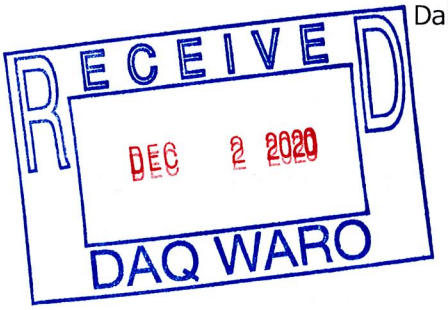
96-280 RWB

PAM ✓
9600280.20A

CONSTRUCTION PERMIT APPLICATION
Synthetic Minor Modification

Flowers Timber Company, Inc.
Seven Springs, NC

Prepared By:



Dale Overcash – Principal Consultant
Jon Hill – Managing Consultant
Trevor Peters - Consultant

TRINITY CONSULTANTS
One Copley Parkway, Suite 205
Morrisville, NC 27560
919 462 9693

November 2020

Project 203401.0130

Trinity Consultants

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1. INTRODUCTION

1.1 Executive Summary

Flowers Timber Company, Inc. (Flowers Timber) performs fumigation operations in Seven Springs, Wayne County, North Carolina.

Flowers Timber currently uses methyl bromide to perform fumigation services of logs. As part of this application, Flowers Timber is requesting to add the additional capability to use phosphine for fumigation of tobacco. The facility currently operates under North Carolina Department of Environmental Quality (NC DEQ) Air Permit No. 10549R00.

Flowers Timber is submitting this permit modification to establish new permit limits for the usage of methyl bromide and phosphine, the former in association with recently promulgated AALs. This will be done through the modification of emission unit ES-4. Flowers Timber has the potential to emit more than 10 tpy of methyl bromide and phosphine, which are hazardous air pollutants (HAPs). Flowers Timber will limit its total HAP emissions to below 25 tpy and each individual HAP to below 10 tpy to be classified as a synthetic minor source.

Flowers Timber is requesting a construction and operating permit be issued in accordance with Title 15A of North Carolina Administrative Code (15A NCAC) Chapter 2Q .0304 and 2Q .0305. In accordance with 15A NCAC 2Q .0305(b), the required number of copies (3) have been included, and the copies have been signed as required by Rule 2Q .0305(a)(1).

The facility will be a synthetic minor source of HAPs. The permit application fee for a synthetic minor source ($400) as required under 2Q .0203(b) will be paid via ePayment. Furthermore, as required by 2Q .0304(b)(1), a zoning consistency determination has been submitted as part of this application.

1.2 Application Contents

This application for a construction and operating permit contains the following information:

- Section 2 provides process descriptions for the emissions sources at the plant,
- Section 3 provides a federal and state regulatory applicability analysis,
- Section 4 provides the toxics modeling analysis
- Section 5 provides the applicable NC general facility permit application forms,
- Section 6 provides source specific permit application forms,
- Appendix A contains potential emission calculations,
- Appendix B contains modeling files, and
- Appendix C presents a copy of the local zoning consistency determination

2. BACKGROUND AND PROCESS DESCRIPTION

Flowers Timber operates fumigation services at 140 Greenfield Cemetery Rd in in Seven Springs, North Carolina. There, they fumigate logs and propose to add fumigation of tobacco.

With this permit application, Flowers Timber wishes to modify emission unit ES-4. This emission unit represents a fumigation process using either methyl bromide or phosphine. Commodities are contained and fumigated using either methyl bromide or phosphine for a predetermined amount of time. Emissions are routed through a vertical stack and out to atmosphere.

The following tables shows a breakdown of fumigant usage per commodity.

Methyl Bromide Usage by Commodity		
Oak	40.5	lb/container
Non-Oak	20.25	lb/container
Southern Yellow Pine	13.5	lb/container

Phosphine Usage by Commodity		
Tobacco	0.5	lb/container

Methyl Bromide is a volatile organic compound (VOC), and there are no other pollutants as a result of this process. As shown in the toxics modeling report in Section 4, ES-4 operation will be limited to the hours of 8am – 5pm. Emission calculations assume that all emissions occur during the first hour of fumigation and that the total amount of each fumigant used is emitted through a stack and to atmosphere.

Appendix A shows complete emission calculations for these units.

3. REGULATORY APPLICABILITY ANALYSIS

3.1 Title V Applicability

40 CFR 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.

Flowers Timber has potential uncontrolled emissions above Title V thresholds for HAPs, but as part of this application is applying for a synthetic minor HAP permit to limit emissions below these levels. Detailed emission calculations are included in Appendix A.

3.2 PSD Applicability

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.[1] The facility does not qualify for classification as one of the 28 listed source categories; therefore, the facility's major source threshold for PSD is 250 tpy.

As shown in Appendix A, emissions of PSD-regulated compounds are below PSD thresholds, therefore the facility is not a major stationary source in regards to the PSD regulations.

3.3 NESHAP Applicability

Potential emissions of HAPs will be limited to below the major source thresholds of 10/25 tpy for HAPs, and therefore Flowers Timber is a minor (area) source of HAPs. There are no applicable NESHAP regulations for the proposed project.

3.4 NSPS Applicability

There are no applicable NSPS regulations to the proposed project.

3.5 North Carolina Regulations

The applicability of key North Carolina State Implementation Plan (SIP) regulations is discussed below.

3.5.1 Control of Visible Emissions (15A NCAC 2D .0521)

This regulation outlines control requirements for visible emissions. Emission units shall not be more than 20 percent opacity when averaged over a six-minute period, except that six-minute periods

[1] 40 CFR §51.166(b)(1)(i)

averaging not more than 87 percent opacity may occur not more than once in any hour nor more than four times in any 24-hour period. As there are minimal visible emissions from the site, compliance is achieved with this regulation.

3.5.2 15A NCAC 2D .0546 – Control of Emissions from Log Fumigation Operations

This regulation outlines procedures for control of emissions from log fumigation operations. Flowers Timber will comply with all parts of this regulation, including compliance through air toxics modeling as shown in Section 4 of this application.

3.5.3 15A NCAC 2D .1100 – Control of Toxic Air Pollutant Emissions

This regulation outlines the procedures that must be followed if modeling is required under NCAC 2Q.0700. The facility emits TAPs and is performing a TAP modeling analysis as part of this application.

3.5.4 15A NCAC 2Q .0700 – Toxic Air Pollutant Procedures

This rule establishes procedures for documenting compliance for a modification that results in an increase in NC air toxics. Compliance can be demonstrated by:

1. Documenting that facility wide emissions are below the thresholds in 15A NCAC 2Q .0711
2. Netting to show there has been a no net increase in NC air toxics; or
3. Modeling to document compliance with the ambient levels in 15A NCAC 2D .1100.

The facility performed toxics modeling for Methyl Bromide and Phosphine as shown in Section 4 of this application.

4. TAP MODELING ANALYSIS

The facility performed an air dispersion modeling analysis for the two affected TAPs, methyl bromide and phosphine, in order to demonstrate that the proposed facility will present no unacceptable risk to human health. The unacceptable risk determination is made by showing facility-wide model impacts in compliance with the Acceptable Ambient Levels (AAL) set forth in 15 NCAC 02D .1100 for the pollutants.

The modeling methodology utilized in the analysis conforms to the *Guidelines for Evaluating the Air Quality Impacts of Toxic Pollutants in North Carolina* (May 2018).[2] In lieu of a modeling protocol, a protocol checklist is provided in Appendix B.

4.1 Site Description

The Flowers Timber facility is located at 140 Greenfield Cemetery Rd, Seven Springs, NC. The facility is located in Wayne County and its approximate Universal Transverse Mercator (UTM) coordinates are 231.254 km easting and 3,904.324 km northing (Zone 18, WGS84 datum). Figure 4-1 shows an aerial map of the proposed facility location and surroundings.

For modeling purposes the appropriate land use classification for the area was determined as rural based on a review of topographic maps and guidance provided in the *Guidelines*.

[2] https://files.nc.gov/ncdeq/Air%20Quality/permits/mets/NC_Toxics_Guidance_rev_24May2018.pdf

Figure 4-1. Area Map of Flowers Timber and Surroundings

4.2 Modeled Sources and Stack Parameters

The proposed facility will perform fumigation out a vertical stack denoted as emission unit ES-4. The stack was modeled as a point source. Since the stack is an unobstructed, vertical stack, the actual exit parameters were modeled. Since the exit temperature was assumed to be ambient, a value of 0K was input to AERMOD to force the model always to ambient temperature. Table 4-1 summarizes the modeled location and parameters of the source.

Table 4-1. Modeled Source Parameters

ID	UTM-E (m)	UTM-N (m)	Elevation (m)	Stack Height (m)	Stack Temp (K)	Stack Velocity (m/s)	Stack Diameters (m)
ES-4	231,254	3,904,324	35.93	9.14	0	14.55	0.61

Emissions from ES-4 result from the fumigation of logs and tobacco. Operations are limited to between 8am and 5pm. The "HROFDAY" emission factor option was used in AERMOD to restrict the stack operations to those hours.

For both short term emissions modeling and long term, a normalized emission rate of 1 gram per second (g/s) was modeled for each of the averaging periods - 24-hour and annual for methyl bromide, and 1-hour for phosphine. The modeling concentrations from the 1 g/s runs for both TAPs were then scaled to their respective AALs to determine an allowable emission rate for each averaging period/acceptable ambient level (AAL), explained further in Section 4.6.

4.3 Model Setup and Data Sources

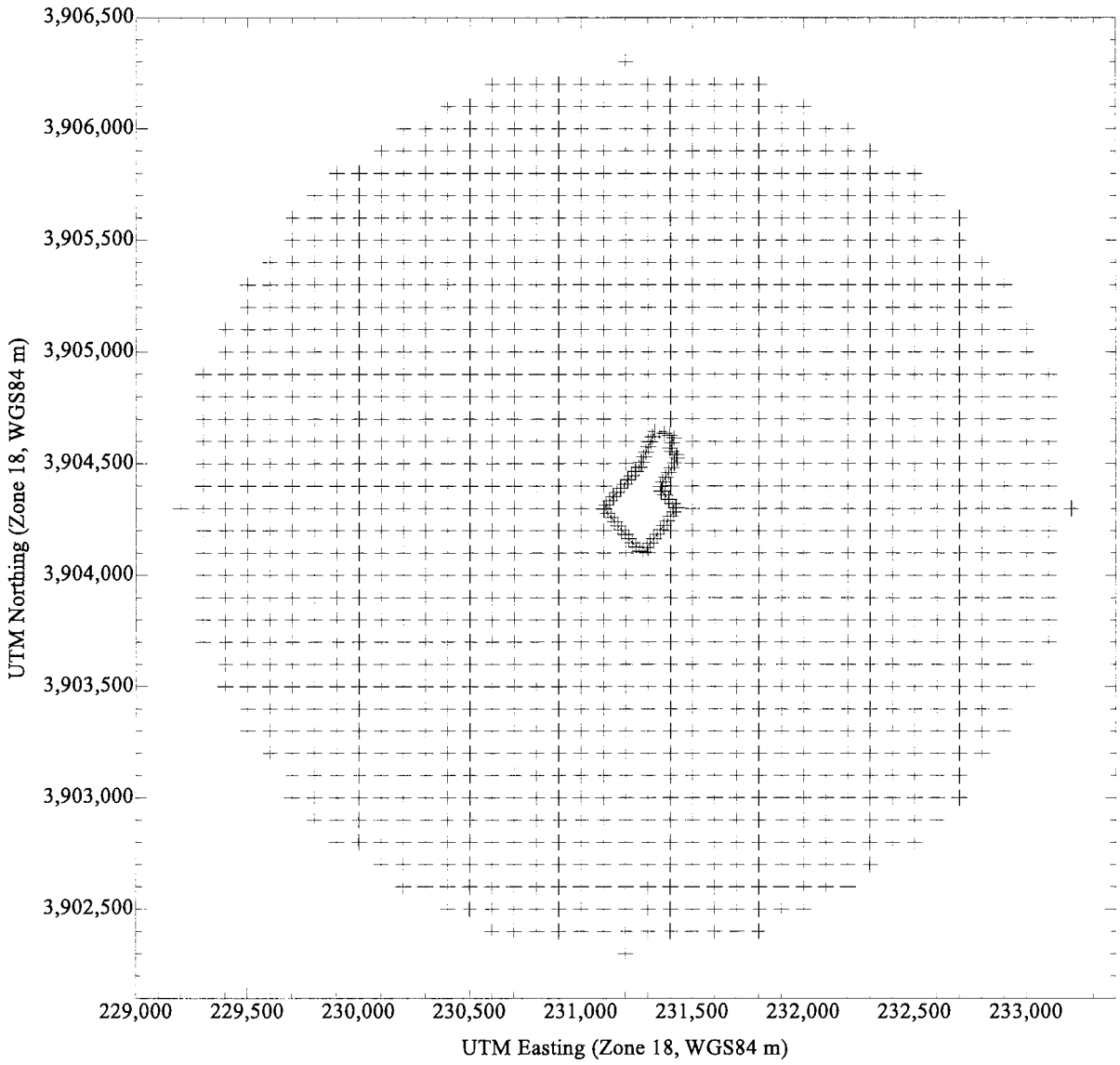
The latest AERMOD dispersion model (version 19191) was selected to calculate ambient concentrations at receptor locations off property as well as evaluate whether the cavity re-circulation zone extends off-property. AERMOD is the NC DAQ-preferred model for most refined modeling applications. AERMOD includes algorithms to calculate concentrations in the cavity re-circulation zone, which eliminates the need to use SCREEN3 for evaluation of cavity zones. AERMOD is also able to estimate impacts at simple, intermediate, and complex terrain receptors, thus eliminating the need to use multiple dispersion models for the analysis.

Receptors at 25-m spacing were placed along the boundary of the Flowers Timber property. Beyond the boundary receptors, a Cartesian receptor grid with a receptor spacing of 100-m extending approximately 2 km from the facility in all directions was included (as shown in Figure 4-3). Modeled impacts were reviewed to ensure that the maximum concentrations were captured within the receptor grid.

Terrain elevations for each receptor were identified using the latest AERMAP preprocessor (version 18081) and USGS National Elevation Data (NED) digital elevation data with 1 arcsecond (approximately 30 m) resolution. AERMAP was also used to identify the base elevations for all stacks and structures input to the model.

Figure 4-3 presents the modeled receptor grid for the facility.

Figure 4-3. Modeled Receptor Grid



4.4 Meteorological Data

Per the recent Air Quality Analysis Branch guidance, modeling was performed using Rocky Mount – Wilson Regional Airport meteorological data. Meteorological data was processed with the ADJ_U* option, as the preliminary modeling indicated that the short-term concentrations were occurring during low wind speed and/or stable atmospheric conditions.[3] The base elevation of the meteorological site (48.8 m) was used for the potential temperature profile calculations.[4] Five years (2014-2018) of data were used to estimate the maximum modeled impacts from the facility.

4.5 Building Downwash

AERMOD incorporates the Plume Rise Model Enhancements (PRIME) downwash algorithms. Direction specific building parameters required by AERMOD are calculated using the BPIP-PRIME preprocessor (version 04274).

EPA has promulgated stack height regulations that restrict the use of stack heights in excess of "Good Engineering Practice" (GEP) in air dispersion modeling analyses. Under these regulations, that portion of a stack in excess of the GEP height is generally not creditable when modeling to determine source impacts. This essentially prevents the use of excessively tall stacks to reduce ground-level pollutant concentrations. The minimum stack height not subject to the effects of downwash, called the GEP stack height, is defined by the following formula:

HGEP = H + 1.5L, where:

HGEP = minimum GEP stack height,
H = structure height, and
L = lesser dimension of the structure (height or projected width).

This equation is limited to stacks located within 5L of a structure. Stacks located at a distance greater than 5L are not subject to the wake effects of the structure. The wind direction-specific downwash dimensions and the dominant downwash structures used in this analysis are determined using BPIP. In general, the lowest GEP stack height for any source is 65 meters by default. None of the proposed emission units at the Port facility will exceed GEP height.

Figure 4-1 includes the source and building arrangement as modeled. The electronic BPIP input and output files will be included on the modeling file FTP Site.

[3] ADJ_U* Meteorological Data for RWI provided via email from Matthew Porter (NCDAQ) to Jonathan Hill (Trinity) on March 17, 2020.

[4] https://files.nc.gov/ncdeq/Air%20Quality/permits/mets/ProfileBaseElevations_2018.pdf

4.6 Modeling Results

Table 4-4 summarizes the TAP modeling impacts at 1 g/s, showing the conversion to 99% of the respective AALs. Table 4-5 summarizes the final modeling impacts.

The highest 1-hour and 24-hour concentrations over the 2014-2018 meteorological data period was used. The maximum annual concentration over the individual meteorological years (2017) was used. The requested daily permit limits are calculated by ratio of the normalized emission rate and normalized modeling impact versus 99% of the AAL. Daily limits were determined by multiplying the allowable pound per hour (lb/hr) values by 9 hours per day. The annual limit assumes this same operation, for 365 days per year. Maximum concentrations for all pollutants occur at or near the boundary receptors and were limited such that the Flowers Timber facility will comply with the AALs for all triggered pollutants. Based on that, the proposed facility will not present any unacceptable risk to human health.

Electronic copies of model input and output files will be provided via secure FTP transfer upon request by AQAB.

Table 4-4. Normalized Modeling Results

Pollutant	Averaging Period	Normalized Emission Rate (g/s)	Normalized Modeling Impact (ug/m3)	AAL (ug/m3)	99% of AAL
Methyl Bromide	24-hr	1	51.79	1000	990
Methyl Bromide	Annual	1	4.09	5	4.95
Phosphine	1-hr	1	932.09	130	128.7

Table 4-5. Permitted Emission Rates

Pollutant	Averaging Period	UTM-E (m)	UTM-N (m)	Maximum Concentration	Date/Year Occurred	Requested Permit Limit
Methyl Bromide	24-hr	231226.4	390446.5	990	01/11/2017	1,365.3 lb/day
Methyl Bromide	Annual	231365.2	3904418.3	4.95	2017	31,539.0 lb/yr
Phosphine	1-hr	231209.8	3904428	128.7	01/05/2014 17:00	1.10 lb/hr

5. GENERAL FACILITY PERMIT APPLICATION FORMS

This section contains DEQ permit application forms for the general facility and proposed changes.

FACILITY FORMS

Form A – Facility (General Information)
Form A2 – Emission Source Listing
Form A3 – 112(r) Applicability Information
Form D1 – Facility-wide Emissions Summary

FORM A

GENERAL FACILITY INFORMATION

REVISED 09/22/16

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

A

NOTE- APPLICATION WILL NOT BE PROCESSED WITHOUT THE FOLLOWING:

X	Local Zoning Consistency Determination (new or modification only)	☑	Appropriate Number of Copies of Application	Application Fee (please check one option below)
X	Responsible Official/Authorized Contact Signature	☐	P.E. Seal (if required)	☐ Not Required ☑ ePayment ☐ Check Enclosed

GENERAL INFORMATION

Legal Corporate/Owner Name:	Flowers Timber Company, Inc.
Site Name:	Flowers Timber
Site Address (911 Address) Line 1:	140 Greenfield Cemetery Rd
Site Address Line 2:	
City:	Seven Springs
State:	NC
Zip Code:	28578
County:	Wayne

CONTACT INFORMATION

Responsible Official/Authorized Contact:		***Invoice Contact:***	
Name/Title:	Jeremy Flowers/President	Name/Title:	Alison Marwitz/Senior Regulatory Specialist
Mailing Address Line 1:	140 Greenfield Cemetery Rd.	Mailing Address Line 1:	655 Lone Oak Rd
Mailing Address Line 2:		Mailing Address Line 2:	
City: Seven Springs	State: NC Zip Code: 28578	City: Eagan	State: MN Zip Code: 55121
Primary Phone No.:	919 288 1770	Primary Phone No.:	651-795-5715
Fax No.:		Fax No.:	
Secondary Phone No.:		Secondary Phone No.:	
Email Address:		Email Address:	alison.marwitz@ecolab.com
Facility/Inspection Contact:		***Permit/Technical Contact:***	
Name/Title:	Jeremy Flowers/President	Name/Title:	James Fealey/District Manager
Mailing Address Line 1:	140 Greenfield Cemetery Rd,	Mailing Address Line 1:	53 McCullough Dr
Mailing Address Line 2:		Mailing Address Line 2:	
City: Seven Springs	State: NC Zip Code: 28578	City: Lincolnton	State: NC Zip Code: 28092
Primary Phone No.:	919 288 1770	Primary Phone No.:	302-322-3600
Fax No.:		Fax No.:	
Secondary Phone No.:		Secondary Phone No.:	
Email Address:		Email Address:	james.fealey@ecolab.com

APPLICATION IS BEING MADE FOR

☐ New Non-permitted Facility/Greenfield ☑ Modification of Facility (permitted) ☐ Renewal Title V ☐ Renewal Non-Title V
☐ Name Change ☐ Ownership Change ☐ Administrative Amendment ☐ Renewal with Modification

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): Fumigation services for logs and other commodities using Methyl Bromide and Phosphine.

Primary SIC/NAICS Code: 7342	Facility ID No. 9600280
Facility Coordinates: Latitude:	Current/Previous Air Permit No. 10549R00 Expiration Date: N/A
	Longitude:
Does this application contain confidential data? ☐ YES ☑ NO	***If yes, please contact the DAQ Regional Office prior to submitting this application.*** (See Instructions)

PERSON OR FIRM THAT PREPARED APPLICATION

Person Name:	Trevor Peters	Firm Name:	Trinity Consultants
Mailing Address Line 1:	One Copley Parkway, Suite 205	Mailing Address Line 2:	
City: Morrisville	State: NC	Zip Code: 27560	County: Wake
Phone No.:	919 462 9693	Fax No.:	
Email Address:	tpeters@trinityconsultants.com		

SIGNATURE OF RESPONSIBLE OFFICIAL/AUTHORIZED CONTACT

Name: Jeremy Flowers
X Signature(Blue Ink):
Title: President
Date:

Attach Additional Sheets As Necessary

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

SECTION AA1 - APPLICATION FOR NON-TITLE V PERMIT RENEWAL

_____ (Company Name) hereby formally requests renewal of Air Permit No. _____

There have been no modifications to the originally permitted facility or the operations therein that would require an air permit since the last permit was issued.

Is your facility subject to 40 CFR Part 68 "Prevnetion of Accidental Releases" - Section 112(r) of the Clean Air Act? ☐ YES ☐ NO

If yes, have you already submitted a Risk Manage Plan (RMP) to EPA? ☐ YES ☐ NO Date Submitted: _____

Did you attach a current emissions inventory? ☐ YES ☐ NO

If no, did you submit the inventory via AERO or by mail? ☐ Via AERO ☐ Mailed Date Mailed: _____

SECTION AA2- APPLICATION FOR TITLE V PERMIT RENEWAL

In accordance with the provisions of Title 15A 2Q .0513, the responsible official of _____ (Company Name) hereby formally requests renewal of Air Permit No. _____ (Air Permit No.) and further certifies that:

(1) The current air quality permit identifies and describes all emissions units at the above subject facility, except where such units are exempted under the North Carolina Title V regulations at 15A NCAC 2Q .0500;

(2) The current air quality permit cits all applicable requirements and provides the method or methods for determing compliance with the applicable requirements;

(3) The facility is currently in compliance, and shall continue to comply, with all applicable requiremetns. (Note: As provided under 15A NCAC 2Q .0512 compliance with the conditions of the permit shall be deemed compliance with the applicable requirements specifically identified in the permit);

(4) For applicable requirements that become effective during the term of the renewed permit that the facility shall comply on a timely basis;

(5) The facility shall fulfill applicable enhanced monitoring requirements and submit a compliance certification as required by 40 CFR Part 64.

The responsible official (signature on page 1) certifies under the penalty of law that all information and statements provided above, based on information and belief formed after reasonable inquiry, are true, accurate, and complete.

SECTION AA3- APPLICATION FOR NAME CHANGE

New Facility Name: _____

Former Facility Name: _____

An official facility name change is requested as described above for the air permit mentioned on page 1 of this form. Complete the other sections if there have been modifications to the originally premitted facility that would requie an air quality permit since the last permit was issued and if ther has been an ownership change associated with this name change.

SECTION AA4- APPLICATION FOR AN OWNERSHIP CHANGE

By this application we hereby request transfer of Air Quality Permit No. _____ from the former owner to the new owner as described below. The transfer of permit responsibility, coverage and liability shall be effective _____ (immediately or insert date.) The legal ownership of the facility described on page 1 of this form has been or will be transferred on _____ (date). There have been no modifications to the originally permitted facility that would require an air quality permit since the last permit was issued.

Signature of New (Buyer) Responsible Official/Authorized Contact (as typed on page 1):

X Signature (Blue Ink): _____

Date:

New Facility Name:

Former Facility Name:

Signature of Former (Seller) Responsible Official/Authorized Contact:

Name (typed or print):

Title:

X Signature (Blue Ink): _____

Date:

Former Legal Corporate/Owner Name:

In lieu of the seller's signature on this form, a letter may be submitted with the seller's signature indicating the ownership change

SECTION AA5- APPLICATION FOR ADMINISTRATIVE AMENDMENT

Describe the requested administrative amendment here (attach additional documents as necessary):

FORM D1

FACILITY-WIDE EMISSIONS SUMMARY

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CRITERIA AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

AIR POLLUTANT EMITTED	EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)
	tons/yr	tons/yr	tons/yr
PARTICULATE MATTER (PM)	**Project Emissions**		
PARTICULATE MATTER < 10 MICRONS (PM_{10})			
PARTICULATE MATTER < 2.5 MICRONS ($PM_{2.5}$)			
SULFUR DIOXIDE (SO_2)			
NITROGEN OXIDES (NOx)			
CARBON MONOXIDE (CO)			
VOLATILE ORGANIC COMPOUNDS (VOC)	< 10	< 10	< 10
LEAD			
GREENHOUSE GASES (GHG) (SHORT TONS)			
OTHER			

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

HAZARDOUS AIR POLLUTANT EMITTED	CAS NO.	EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)
		tons/yr	tons/yr	tons/yr
Methyl Bromide		< 10	< 10	< 10
Phosphine		1.81	1.81	1.81

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	Modeling Required ? No
Methyl Bromide	**See Modeling Analysis Section 4 of application**				X	
Phosphine					X	

COMMENTS:

Attach Additional Sheets As Necessary

6. SOURCE SPECIFIC PERMIT APPLICATION FORMS

This section contains the NCDAQ permit application forms for the proposed emission units

EMISSION UNIT FORMS

- ES-4
  - Form B - Specific Emissions Source Information
  - Form B9 - Emission Source-Other

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B**

EMISSION SOURCE DESCRIPTION: Fumigation	EMISSION SOURCE ID NO: ES-4
	CONTROL DEVICE ID NO(S): N/A
OPERATING SCENARIO 1 OF 1	EMISSION POINT (STACK) ID NO(S): EP-4

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
Fumigation operations of various commodities using Methyl Bromide and Phosphine.

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)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☑ Other (Form B9)

START CONSTRUCTION DATE: End 2020 DATE MANUFACTURED: N/A

MANUFACTURER / MODEL NO.: N/A EXPECTED OP. SCHEDULE: 9 HR/DAY 7 DAY/WK 52 WK/YR

IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?): ☐ NESHAP (SUBPARTS?):

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25 MAR-MAY 25 JUN-AUG 25 SEP-NOV 25

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 EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	-	-	-	-	-	-	-
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)	02		< 10		< 10		< 10
LEAD	-	-	-	-	-	-	-
OTHER	-	-	-	-	-	-	-

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
Methyl Bromide	NA	02		< 10		< 10		< 10
Phosphine	NA	02	1.10	1.81	1.10	1.81	1.10	1.81

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
Methyl Bromide	NA	02		1365.3	< 20,000
Phosphine	NA	02	1.10	10	3614

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

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

Attach Additional Sheets As Necessary

FORM B9

EMISSION SOURCE (OTHER)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B9**

EMISSION SOURCE DESCRIPTION: Fumigation	EMISSION SOURCE ID NO: ES-4
	CONTROL DEVICE ID NO(S): N/A
OPERATING SCENARIO 1 OF 1	EMISSION POINT (STACK) ID NO(S): EP-4

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
Fumigation operations of various commodities using Methyl Bromide and Phosphine.

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

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UNIT/BATCH)
Methyl Bromide	lbs	1365.3	1365.3
Phosphine	lbs	1.10	1.10

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

COMMENTS:

Attach Additional Sheets as Necessary

APPENDIX A. EMISSION CALCULATIONS

Potential Emission Calculations
Emission Unit: ES-4

Methyl Bromide Usage per Container of Commodity		
Oak	40.5	lb/container
Non-Oak	20.25	lb/container
Southern Yellow Pine	13.5	lb/container

ES-1 Fumigation		
Daily Operating Hours [1]	9	hrs
Max Potential Methyl Bromide [2]	1365.3	lb/day
	10	tpy
Max Potential Phosphine	1.1	lb/hr
	1.81	tpy

[1] ES-1 limited to operation from 8am - 5pm, a total of 9 hours per day 365 days per year.

[2] Minor source limit of 10 tpy of individual HAP.

APPENDIX B. MODELING FILES

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: Flowers Timber Company, Inc. **Facility ID:** 9600280 **Address:** 140 Greenfield Cemetery Rd Seven Springs, NC 28578	**Consultant (if applicable):** Trinity Consultants One Copley Parkway Suite 205 Morrisville, NC 27560
Contact Name: Jeremy Flowers	**Contact Name:** Jon Hill
Phone Number: 919-288-1770 **Email:** jeremy@flowerstimber.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.	X
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.	NA
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.	NA

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.	NA
Source / Source emission parameters: Provide a table listing the sources modeled and the applicable source emission parameters. *See NC Form 3 – Appendix A.*	NA
Merged Sources: Identify merged sources and show all appropriate calculations. *See Section 3.3*	NA
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.*	NA
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*	NA
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: _____	
Meteorology: In SCREEN3, select full meteorology.	NA
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.	NA
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.*	NA
Modeling Files: Either electronic or hard copies of SCREEN3 output must be submitted.	NA

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.*	X
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
Coordinate System: Specify the coordinate system used (e.g., NAD27, NAD83, etc.) to identify the source, building, and receptor locations. Note: Be sure to specify in the AERMAP input file the correct base datum (NADA) to be used for identifying source input data locations. Clearly note in both the protocol checklist and the modeling report which datum was used.	NAD83
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 Rocky Mount '14-'18 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).	
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

APPENDIX C. LOCAL ZONING CONSISTENCY DETERMINATION

Zoning Consistency Determination

Facility Name	Flowers Timber Company
Facility Street Address	140 Greenfield Cemetery Rd
Facility City	Seven Springs
Description of Process	Fumigation using Methyl Bromide and Phosphine
SIC/NAICS Code	
Facility Contact	Jeremy Flowers
Phone Number	919-288-1770
Mailing Address	Same
Mailing City, State Zip	

Based on the information given above:

- [x] I have received a copy of the air permit application (draft or final) AND...

- [x] 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	Wayne County Planning
Name of Designated Official	Berry Gray
Title of Designated Official	Planning Director
Signature	
Date	12/1/20

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.