-03	6.9E-03	7.5E-04	3.3E-03	1.1E-04	5.0E-04
DP3	ES-DWH	Dryer Outfeed Conveyors to Silo Feed / Silo Bypass	Enclosed	Reduction to 2 mph mean wind speed	47.78	418,533.33	3.2E-03	1.4E-02	1.5E-03	6.5E-03	2.3E-04	9.9E-04
DP4	ES-DWH	Silo Bypass / Dryer Silo to Conveyor to Hammermill Surge Bin	Enclosed	Reduction to 2 mph mean wind speed	47.78	418,533.33	3.2E-03	1.4E-02	1.5E-03	6.5E-03	2.3E-04	9.9E-04
DP5	ES-DWH	Conveyor to Hammermill Surge Bin drop into HM Surge Bin	Enclosed	Reduction to 2 mph mean wind speed	47.78	418,533.33	3.2E-03	1.4E-02	1.5E-03	6.5E-03	2.3E-04	9.9E-04
DP6	ES-PP	Drop Emissions from Pellet Presses to Pellet Press Collection Conveyors	Enclosed	Reduction to 2 mph mean wind speed	47.78	418,533.33	3.2E-03	1.4E-02	1.5E-03	6.5E-03	2.3E-04	9.9E-04
						TOTAL	**1.6E-02**	**6.9E-02**	**7.5E-03**	**3.3E-02**	**1.1E-03**	**5.0E-03**
						ES-DWH	**1.3E-02**	**5.5E-02**	**6.0E-03**	**2.6E-02**	**9.1E-04**	**4.0E-03**
						ES-PP	**3.2E-03**	**1.4E-02**	**1.5E-03**	**6.5E-03**	**2.3E-04**	**9.9E-04**

Note:

1) Fugitive emissions are not included in facility-wide PTE because the Ahoskie Pellet Mill does not belong to one of the listed 28 source categories.
2) Maximum hourly throughput is based upon 8,760/yr.
3) Based emission factors calculated per AP-42 Section 13.2.4, September 2006.

$$E = k\ (0.0032)\ \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}} \quad \text{(lb/ton)}$$

where: E = emission factor (lb/ton)	
k = particle size multiplier (dimensionless) for PM	0.74
k = particle size multiplier (dimensionless) for PM_{10}	0.35
k = particle size multiplier (dimensionless) for $PM_{2.5}$	0.053
U = mean wind speed (mph)	2.00
M = material moisture content (%)	11
E for PM (lb/ton) =	6.6E-05
E for PM_{10} (lb/ton) =	3.1E-05
E for $PM_{2.5}$ (lb/ton) =	4.7E-06

Tank VOC Emissions

Tank ID	Tank Description	Volume[1] (gal)	Tank Dimensions		Orientation	Throughput (gal/yr)	Turnovers	TANKS 4.0 VOC Emissions	
			Diameter (ft)	Height/Length (ft)				(lb/yr)	(tpy)
TK01	Emergency Generator Fuel Oil Tank[2]	2,500	6	12	Vertical	12,000	4.80	0.37	3.57E-03
TK02	Fire Water Pump Fuel Oil Tank[2]	500	3	10	Horizontal	10,300	20.60	0.43	2.15E-04
							TOTAL	**0.80**	**3.79E-03**

Note:

1. Conservative design specifications.
2. Throughput based on fuel consumption and 500 hours of operation per year. Fuel consumption data provided by pump engine vendors.

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Enviva Diesel Generator Tank (2500 gal)
City:	Raleigh
State:	NC
Company:	Enviva
Type of Tank:	Vertical Fixed Roof Tank
Description:	2,500 gallon Diesel Generator Tank

Tank Dimensions

Shell Height (ft):		12.00
Diameter (ft):		6.00
Liquid Height (ft) :		12.00
Avg. Liquid Height (ft):		12.00
Volume (gallons):		2,500.00
Turnovers:		4.80
Net Throughput(gal/yr):		12,000.00
Is Tank Heated (y/n):	N	

Paint Characteristics

Shell Color/Shade:	Gray/Medium
Shell Condition	Good
Roof Color/Shade:	Gray/Medium
Roof Condition:	Good

Roof Characteristics

Type:	Dome	
Height (ft)		0.50
Radius (ft) (Dome Roof)		6.00

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Raleigh, North Carolina (Avg Atmospheric Pressure = 14.53 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Enviva Diesel Generator Tank (2500 gal) - Vertical Fixed Roof Tank
Raleigh, NC

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Distillate fuel oil no. 2	All	68.49	57.95	79.03	62.36	0.0088	0.0068	0.0117	130.0000			188.00	Option 1: VP60 = .0074 VP70 = .009

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Enviva Diesel Generator Tank (2500 gal) - Vertical Fixed Roof Tank
Raleigh, NC

Annual Emission Calcaulations

Standing Losses (lb):	0.0398
Vapor Space Volume (cu ft):	7.1340
Vapor Density (lb/cu ft):	0.0002
Vapor Space Expansion Factor:	0.0760
Vented Vapor Saturation Factor:	0.9999
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	7.1340
Tank Diameter (ft):	6.0000
Vapor Space Outage (ft):	0.2523
Tank Shell Height (ft):	12.0000
Average Liquid Height (ft):	12.0000
Roof Outage (ft):	0.2523
Roof Outage (Dome Roof)	
Roof Outage (ft):	0.2523
Dome Radius (ft):	6.0000
Shell Radius (ft):	3.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0002
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0088
Daily Avg. Liquid Surface Temp. (deg. R):	528.1618
Daily Average Ambient Temp. (deg. F):	59.2833
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	522.0333
Tank Paint Solar Absorptance (Shell):	0.6800
Tank Paint Solar Absorptance (Roof):	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):	1,393.0797
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0760
Daily Vapor Temperature Range (deg. R):	42.1602
Daily Vapor Pressure Range (psia):	0.0049
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0088
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0068
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0117
Daily Avg. Liquid Surface Temp. (deg R):	528.1618
Daily Min. Liquid Surface Temp. (deg R):	517.6217
Daily Max. Liquid Surface Temp. (deg R):	538.7018
Daily Ambient Temp. Range (deg. R):	21.7167
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9999
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.0088
Vapor Space Outage (ft):	0.2523

Working Losses (lb):	0.3253
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0088
Annual Net Throughput (gal/yr.):	12,000.0000
Annual Turnovers:	4.8000
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	2,500.0000
Maximum Liquid Height (ft):	12.0000
Tank Diameter (ft):	6.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	0.3651

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Enviva Diesel Generator Tank (2500 gal) - Vertical Fixed Roof Tank
Raleigh, NC

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.33	0.04	0.37

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Enviva Fire Water Diesel Tank (500 gal)
City:	Raleigh
State:	North Carolina
Company:	Enviva
Type of Tank:	Horizontal Tank
Description:	500 gallon Enviva Fire Water Diesel Tank

Tank Dimensions

Shell Length (ft):		10.00
Diameter (ft):		3.00
Volume (gallons):		500.00
Turnovers:		20.60
Net Throughput(gal/yr):		10,300.00
Is Tank Heated (y/n):	N	
Is Tank Underground (y/n):	N	

Paint Characteristics

Shell Color/Shade:	Aluminum/Specular
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Raleigh, North Carolina (Avg Atmospheric Pressure = 14.53 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Enviva Fire Water Diesel Tank (500 gal) - Horizontal Tank
Raleigh, North Carolina

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Distillate fuel oil no. 2	All	64.33	56.61	72.04	60.62	0.0081	0.0064	0.0096	130.0000			188.00	Option 1: VP60 = .0074 VP70 = .009

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Enviva Fire Water Diesel Tank (500 gal) - Horizontal Tank
Raleigh, North Carolina

Annual Emission Calcaulations

Standing Losses (lb):	0.1689
Vapor Space Volume (cu ft):	45.0228
Vapor Density (lb/cu ft):	0.0002
Vapor Space Expansion Factor:	0.0550
Vented Vapor Saturation Factor:	0.9994
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	45.0228
Tank Diameter (ft):	3.0000
Effective Diameter (ft):	6.1820
Vapor Space Outage (ft):	1.5000
Tank Shell Length (ft):	10.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0002
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0081
Daily Avg. Liquid Surface Temp. (deg. R):	523.9958
Daily Average Ambient Temp. (deg. F):	59.2833
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	520.2933
Tank Paint Solar Absorptance (Shell):	0.3900
Daily Total Solar Insulation Factor (Btu/sqft day):	1,393.0797
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0550
Daily Vapor Temperature Range (deg. R):	30.8484
Daily Vapor Pressure Range (psia):	0.0032
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0081
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0064
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0096
Daily Avg. Liquid Surface Temp. (deg R):	523.9958
Daily Min. Liquid Surface Temp. (deg R):	516.2837
Daily Max. Liquid Surface Temp. (deg R):	531.7079
Daily Ambient Temp. Range (deg. R):	21.7167
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9994
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.0081
Vapor Space Outage (ft):	1.5000
Working Losses (lb):	0.2580
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0081
Annual Net Throughput (gal/yr.):	10,300.0000

Annual Turnovers:	20.5000
Turnover Factor:	1.0000
Tank Diameter (ft):	3.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	0.4268

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Enviva Fire Water Diesel Tank (500 gal) - Horizontal Tank
Raleigh, North Carolina

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.26	0.17	0.43

Zoning Consistency Determination

Facility Name	Enviva Pellets Ahoskie, LLC
Facility Street Address	142 N.C. Rt. 561 East
Facility City	Ahoskie, NC
Description of Process	Plant will produce pelletized wood
SIC/NAICS Code	2499 (Wood Products, Not Elsewhere Classified)
Facility Contact	Glenn Gray
Phone Number	(804) 412-0227
Mailing Address	1309 East Cary Street, Suite 200
Mailing City, State Zip	Richmond, VA 23219

Based on the information given above:

☑ I have received a copy of the air permit application (draft or final) AND...

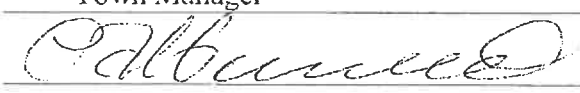
☐ There are no applicable zoning ordinances for this facility at this time

☑ The proposed operation IS consistent with applicable zoning ordinances

☐ The proposed operation IS NOT consistent with applicable zoning ordinances
(please include a copy of the rules in the package sent to the air quality office)

☐ The determination is pending further information and can not be made at this time

☐ Other:

Agency	Town of Ahoskie
Name of Designated Official	Charles A. Hammond
Title of Designated Official	Town Manager
Signature	
Date	September 24, 2010

Please forward to the facility mailing address listed above and the air quality office at the appropriate address as checked on the back of this form.

Courtesy of the Small Business Environmental Assistance Program
toll free at 1-877-623-6748 or on the web at www.envhelp.org/sb

North Carolina Modeling Protocol Checklist

The North Carolina Modeling Protocol Checklist may be used in lieu of developing the traditional written modeling plan for North Carolina toxics and criteria pollutant modeling. The protocol checklist is designed to provide the same level of information as requested in a modeling protocol as discussed in Chapter 2 of the *Guideline for Evaluating the Air Quality Impacts of Toxic Pollutants in North Carolina*. The modeling protocol checklist is submitted with the modeling analysis.

Although most of the information requested in the modeling protocol checklist is self explanatory, additional comments are provided, where applicable, and are discussed in greater detail in the toxics modeling guidelines referenced above. References to sections, tables, figures, appendices, etc., in the protocol checklist are found in the toxics modeling guidelines.

INSTRUCTIONS: The modeling report supporting the compliance demonstration should include most of the information listed below. As appropriate, answer the following questions or indicate by check mark the information provided or action taken is reflected in your report.

FACILITY INFORMATION	
Name: Enviva Pellets Ahoskie, LLC **Facility ID:** New Facility - TBD **Address:** 142 N.C. Rt 561 East Ahoskie N.C. 27910	**Consultant (if applicable):** Trinity Consultants One Copley Parkway Suite 310 Morrisville, NC 27560
Contact Name: Glenn Gray	**Contact Name:** Jon Hill
Phone Number: (804) 412-0227 **Email:** Glenn.Gray@intrinergy.com	**Phone Number:** (919) 462-9693 **Email:** jhill@trinityconsultants.com

GENERAL	
Description of New Source or Source / Process Modification: provide a short description of the new or modified source(s) and a brief discussion of how this change affects facility production or process operation.	X
Source / Pollutant Identification: provide a table of the affected pollutants, by source, which identifies the source type (point, area, or volume), maximum pollutant emission rates over the applicable averaging period(s), and, for point sources, indicate if the stack is capped or non-vertical (C/N).	X
Pollutant Emission Rate Calculations: indicate how the pollutant emission rates were derived (e.g., AP-42, mass balance, etc.) and where applicable, provide the calculations.	X
Site / Facility Diagram: provide a diagram or drawing showing the location of all existing and proposed emission sources, buildings or structures, public right-of-ways, and the facility property (toxics) / fence line (criteria pollutants) boundaries. The diagram should also include a scale, true north indicator, and the UTM or latitude/longitude of at least one point.	X
Certified Plat or Signed Survey: a certified plat (map) from the County Register of Deeds or a signed survey must be submitted to validate property boundaries modeled.	SS
Topographic Map: A topographic map covering approximately 5km around the facility must be submitted. The facility boundaries should be annotated on the map as accurately as possible.	X
Cavity Impact Analysis: If using SCREEN3, a cavity impact analysis must be conducted for all structures with a region of influence extending to one or more sources modeled to determine if cavity regions extend off property (toxics) or beyond the fence line (criteria pollutants). No separate cavity analysis is required if using AERMOD. *See Section 4.2*	N/A

GENERAL (continued)	
Background Concentrations (criteria pollutant analyses only): Background concentrations must be determined for each pollutant for each averaging period evaluated. The averaged background value used (e.g., high, high-second-high, high-third-high, etc.) is based on the pollutant and averaging period evaluated. The background concentrations are added to the modeled concentrations, which are then compared to the applicable air quality standard to determine compliance.	N/A
Offsite Source Inventories (criteria pollutant analyses only): Offsite source inventories must be developed and modeled for all pollutants for which onsite sources emissions are modeled in excess of the specific pollutant significant impact levels (SILs) as defined in the PSD New Source Review Workshop Manual. The DAQ AQAB must approve the inventories. An initial working inventory can be requested from the AQAB.	N/A

SCREEN LEVEL MODELING	
Model: The latest version of the SCREEN3 model must be used until AERSCREEN is developed and approved. The use of other screening models should be approved by NCDAQ prior to submitting the modeling report.	N/A
Source / Source emission parameters: Provide a table listing the sources modeled and the applicable source emission parameters. *See NC Form 3 – Appendix A.*	N/A
Merged Sources: Identify merged sources and show all appropriate calculations. *See Section 3.3*	N/A
GEP Analysis: SCREEN3 – for each source modeled, show all calculations identifying the critical structure used in the model run. *See section 3.2 and NC Form 1 - Appendix A.*	N/A
Cavity Impact Analysis: A cavity impact analysis using SCREEN3 must be conducted for all structures with a region of influence extending to one or more sources modeled to determine if cavity regions extend off property (toxics) or beyond the fence line (criteria pollutants). *See Section 4.2*	N/A
Terrain: Indicate the terrain modeled: simple *(Section 4.4)*, and complex *(Section 4.5 and NC Form 4 – Appendix A)*. If complex terrain is within 5 kilometers of the facility, complex terrain must be evaluated. Simple terrain must include terrain elevations if any terrain is greater than the stack base of any source modeled. Simple: _____ Complex: _____	N/A
Meteorology: In SCREEN3, select full meteorology.	N/A
Receptors: SCREEN3 – use shortest distance to property boundary for each source modeled and use sufficient range to find maximum (*See Section 4.1 (i) and (j)*). Terrain above stack base must be evaluated.	N/A
Modeling Results: For each affected pollutant, modeling results should be summarized, converted to the applicable averaging period *(See Table 3)*, and presented in tabular format indicating compliance status with the applicable AAL, SIL or NAAQS. *See NC Form S5 – Appendix A.*	N/A
Modeling Files: Either electronic or hard copies of SCREEN3 output must be submitted.	N/A

REFINED LEVEL MODELING	
Model: The latest version of AERMOD should be used, and may be found at http://www.epa.gov/scram001/dispersion_prefrec.htm. The use of other refined models must be approved by NCDAQ prior to submitting the modeling report.	X
Source / Source emission parameters: Provide a table listing the sources modeled and the applicable source emission parameters. *See NC Form 3 - Appendix A.*	X
GEP Analysis: Use BPIP-Prime with AERMOD.	X
Cavity Impact Analysis: No separate cavity analysis is required when using AERMOD as long as receptors are placed in cavity susceptible areas. *See Section 4.2 and 5.2.*	N/A
Terrain: Use digital elevation data from the USGS NED database (http://seamless.usgs.gov/index.php). Use of other sources of terrain elevations or the non-regulatory Flat Terrain option will require prior approval from DAQ AQAB.	X
Receptors: The receptor grid should be of sufficient size and resolution to identify the maximum pollutant impact. *See Section 5.3.*	X
Meteorology: Indicate the AQAB, pre-processed, 5-year data set used in the modeling demonstration: *(See Section 5.5 and Appendix B)* AERMOD 1988-1992 Norfolk/Wallops Island If processing your own raw meteorology, then pre-approval from AQAB is required. Additional documentation files (e.g. AERMET stage processing files) will also be necessary. For NC toxics, the modeling demonstration requires only the last year of the standard 5 year data set (e.g., 2005) provided the maximum impacts are less than 50% of the applicable AAL(s).	X
Modeling Results: For each affected pollutant and averaging period, modeling results should be summarized and presented in tabular format indicating compliance status with the applicable AAL, SIL or NAAQS. *See NC Form R5 - Appendix A.*	X
Modeling Files: Submit input and output files for AERMOD. Also include BPIP-Prime files, AERMAP files, DEM files, and any AERMET input and output files, including raw meteorological data.	X

ENVIVA – AHOSKIE PLANT MODELING FILE INDEX

The following list describes how the files that were used in Enviva's Ahoskie modeling analyses are organized on the CD.

AERMAP folder – contains the AERMAP input (.inp), output (.out), source (.src) and receptor (.rec) files for the AERMAP terrain analysis. The NED data is also included in the NED folder.

AERMOD folder – contains the AERMOD input (.inp) and output (.out) files for each modeled pollutant.

BPIP folder – contains the input (.inp), output (.out) and summary (.sum) files for the BPIP-PRIME downwash analysis.

MET folder – contains the 1988-1992 Norfolk/Wallops Island surface (.sfc) and profile (.pfl) files that were used in the AERMOD analyses.