SUNROCK®
CAROLINA SUNROCK LLC

Scott Martino
Environmental Compliance Manager
200 Horizon Drive, Suite 100
Raleigh, NC 27615

NC Department of Environmental Quality
Received
APR 22 2021
Winston-Salem
Regional Office

April 21, 2021

Mr. Ray Stewart, P.E.
Air Quality Regional Supervisor
Winston-Salem Regional Office
450 West Hanes Mill Road, Suite 300
Winston-Salem, North Carolina 27105

12X21 13401 9536 1559
Check # 6E7983
$400.00
Received 4/22/21
- DMM

Re: Air Quality Construction Permit Applications
Carolina Sunrock
Burlington North Plant
Prospect Hill Quarry and Distribution Center
Caswell County

Dear Mr. Stewart:

Please find attached the construction permit applications for the proposed Carolina Sunrock plant sites that will be located in Caswell County, NC. The attached applications are being resubmitted for the same sites that the NC Division of Air Quality (DAQ) denied last year.

The attached applications contain the required information, including application forms, calculations, dispersion modeling, and other supporting information as required for air permit construction applications. These applications also address the air quality concerns that were expressed by NC DAQ to Carolina Sunrock last year.

Carolina Sunrock understands that DAQ intends to notice the permit application for a public hearing. As such, it is requested that the agency include with the public notice the time and place of the public hearing in accordance with 15A NCAC 2Q .0307, and also include an alternate hearing date in the event of a postponement due to extraordinary circumstances. Please let us know if DAQ will follow this requested procedure.

If you have any questions regarding this application, please feel free to contact me at (919) 747-6336

Sincerely
Carolina Sunrock LLC

Scott Martino,
Manager Environmental Compliance

Cc: Mr. Mike Abraczinskas

Email: smartino@thesunrock group.com
Office: (919) 747-6336
Fax: (919) 747-6305

AIR QUALITY CONSTRUCTION PERMIT APPLICATION

CAROLINA SUNROCK LLC
BURLINGTON, NORTH CAROLINA

SUNROCK®

Prepared By:

TRINITY CONSULTANTS
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April 2021

Project 203401.0131

Trinity Consultants

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APPENDIX D. LOCAL ZONING CONSISTENCY DETERMINATION

1. INTRODUCTION

1.1 Executive Summary

Carolina Sunrock LLC (Carolina Sunrock) currently owns and operates several hot mix asphalt and concrete batching plants across North Carolina. Carolina Sunrock plans to build a hot mix asphalt and truck mix concrete batch plant at 12971 North Carolina 62, Burlington, Caswell County, North Carolina 27217, as previously submitted in September 2019.

For this proposed facility, Carolina Sunrock 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(a)(1), the required number of copies (2) have been included as required by Rule 2Q .0305(b), and the copies have been signed as required by Rule 2Q .0305(a)(1)(E).

There have been no changes made since the original submittal other than the acceptance of utilizing ultra-low sulfur diesel (ULSD) as a fuel source for the insignificant asphalt heaters.

The new facility will be a synthetic minor facility for particulate matter (PM) and carbon monoxide (CO) emissions and an area source of hazardous air pollutants (HAPs). The permit application fee ($400) as required under 2Q .0301(c), 0304(j) and 2Q .0305(a)(1)(A) is enclosed. Furthermore, as required by 2Q .0304(b)(1) and 2Q .0305(a)(1)(B), a zoning consistency determination has been submitted as part of this application.

1.2 Application Contents

Three copies of this air permit application and application processing fee of $400 are enclosed. This application contains the following information:

- Section 2 provides a project description and discusses air emissions,
- Section 3 discusses regulatory applicability,
- Section 4 contains the air dispersion modeling analysis,
- Section 5 provides general facility permit application forms,
- Section 6 provides source specific permit application forms,
- Appendix A contains facility-wide emission summaries, including:
    - Combustion source emission summaries,
    - DEQ spreadsheet calculations for the HMA plant,
    - DEQ spreadsheet calculations for the concrete batch plant,
- Appendix B contains the original TAP modeling analysis,
- Appendix C contains the NAAQS modeling analysis, and
- Appendix D presents a copy of the local zoning consistency request submitted to the local zoning department.

2. BACKGROUND AND PROCESS DESCRIPTION

2.1 Background

Carolina Sunrock is submitting this application to build a hot mix asphalt (HMA) and truck mix concrete batch plant in Burlington, North Carolina. The facility requests following permitted manufacturing operations be included as emission sources in the permit:

- Hot mix asphalt plant
- RAP crushing system
- Truck mix batch concrete plant

The plant's processes are discussed in detail in Section 2.2. Facility-wide potential emission estimates associated with the facility's operations are included in Appendix A.

A detailed description of the production process and associated emissions sources are provided in the following subsections. NCDEQ's source-specific application forms are included in Section 6 of this application.

2.2 Process Description

2.2.1 Hot Mix Asphalt Plant

Carolina Sunrock is proposing the following emission sources associated with a hot mix asphalt plant (250 tons per hour capacity) consisting of:

- Propane/Natural Gas/No. 2 Fuel oil/Recycled No. 2 Fuel Oil/Recycled No. 4 Fuel Oil-fired drum type hot mix asphalt plant (80 MMBtu/hr maximum heat input capacity) – controlled by a bagfilter
- Two (2) hot mix asphalt storage silos (150 tons maximum capacity, each)
- Three (3) hot mix asphalt storage silos (200 tons maximum capacity, each)
- Asphalt loadout operation
- Truck loadout operation
- Natural gas/No. 2 ULSD fuel oil-fired Asphalt Cement Heater; and
- Natural gas/No. 2 ULSD fuel oil-fired Liquid Asphalt Tank Heater

In association with the asphalt plant, Carolina Sunrock is also proposing a reclaimed asphalt pavement (RAP) crushing system consisting of:

- One crusher (65 tph)
- One double deck screen
- Four conveyors

The RAP crushing system will also periodically use a mobile crusher (also rated at 65 tph) which may temporarily reside at the new Burlington facility but moves from site to site. This crusher has an associated diesel-fired generator. This mobile crusher is exempt from permitting in accordance with 15A NCAC 2Q .0902, which exempts temporary crushers. This exemption is discussed further in Section 3.5.12.

2.2.2 Truck Mix Concrete Batch Plant

Carolina Sunrock is proposing a truck mix concrete batch plant (120 cubic yards per hour) consisting of:

- Cement silo (200 tons maximum capacity)
- Fly ash silo (200 tons maximum capacity)
- Truck loadout point
- Cement/flyash weight batcher (25 tons maximum capacity)
- Aggregate weigh batcher (50 tons maximum capacity)

Note that all the sources in the truck mix concrete batch plant except for the aggregate weight batcher will be controlled by a bagfilter.

2.2.3 Insignificant Activities

Carolina Sunrock is proposing the following insignificant activities which are exempt from permitting under 15A NCAC 02Q .0102:

- Two (2) Used Oil Storage Tank associated with HMA plant (20,000 gallons capacity each)
- Two (2) Diesel Fuel Storage Tanks associated with HMA plant (20,000 gallons capacity each)
- Liquid Asphalt Tank (30,000 gallons capacity); and
- Liquid Asphalt Tank (30,000 gallons capacity)

2.3 Synthetic Minor Permit Limitation Request

Unrestricted facility wide PTE emissions are over 100 tpy for PM and CO. Therefore, Carolina Sunrock is requesting synthetic minor limitations be included in the permit to limit PM and CO emissions and avoid major source status under the Title V regulations.

Carolina Sunrock is proposing the following synthetic minor limitations to ensure that the PM and CO PTE remains below 100 tpy:

- Production of the HMA plant (maximum design production of 250 tph) will be capped at 500,000 tpy

- The facility requests no limitation on the concrete batch operations.

3. REGULATORY APPLICABILITY ANALYSIS

3.1 Title V Applicability

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, 100 tpy of certain other regulated pollutants, and 100,000 tpy for CO_2e.

The facility is a synthetic minor source because potential uncontrolled emissions of particulate matter (PM) and carbon monoxide (CO) exceed the applicable threshold of 100 tpy. The facility is a minor source of HAPs because potential uncontrolled HAP emissions are less than 10/25 tpy.

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 pollutant other than carbon dioxide equivalent (CO_2e), for which the threshold is 100,000 tpy.[1] The facility does not qualify for classification in 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 PSD regulations.

3.3 NESHAP Applicability

Potential emissions of HAPs are not greater than the major source thresholds of 10/25 tpy for HAPs. Therefore, Carolina Sunrock is a minor source of HAPs. The proposed non-exempt equipment does not belong to any of the source categories regulated under these standards.

3.4 NSPS Applicability

3.4.1 Standards of Performance for Hot Mix Asphalt Facilities NSPS [40 CFR 60 Subpart I]

The provisions of this subpart are applicable to hot mix asphalt facilities that commence construction or modification after June 11, 1973; therefore this rule applies to Carolina Sunrock's hot mix asphalt plant (ID No. HMA-1).

[1] 40 CFR §52.21(b)(1)(i)

3.4.1.1 Emission Standards

In accordance with §60.92, Carolina Sunrock must not discharge into the atmosphere any gases which:

- Contain PM in excess of 90 mg/dscm (0.04 gr/dscf)
- Exhibit 20 percent opacity, or greater.

3.4.1.2 Testing Requirements

Per §60.93, the facility shall conduct a performance test as required in §60.8, using the following test methods:

- Method 5 for determining compliance with PM standard
- Method 9 and §60.11 procedures for determining opacity

3.4.2 Standards of Performance for Nonmetallic Mineral Processing Plants NSPS [40 CFR 60 Subpart OOO]

Per §60.670(a)(1), the provisions of this subpart are applicable to crushers and grinding mills at hot mix asphalt facilities that reduce the size of nonmetallic minerals embedded in RAP up to the first storage silo or bin. Therefore, the RAP Crushing System at the facility is subject to this regulation including the RAP crusher, conveyors, and screen.

3.4.2.1 Emission Standards

In accordance with table 3 and §60.672(b), for affected facilities that commence construction after April 22, 2008, the fugitive emission limit for the RAP Crushing System is 12 percent opacity. For the RAP conveyors and screens, the fugitive emissions limit is 7 percent opacity.

The facility must demonstrate compliance with these limits by conducting an initial performance test per §60.11 and §60.675 and perform periodic inspections of water sprays per §60.674(b) and §60.676(b). The facility must also perform a repeat performance test within 5 years from the previous performance test from affected facilities without water sprays (facilities controlled by water carryover from upstream water sprays that are inspected are exempt from the repeat testing requirement).

3.4.2.2 Exemption for Portable Crushers

The facility may also periodically utilize a portable RAP crushing system that moves from site to site. It is exempt from Subpart OOO in accordance with §60.670(c)(2) since its capacity is 65 tons per hour, which is less than the 150 tons per hour threshold specified in this exemption. This portable crusher is also exempt from permitting per 15A NCAC 2Q .0902 which is further discussed in Section 3.5.12.

3.4.3 Non-Applicable NSPS

The basis for non-applicability of a potential NSPS is provided below.

Subpart Kb: Subpart Kb applies to volatile organic liquid storage vessels with a volume greater than 75 m^3 (19,813 gallons) storing VOCs with a vapor pressure less than or equal to 15.0 kPa (2.18 psia). In addition, tanks with capacities of greater than 151 m^3 (39,890 gallons), containing VOCs with a vapor pressure less than 3.5 kPa (0.5 psia) are exempt from this NSPS.

This project will add several storage tanks for storing ULSD, used oil, liquid asphalt, and pressurized propane, which all have vapor pressures below the applicability cutoff per AP-42 Table 7.1-2, and are therefore exempt from this regulation.

3.5 North Carolina Regulations

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

3.5.1 Particulates from Hot Mix Asphalt Plants (15A NCAC 2D .0506)

Particulate matter emissions resulting from the operation of a hot mix asphalt plant shall not exceed allowable emission rates. The allowable emission rates are, as defined in 15A NCAC 2D .0506, a function of the process weight rate and shall be determined by the following equation (calculated to three significant figures), where P is the process throughput rate in tons per hour (tons/hr) and E is the allowable emission rate in pounds per hour (lbs/hr).

$E = 4.9445 * (P)^{0.4376}$ for P < 300 tons/hr, or

$E = 60$ lbs/hr for P >=300 tons/hr

The maximum process weight rate for the proposed plant will be 250 tons/hour, the maximum allowable emission rate is 55.4 lb/hr. The proposed hot mix asphalt plant will be in compliance with the applicable limit by use of a bagfilter.

3.5.2 Particulates from Sand, Gravel, or Crushed Stone Operations (15A NCAC 2D .0510)

This regulation applies to the RAP crushing system at Carolina Sunrock.

As required by 15A NCAC 2D .0510 "Particulates from Sand, Gravel, or Crushed Stone Operations," the following requirements apply:

a. The Permittee of a sand, gravel, recycled asphalt pavement (RAP), or crushed stone operation shall not cause, allow, or permit any material to be produced, handled, transported, or stockpiled without taking measures to reduce to a minimum any particulate matter from becoming airborne to prevent exceeding the ambient air quality standards beyond the property line for particulate matter, both PM_{10} and total suspended particulates.
b. Fugitive dust emissions from sand, gravel, RAP, or crushed stone operations shall be controlled by 15A NCAC 2D .0540 "Particulates from Fugitive Dust Emission Sources."
c. The Permittee of any sand, gravel, RAP, or crushed stone operation shall control process-generated emissions:
    i. From crushers with wet suppression (excluding RAP crushers); and
    ii. From conveyors, screens, and transfer points

    such that the applicable opacity standards in 15A NCAC 2D .0521 Control of Visible Emissions," or 15A NCAC 2D .0524 "New Source Performance standards" are not exceeded.

3.5.3 Particulates from Miscellaneous Industrial Processes (15A NCAC 2D .0515)

This regulation applies to the following truck mix concrete batch plant emission sources: cement/flyash weigh batcher, cement/flyash silos, aggregate weigh batcher, and truck loadout point.

As required by 15A NCAC 2D .0515 "Particulates from Miscellaneous Industrial Processes," particulate matter emissions from the emission sources shall not exceed allowable emission rates. The allowable emission rates are, as defined in 15A NCAC 2D .0515, a function of the process weight rate and shall be determined by the following equation(s), where P is the process throughput rate in tons per hour (tons/hr) and E is the allowable emission rate in pounds per hour (lbs/hr).

$E = 4.10 * (P)^{0.67}$ for P <= 30 tons/hr, or

$E = 55 * (P)^{0.11} - 40$ for P >30 tons/hr

See Appendix A, Concrete Batch Plant Emissions Calculator – Input Screen, for the allowable emission rate calculation for each source. The emission rate from each source is less than the maximum allowable emission rate, and thus shows compliance with this regulation.

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

Visible emissions from the HMA plant and concrete batch plant manufactured after July 1, 1971, shall not be more than 20 percent opacity when averaged over a six-minute period, except that six-minute periods 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. However, sources which must comply with 15A NCAC 2D .0524 "New Source Performance Standards" or .1110 "National Emission Standards for Hazardous Air Pollutants" must comply with applicable visible emissions requirements contained therein.

3.5.5 Particulates from Fugitive Dust Emission Sources (15A NCAC 2D .0540)

The facility shall not cause or allow fugitive dust emissions to cause or contribute to substantive complaints or excess visible emissions beyond the property boundary. If substantive complaints or excessive fugitive dust emissions from the facility are observed beyond the property boundaries for six minutes in any one hour (using Reference Method 22 in 40 CFR, Appendix A), the owner or operator may be required to submit a fugitive dust plan as described in 2D .0540(f).

"Fugitive dust emissions" means particulate matter that does not pass through a process stack or vent and that is generated within plant property boundaries from activities such as: unloading and loading areas, process areas stockpiles, stock pile working, plant parking lots, and plant roads (including access roads and haul roads).

3.5.6 Sulfur Dioxide Emissions from Combustion Sources (15A NCAC 2D .0516)

As required by 15A NCAC 2D .0516 "Sulfur Dioxide Emissions from Combustion Sources," sulfur dioxide emissions from the combustion sources shall not exceed 2.3 pounds per million Btu heat input. The combustion sources proposed in this application will comply with this regulation through combusting natural gas, propane, or ultra-low sulfur diesel fuel.

3.5.7 Excess Emissions Reporting and Malfunctions (15A NCAC 2D .0535)

As required by 15A NCAC 2D .0535, if a source of excess emissions lasts for more than four hours and results from a malfunction, a breakdown of process or control equipment or any other abnormal conditions, the facility shall:

a. Notify the Director or his designee of any such occurrence by 9:00 a.m. Eastern time of the Division's next business day of becoming aware of the occurrence and describe:
   i. the name and location of the facility,
   ii. the nature and cause of the malfunction or breakdown,
   iii. the time when the malfunction or breakdown is first observed,
   iv. the expected duration, and
   v. an estimated rate of emissions.
b. Notify the Director or his designee immediately when the corrective measures have been accomplished.

3.5.8 Control and Prohibition of Odorous Emissions (15A NCAC 2D .1806)

The facility shall not operate without implementing management practices or installing and operating odor control equipment sufficient to prevent odorous emissions from the facility from causing or contributing to objectionable odors beyond the facility's boundary.

3.5.9 Limitation to Avoid Title V Permit (15A NCAC 2Q .0501)

Pursuant to 15A NCAC 2Q .0315 "Synthetic Minor Facilities," to avoid the applicability of 15A NCAC 2Q .0501 "Purpose of Section and Requirement for a Permit," Carolina Sunrock requests that facility-wide emissions be limited to less than 100 tons per consecutive 12-month period for the following pollutants:

- PM
- CO

The facility requests the limitations discussed in Section 2.3 above.

3.5.10 Toxic Air Pollutant Procedures (15A NCAC 2Q .0700)

Under the NC air toxics program regulations, facility-wide modeling and permitting is required if total facility-wide emissions of regulated air toxics emitted from non-exempt, new or modified emission units exceed the toxics de minimis emissions rates (a.k.a., "TPERS") established under the 15A NCAC 2Q .0700 regulations.

The previously-submitted application included a TAP modeled compliance demonstration performed by RTP Environmental in September 2019. That report is included in Appendix B.

3.5.11 Permit Exemptions - Temporary Crushers (15A NCAC 2Q .0902)

The facility may periodically use a mobile RAP crushing system that moves around other Carolina Sunrock sites. This temporary crusher has a maximum capacity of 65 tons per hour. It is exempt from permitting since it meets the criteria specified in 2Q .0902 and will not be operated at this facility for more than 12 months. In addition, the crusher:

- Will crush no more than 300,000 tons at the facility
- Will burn no more than 17,000 gallons of diesel fuel at the facility
- Does not operate at a quarry that has an air permit
- Will continuously use water spray to control emissions from the crusher, and
- Does not operate at a facility that is required to have a mining permit issued by Division of Energy, Mineral, and Land Resources.

The diesel fired emergency generator associated with this temporary crusher was not included in the TAP modeling demonstration since it is exempt from permitting and will only be operated on a short term basis. The generator is also subject to RICE MACT (40 CFR 63, Subpart ZZZZ).

4. AIR DISPERSION MODELING

The previously-submitted application (September 2019) included a TAP modeled compliance demonstration by RTP Environmental. That report is included in Appendix B. Since the time of that submittal, DAQ requested that the site perform a NAAQS modeling demonstration for SO_2, NO_X, TSP, PM_{10} and $PM_{2.5}$. Appendix C includes the report documenting NAAQS compliance, that was prepared and submitted to DAQ's Air Quality Analysis Branch (AQAB) on March 10, 2021.

There have been no changes made since the original submittal other than the acceptance of utilizing ultra-low sulfur diesel (ULSD) as a fuel source for the small asphalt heaters associated with the HMA plant (1.1 MMBtu/hr and 1.2 MMBtu/hr maximum heat input capacities).

5. NCDEQ GENERAL FACILITY APPLICATION FORMS

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

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 D4 – Exempt and Insignificant Activities Summary
- Form D5 – P.E. Seal Form

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)
- [x] Appropriate Number of Copies of Application
- [x] Application Fee (if required)
- [x] Responsible Official/Authorized Contact Signature
- [ ] P.E. Seal (if required)

GENERAL INFORMATION

Legal Corporate/Owner Name:	Carolina Sunrock LLC
Site Name:	Burlington North
Site Address (911 Address) Line 1:	12971 North Carolina 62
Site Address Line 2:	
City: Burlington	State: North Carolina
Zip Code: 27217	County: Caswell

CONTACT INFORMATION

Responsible Official/Authorized Contact:	*Invoice Contact:*
Name/Title: Gregg W. Bowler - President	Name/Title: Accounts Payable
Mailing Address Line 1: 200 Horizon Drive Suite 100	Mailing Address Line 1: 200 Horizon Drive Suite 100
Mailing Address Line 2:	Mailing Address Line 2:
City: Raleigh State: NC Zip Code: 27615	City: Raleigh State: NC Zip Code: 27615
Primary Phone No.: (919) 747-6400 Fax No.: (919) 747-6357	Primary Phone No.: (919) 747-6400 Fax No.: (919) 747-6357
Secondary Phone No.:	Secondary Phone No.:
Email Address: gbowler@thesunrockgroup.com	Email Address: ap@thesunrockgroup.com
Facility/Inspection Contact:	*Permit/Technical Contact:*
Name/Title: Scott Martino - Compliance Manager	Name/Title: Scott Martino - Compliance Manager
Mailing Address Line 1: 200 Horizon Drive Suite 100	Mailing Address Line 1: 200 Horizon Drive Suite 100
Mailing Address Line 2:	Mailing Address Line 2:
City: Raleigh State: NC Zip Code: 27615	City: Raleigh State: NC Zip Code: 27615
Primary Phone No.: (919) 747-6336 Fax No.: (919) 747-6357	Primary Phone No.: (919) 747-6336 Fax No.: (919) 747-6357
Secondary Phone No.: (984) 202-4761	Secondary Phone No.: (984) 202-4761
Email Address: smartino@thesunrockgroup.com	Email Address: smartino@thesunrockgroup.com

APPLICATION IS BEING MADE FOR

- [x] 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
- [x] Synthetic Minor
- [ ] Title V

FACILITY (Plant Site) INFORMATION

Describe nature of (plant site) operation(s): This is a proposal for a Drum Mix Hot Asphalt Plant, Truck Mix Concrete Plant

	Facility ID No.
Primary SIC/NAICS Code: 324121	Current/Previous Air Permit No. / Expiration Date:
Facility Coordinates: Latitude: 36 15' 03.51"	Longitude: 79 19' 36.68
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: Aimee Andrews	Firm Name: Trinity Consultants
Mailing Address Line 1:	Mailing Address Line 2: Suite 205
City: State:	Zip Code: County:
Phone No.: Fax No.:	Email Address:

SIGNATURE OF RESPONSIBLE OFFICIAL/AUTHORIZED CONTACT

Name (typed): Gregg W. Bowler	Title: President
X Signature(Blue Ink):	Date: 3/8/21

Attach Additional Sheets As Necessary

FORMs A2, A3

EMISSION SOURCE LISTING FOR THIS APPLICATION - A2

112r APPLICABILITY INFORMATION - A3

REVISED 09/22/16 — NCDEQ/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 DEVIC ID NO.	CONTROL DEVICE DESCRIPTION
Equipment To Be ADDED By This Application (New, Previously Unpermitted, or Replacement)			
Drum Mix Asphalt Plant (250 tons per hour capacity) Consisting of the Following			
HMA-1	Propane/Natural Gas/No. 2 Fuel Oil/Recycled No. 2 Fuel Oil/Recycled No.4 Fuel Oil-fired drum type hot asphalt plant (80 MMBtu/hr maximum heat input capacity)	HMA-CD1	Bagfilter (8968 square feet of filter area)
HMA Silo1	Hot mix asphalt storage silo (150 tons maximum capacity)	NA	NA
HMA Silo2	Hot mix asphalt storage silo (150 tons maximum capacity)	NA	NA
HMA Silo3	Hot mix asphalt storage silo (200 tons maximum capacity)	NA	NA
HMA Silo4	Hot mix asphalt storage silo (200 tons maximum capacity)	NA	NA
HMA Silo5	Hot mix asphalt storage silo (200 tons maximum capacity)	NA	NA
HMA-LO1	Asphalt Loadout Operation Silo 1	NA	NA
HMA-LO2	Asphalt Loadout Operation Silo 2	NA	NA
HMA-LO3	Asphalt Loadout Operation Silo 3	NA	NA
HMA-LO4	Asphalt Loadout Operation Silo 4	NA	NA
HMA-LO5	Asphalt Loadout Operation Silo 5	NA	NA
HMA-H1	Natural gas/no.2 fuel ULSD oil-fired liquid asphalt cement heater (1.2 million btu per hour maximum heat input)	NA	NA
HMA-H2	Natural gas/no.2 fuel ULSD oil-fired liquid asphalt cement heater (1.1 million btu per hour maximum heat input)	NA	NA
RAP Crushing System Consisting of the Following			
RAP-CRSH	RAP impact Crusher (65 tons per hour maximum rated capacity)	NA	NA
RAP-CNV	(4) Conveyors	NA	NA
RAP-SCN	8' X 20' Double Deck Screen	NA	NA
Truck Mix Concrete Batch Plant (120 cubic yards per hour capacity) Consisting of the Following			
RM-1	Cement Storage Silo (200-ton capacity)	RMC-CD2	Bagfilter (1,433 square feet of filter area)
RM-2	Flyash Storage Silo (200-ton Capacity)	RMC-CD2	Bagfilter (1,433 square feet of filter area)
RM-3	Truck Loadout point	RMC-CD2	Bagfilter (1,433 square feet of filter area)
RM-4	Cement/Flyash Weigh Batcher (25-ton max Capacity)	RMC-CD2	Bagfilter (1,433 square feet of filter area)
RM-5	Aggregate Weigh Batcher (50-ton max Capacity)	NA	NA
Existing Permitted Equipment To Be MODIFIED By This Application			
Equipment To Be DELETED By This Application			

112(r) APPLICABILITY INFORMATION

Is your facility subject to 40 CFR Part 68 "Prevention of Accidental Releases" - Section 112(r) of the Federal Clean Air Act? ☐ Yes ☑ No **A 3**

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

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: _____

C. List the processes subject to 112(r) at your facility:

PROCESS DESCRIPTION	PROCESS LEVEL (1, 2, or 3)	HAZARDOUS CHEMICAL	INVENTORY (LBS)

Attach Additional Sheets As Necessary

FORM D4

EXEMPT AND INSIGNIFICANT ACTIVITIES SUMMARY

REVISED: 12/01/01 | NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate | D4

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

DESCRIPTION OF EMISSION SOURCE	SIZE OR PRODUCTION RATE	BASIS FOR EXEMPTION OR INSIGNIFICANT ACTIVITY
IES-1 – Used Oil Storage Tank associated with asphalt plant	20,000 gallon	2Q .0102(g)(4)
IES-2 – Used Oil Storage Tank associated with asphalt plant	20,000 gallon	2Q .0102(g)(4)
IES-3 – Liquid Asphalt Tank	30,000 gallon	2Q .0102(g)(14)(B)
IES-4 – Liquid Asphalt Tank	30,000 gallon	2Q .0102(g)(14)(B)
IES-5 – Diesel Fuel Storage Tank associated with asphalt plant	20,000 gallon	2Q .0102(g)(4)
IES-6 – Diesel Fuel Storage Tank associated with asphalt plant	20,000 gallon	2Q .0102(g)(4)

Attach Additional Sheets As Necessary

FORM D1

FACILITY-WIDE EMISSIONS SUMMARY

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **D1**

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

	EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)
AIR POLLUTANT EMITTED	tons/yr	tons/yr	tons/yr
PARTICULATE MATTER (PM)		**523**	**28.88**
PARTICULATE MATTER < 10 MICRONS (PM_{10})		**207**	**14.45**
PARTICULATE MATTER < 2.5 MICRONS ($PM_{2.5}$)		**85.2**	**8.52**
SULFUR DIOXIDE (SO_2)		**94.37**	**23.61**
NITROGEN OXIDES (NOx)		**62.42**	**15.94**
CARBON MONOXIDE (CO)		**145.67**	**33.68**
VOLATILE ORGANIC COMPOUNDS (VOC)		**52.69**	**12.05**
LEAD			
GREENHOUSE GASES (GHG) (SHORT TONS)			
OTHER			

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

		EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)
HAZARDOUS AIR POLLUTANT EMITTED	CAS NO.	tons/yr	tons/yr	tons/yr
Acetaldehyde				
Acrolein		**See Appendix A**		
Antimony unlisted compounds				
Arsenic unlisted cmpds (comp. of ASC)				
Benzene				
Beryllium metal (unreacted)				
Cadmium metal (elemental unreacted)				
Carbon disulfide				
Chromium unlisted cmpds (add w/chrom acid to get CRC)				
Chromic acid (VI) (component of solCR6 and CRC)				
Cobalt unlisted compounds				
Cumene				
Ethyl benzene				
Ethyl chloride (chloroethane)				
Formaldehyde				
Hexane, n-				
Hydrogen Chloride (hydrochloric acid)				
Lead unlisted compounds				
Mercury, vapor				
Methyl bromide				
Methyl chloride				
Methyl chloroform				
Methyl ethyl ketone				
Methylene chloride				
Napthalene				
Nickel metal				
Perchloroethylene (tetrachloroethylene)				
Phenol				
Phosphorus Metal, Yellow or White				

Polycyclic Organic Matter				
Propionaldehyde				
Quinone				
Selenium compounds				
Styrene				
Tetrachlorodibenzo-p-dioxin, 2,3,7,8-				
Toluene				
Trimethylpentane, 2,2,4-				
Xylene				

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.

					Modeling Required ?		
TOXIC AIR POLLUTANT EMITTED	CAS NO.	lb/hr	lb/day	lb/year	Yes	No	
See Appendix A							

COMMENTS:

Attach Additional Sheets As Necessary

FORM D5

TECHNICAL ANALYSIS TO SUPPORT PERMIT APPLICATION

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **D5**

PROVIDE DETAILED TECHNICAL CALCULATIONS TO SUPPORT ALL EMISSION, CONTROL, AND REGULATORY 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 and B1 through B9) -** 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 INFORMATION 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 and C1 through C9) -** 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 SE A PROFESSIONAL ENGINEER REGISTERED IN NORTH CAROLINA SHALL BE REQUIRED TO SEAL TECHNICAL PORTIONS OF THIS APPLICA NEW SOURCES AND MODIFICATIONS OF EXISTING SOURCES. (SEE INSTRUCTIONS FOR FURTHER APPLICABILITY).

I, **Aimee Andrews** *attest that this application for* **Carolina Sunrock** *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: **Aimee L. Andrews, P.E.**

DATE: 4/15/2021

COMPANY: **Trinity Consultants of NC, PC**

ADDRESS: **One Copley Parkway, Suite 205, Morrisville, NC 27560**

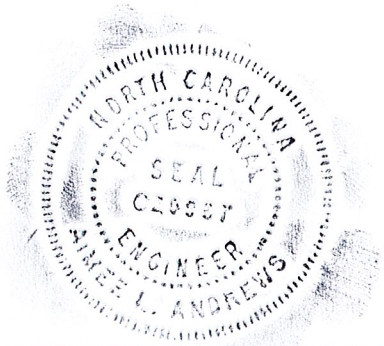
TELEPHONE: **(919) 462-9693**

SIGNATURE: Aimee L Andrews

PAGES CERTIFIE **All**

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

PLACE NORTH CAROLINA SEAL HERE



Attach Additional Sheets As Necessary

6. NCDEQ SOURCE SPECIFIC APPLICATION FORMS

This section contains DEQ source-specific permit application forms for the proposed operations.

HMA Plant:

- Form B – Specific Emissions Source Information (HMA Plant)
- Form B9 – Emission Source-Other (HMA Plant)
- Form B1 – Emission Source Burner (HMA Dryer Heater)
- Form B6 – Emission Source Storage Silo/Bins (HMA Silo 1)
- Form B6 – Emission Source Storage Silo/Bins (HMA Silo 2)
- Form B6 – Emission Source Storage Silo/Bins (HMA Silo 3)
- Form B6 – Emission Source Storage Silo/Bins (HMA Silo 4)
- Form B6 – Emission Source Storage Silo/Bins (HMA Silo 5)
- Form B – Specific Emissions Source Information (Asphalt Heater)
- Form B1 – Emission Source Burner (Asphalt Heater)
- Form B – Specific Emissions Source Information (Asphalt Heater)
- Form B1 – Emission Source Burner (Asphalt Heater)
- Form C1 – Control Device (HMA Fabric Filter)
- Form B – Specific Emissions Source Information (RAP Crushing)
- Form B9 – Emission Source-Other (RAP Crushing)

Truck Mix Concrete Batch Plant:

- Form B – Specific Emissions Source Information (Concrete Batch Plant)
- Form B9 – Emission Source-Other (Concrete Batch Plant)
- Form C1 – Control Device (Concrete Batch Fabric Filter)

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

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

EMISSION SOURCE DESCRIPTION: **250 TPH HMA Drum Plant**	EMISSION SOURCE ID NO: **HMA-1**
	CONTROL DEVICE ID NO(S): **HMA-CD1**
OPERATING SCENARIO **1** OF **1**	EMISSION POINT (STACK) ID NO(S): **EP-1**

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

1. Drying of Aggregate (drying drum) 2. Mixing of Aggregate, RAP, and Liquid Asphalt (Mixing Drum) 3. Storage of Final Product (Silos)

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

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

START CONSTRUCTION DATE:	DATE MANUFACTURED:
MANUFACTURER / MODEL NO.: **Aztec 95-138**	EXPECTED OP. SCHEDULE: **12** HR/DAY **6** DAY/WK

IS THIS SOURCE SUBJEC [x] NSPS (SUBPARTS?): **1** [ ] NESHAP (SUBPARTS?):

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB **15** MAR-MAY **30** JUN-AUG **30** SE

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)	**See DEQ Emission Spreadsheet Appendix A**						
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	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
		See DEQ Emission Spreadsheet Appendix A						

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATION lb/hr	lb/day	lb/yr
		See DEQ Emission Spreadsheet Appendix 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.

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

Attach Additional Sheets As Necessary

FORM B1

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

REVISED 09/22/16 — **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** — **B1**

EMISSION SOURCE DESCRIPTION: **Propane/Natural Gas/No. 2 Fuel Oil/Recycled No. 2 Fuel Oil/Recycled No.4 Fuel Oil-fired drum type hot asphalt plant (80 MMBtu/hr maximum heat input capacity)**	EMISSION SOURCE ID NO: **HMA-1**
	CONTROL DEVICE ID NO(S): **HMA-CD1**
OPERATING SCENARIO: _____ OF _____	EMISSION POINT (STACK) ID NO(S): **CD1**

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

HEATING MECHANISM: ☐ INDIRECT ☑ DIRECT

MAX. FIRING RATE (MMBTU/HOUR): **80**

WOOD-FIRED BURNER

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

PERCENT MOISTURE OF FUEL: _____

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

FUEL FEED METHOD: T TRANSFER MEDIA: ☐ STEAM ☐ AIR ☐ OTHER (DESCRIBE) _____

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	

OIL/GAS-FIRED BURNER

TYPE OF BOILER: ☐ UTILITY ☑ INDUSTRIAL ☐ COMMERCIAL ☐ INSTITUTIONAL

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

OTHER FUEL-FIRED BURNER

TYPE(S) OF FUEL: _____

TYPE OF BOILER: ☐ UTILITY ☑ INDUSTRIAL ☐ COMMERCIAL ☐ INSTITUTIONAL

PERC

TYPE OF FIRING: _____ TYPE(S) OF CONTROL(S) (IF ANY): _____

FUEL USAGE (INCLUDE STARTUP/BACKUP FUELS)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)
Propane/NG/ #2/ Rec #2/ Rec #4	**cf/gallons**	**80 MMBtu/hr**	

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	SPECIFIC BTU CONTENT	SULFUR CONTENT (% BY WEIGHT)	ASH CONTENT (% BY WEIGHT)

COMMENTS:

Attach Additional Sheets As Necessary

FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B6**

EMISSION SOURCE DESCRIPTION: **Hot Mix Asphalt Storage Silo (150-ton)**	EMISSION SOURCE ID NO: **HMA-Silo1**
	CONTROL DEVICE ID NO(S): **NA**
OPERATING SCENARIO: 1 OF 1	EMISSION POINT(STACK) ID NO(S): **HMASILO1**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

Filling, Storage, and loadout of Hot Mix Asphalt Storage Silo (150-Ton)

MATERIAL STORED: **Hot Mix Asphalt**				DENSITY OF MATERIAL (LB/FT3):
CAPACITY	CUBIC FEET:			TONS: **150**
DIMENSIONS (FEET)	HEIGHT: **65**	DIAMETER: **12**	***(OR)***	LENGTH: WIDTH: HEIGHT:
NNUAL PRODUCT THROUGHPUT (TONS	ACTUAL:			MAXIMUM DESIGN CAPACITY: **150**

PNEUMATICALLY FILLED	MECHANICALLY FILLED	FILLED FROM
☐ BLOWER	☐ SCREW CONVEYOR	☐ RAILCAR
☐ COMPRESSOR	☐ BELT CONVEYOR	☐ TRUCK
☐ OTHER:	☑ BUCKET ELEVATOR	☐ STORAGE PILE
	☐ OTHER:	☑ OTHER: **Plant**

NO. FILL TUBES:

MAXIMUM ACFM:

MATERIAL IS UNLOADED TO:

Over the road Truck

BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO?

Gravity via Hydraulic Clam Hatch

MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): **220**

MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR): **132**

COMMENTS:

Oil filled Seal at top of Silo

Attach Additional Sheets As Necessary

FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B6**

EMISSION SOURCE DESCRIPTION: **Hot Mix Asphalt Storage Silo (150-ton)**	EMISSION SOURCE ID NO: **HMA-Silo2**
	CONTROL DEVICE ID NO(S): **NA**
OPERATING SCENARIO: **1** OF **1**	EMISSION POINT(STACK) ID NO(S): **HMASILO2**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

Filling, Storage, and loadout of Hot Mix Asphalt Storage Silo (150-Ton)

MATERIAL STORED: **Hot Mix Asphalt**				DENSITY OF MATERIAL (LB/FT3):	
CAPACITY	CUBIC FEET:			TONS: **150**	
DIMENSIONS (FEET)	HEIGHT: **65**	DIAMETER: **12**	***(OR)***	LENGTH:	WIDTH: HEIGHT:
NNUAL PRODUCT THROUGHPUT (TONS	ACTUAL:			MAXIMUM DESIGN CAPACITY: **150**	

PNEUMATICALLY FILLED	MECHANICALLY FILLED	FILLED FROM
☐ BLOWER	☐ SCREW CONVEYOR	☐ RAILCAR
☐ COMPRESSOR	☐ BELT CONVEYOR	☐ TRUCK
☐ OTHER:	☑ BUCKET ELEVATOR	☐ STORAGE PILE
	☐ OTHER:	☑ OTHER: **Plant**

NO. FILL TUBES:	
MAXIMUM ACFM:	

MATERIAL IS UNLOADED TO:

Over the road Truck

BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO?

Gravity via Hydraulic Clam Hatch

MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): **220**

MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR): **132**

COMMENTS:

Oil filled Seal at top of Silo

Attach Additional Sheets As Necessary

FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B6**

EMISSION SOURCE DESCRIPTION: **Hot Mix Asphalt Storage Silo (200-ton)**	EMISSION SOURCE ID NO: **HMA-Silo3**
	CONTROL DEVICE ID NO(S): **NA**
OPERATING SCENARIO: 1 OF 1	EMISSION POINT(STACK) ID NO(S): **HMASILO3**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

Filling, Storage, and loadout of Hot Mix Asphalt Storage Silo (200-Ton)

MATERIAL STORED: **Hot Mix Asphalt**				DENSITY OF MATERIAL (LB/FT3):
CAPACITY	CUBIC FEET:			TONS: 200
DIMENSIONS (FEET)	HEIGHT: **65**	DIAMETER: **14**	***(OR)***	LENGTH: WIDTH: HEIGHT:
NNUAL PRODUCT THROUGHPUT (TONS	ACTUAL:			MAXIMUM DESIGN CAPACITY: **200**

PNEUMATICALLY FILLED	MECHANICALLY FILLED	FILLED FROM
☐ BLOWER	☐ SCREW CONVEYOR	☐ RAILCAR
☐ COMPRESSOR	☐ BELT CONVEYOR	☐ TRUCK
☐ OTHER:	☑ BUCKET ELEVATOR	☐ STORAGE PILE
	☐ OTHER:	☑ OTHER: **Plant**

NO. FILL TUBES:	
MAXIMUM ACFM:	

MATERIAL IS UNLOADED TO:

Over the road Truck

BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO?

Gravity via Hydraulic Clam Hatch

MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): **220**

MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR): **200**

COMMENTS:

Oil filled Seal at top of Silo

Attach Additional Sheets As Necessary

FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B6**

EMISSION SOURCE DESCRIPTION: **Hot Mix Asphalt Storage Silo (200-ton)**	EMISSION SOURCE ID NO: **HMA-Silo4**
	CONTROL DEVICE ID NO(S): **NA**
OPERATING SCENARIO: 1 OF 1	EMISSION POINT(STACK) ID NO(S): **HMASILO4**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

Filling, Storage, and loadout of Hot Mix Asphalt Storage Silo (200-Ton)

MATERIAL STORED: **Hot Mix Asphalt**				DENSITY OF MATERIAL (LB/FT3):
CAPACITY	CUBIC FEET:			TONS: 200
DIMENSIONS (FEET)	HEIGHT: **65**	DIAMETER: **14**	***(OR)***	LENGTH: WIDTH: HEIGHT:
NNUAL PRODUCT THROUGHPUT (TONS	ACTUAL:			MAXIMUM DESIGN CAPACITY: **200**

PNEUMATICALLY FILLED	MECHANICALLY FILLED	FILLED FROM
☐ BLOWER	☐ SCREW CONVEYOR	☐ RAILCAR
☐ COMPRESSOR	☐ BELT CONVEYOR	☐ TRUCK
☐ OTHER:	☑ BUCKET ELEVATOR	☐ STORAGE PILE
	☐ OTHER:	☑ OTHER: **Plant**

NO. FILL TUBES:	
MAXIMUM ACFM:	

MATERIAL IS UNLOADED TO:

Over the road Truck

BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO?

Gravity via Hydraulic Clam Hatch

MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): **220**

MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR): **200**

COMMENTS:

Oil filled Seal at top of Silo

Attach Additional Sheets As Necessary

FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B6**

EMISSION SOURCE DESCRIPTION: **Hot Mix Asphalt Storage Silo (200-ton)**	EMISSION SOURCE ID NO: **HMA-Silo5**
	CONTROL DEVICE ID NO(S): **NA**
OPERATING SCENARIO: 1 OF 1	EMISSION POINT(STACK) ID NO(S): **HMASILO5**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

Filling, Storage, and loadout of Hot Mix Asphalt Storage Silo (200-Ton)

MATERIAL STORED: **Hot Mix Asphalt**				DENSITY OF MATERIAL (LB/FT3):
CAPACITY	CUBIC FEET:			TONS: 200
DIMENSIONS (FEET)	HEIGHT: **65**	DIAMETER: **14**	***(OR)***	LENGTH: WIDTH: HEIGHT:
NNUAL PRODUCT THROUGHPUT (TONS	ACTUAL:			MAXIMUM DESIGN CAPACITY: **200**

PNEUMATICALLY FILLED	MECHANICALLY FILLED	FILLED FROM
☐ BLOWER	☐ SCREW CONVEYOR	☐ RAILCAR
☐ COMPRESSOR	☐ BELT CONVEYOR	☐ TRUCK
☐ OTHER:	☑ BUCKET ELEVATOR	☐ STORAGE PILE
	☐ OTHER:	☑ OTHER: **Plant**

NO. FILL TUBES:

MAXIMUM ACFM:

MATERIAL IS UNLOADED TO:

Over the road Truck

BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO?

Gravity via Hydraulic Clam Hatch

MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): **220**

MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR): **200**

COMMENTS:

Oil filled Seal at top of Silo

Attach Additional Sheets As Necessary

FORM C1

CONTROL DEVICE (FABRIC FILTER)

REVISED 09/22/16 — **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** — **C1**

CONTROL DEVICE ID NO: **HMA-CD1**	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): **See Form A2&**
EMISSION POINT (STACK) ID NO **EP-1**	POSITION IN SERIES OF CONTROLS NO. **1** OF **1** UNITS
OPERATING SCENARIO:	
	P.E. SEAL REQUIRED (PER 2q .0112)? ☑ YES ☐ NO

DESCRIBE CONTROL SYSTEM: **Astec Model RBH-45 - 45,000 CFM to control emissions from drying and mixing drums in t**

POLLUTANTS COLLECTED:	**PM**	**PM10**		
BEFORE CONTROL EMISSION RATE (LB/HR):	**See Appendix A**			
CAPTURE EFFICIENCY:	**99.99** %	**99.99** %	%	%
CONTROL DEVICE EFFICIENCY:	**90** %	**90** %	%	%
CORRESPONDING OVERALL EFFICIENCY:	**90** %	**90** %	%	%
EFFICIENCY DETERMINATION CODE:	**1**	**1**		
TOTAL AFTER CONTROL EMISSION RATE (LB/HI	**See Appendix A**			

PRESSURE DROP (IN H_20): MIN: MAX: GAUGE? ☑ YES ☐ NO		
BULK PARTICLE DENSITY (LB/FT^3):	INLET TEMPERATURE (MIN **Ambient** MAX **350**	
POLLUTANT LOADING RATE: ☐ LB/HR ☐ GR/FT^3	OUTLET TEMPERATUR MIN **180** MAX **350**	
INLET AIR FLOW RATE (ACFM): **51,000 cfm**	FILTER OPERATING TEMP (^{o}f):	
NO. OF COMPARTMENTS: **1**	NO. OF BAGS PER COMPARTMENT:	LENGTH OF BAG (IN.):
NO. OF CARTRIDGES: **640**	FILTER SURFACE AREA PER CARTRIDGE (FT^2):	DIAMETER OF BAG (IN.):
TOTAL FILTER SURFACE AREA (FT^2): **8968**	AIR TO CLOTH RATIO: **5.68:1**	
DRAFT TYPE: ☑ INDUCED/NEGATIVE ☐ FORCED/POSITIVE	FILTER MATERIAL: ☐ WOVEN ☑ FELTED	

DESCRIBE CLEANING PROCEDU

☐ AIR PULSE ☐ SONIC
☑ REVERSE FLOW ☐ SIMPLE BAG COLLAPSE
☐ MECHANICAL/SHAKER ☐ RING BAG COLLAPSE
☐ OTHER:

DESCRIBE INCOMING AIR STREAM: **Hot Air from Drying and Mixing Drums in HMA Plant**

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	**40**	**40.2**
1-10	**60**	**100**
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

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

COMMENTS:

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

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

EMISSION SOURCE DESCRIPTION: **Asphalt Heaters**	EMISSION SOURCE ID NO: **HMA-H1 and HMA-H2**
	CONTROL DEVICE ID NO(S): **N/A**
OPERATING SCENARIO **1** OF **1**	EMISSION POINT (STACK) ID NO(S):

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
Asphalt Heaters associated with HMA plant

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)	☐ Manuf. of chemicals/coatings/inks (Form
☐ Int.combustion engine/generator (Form B2)	☐ Coating/finishing/printing (Form	☐ Incineration (Form B8)
☐ Liquid storage tanks (Form B3)	☐ Storage silos/bins (Form B6)	☐ Other (Form B9)

START CONSTRUCTION DATE: DATE MANUFACTURED:

MANUFACTURER / MODEL NO.: EXPECTED OP. SCHEDULE: **24** HR/DAY **7** DAY/WK

IS THIS SOURCE SUBJEC ☐ NSPS (SUBPARTS?):_____ ☐ NESHAP (SUBPARTS?):_____

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB **15** MAR-MAY **30** JUN-AUG **30** SE

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)	**See DEQ Emission Spreadsheet Appendix A**						
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	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
		See DEQ Emission Spreadsheet Appendix A						

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATION lb/hr	lb/day	lb/yr
		See DEQ Emission Spreadsheet Appendix 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.

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

Attach Additional Sheets As Necessary

FORM B1

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

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — **B1**

EMISSION SOURCE DESCRIPTION: **Natural gas/no.2 fuel (ultra-low sulfur diesel (0.0015% sulfur))oil-fired liquid asphalt cement heater (1.2 million btu per hour maximum heat input)**

EMISSION SOURCE ID NO: **HMA-H1**

CONTROL DEVICE ID NO(S): **NA**

OPERATING SCENARIO: _____ OF _____

EMISSION POINT (STACK) ID NO(S): **HMA-H1**

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

HEATING MECHANISM: ☑ INDIRECT ☐ DIRECT

MAX. FIRING RATE (MMBTU/HOUR): **1.2 MMBTU/hr**

WOOD-FIRED BURNER

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

PERCENT MOISTURE OF FUEL: _____

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

FUEL FEED METHOD:

HEAT TRANSFER MEDIA: ☐ STEAM ☐ AIR ☐ OTHER (DESCRIBE) _____

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	

OIL/GAS-FIRED BURNER

TYPE OF BOILER: ☐ UTILITY ☑ INDUSTRIAL ☐ COMMERCIAL ☐ INSTITUTIONAL

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

OTHER FUEL-FIRED BURNER

TYPE(S) OF FUEL: _____ PE

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

TYPE OF FIRING: _____ TYPE(S) OF CONTROL(S) (IF ANY): _____

FUEL USAGE (INCLUDE STARTUP/BACKUP FUELS)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	SPECIFIC BTU CONTENT	SULFUR CONTENT (% BY WEIGHT)	ASH CONTENT (% BY WEIGHT)
Natural Gas			
No. 2 Fuel Oil/ultra-low sulfur diesel (0.0015% sulfu		**0.00015%**	

COMMENTS:

Attach Additional Sheets As Necessary

FORM B1

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

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — **B1**

EMISSION SOURCE DESCRIPTION: **Natural gas/no.2 fuel (ultra-low sulfur diesel (0.0015% sulfur))oil-fired liquid asphalt cement heater (1.1 million btu per hour maximum heat input)**

EMISSION SOURCE ID NO: **HMA-H2**

CONTROL DEVICE ID NO(S): **NA**

OPERATING SCENARIO: _____ OF _____

EMISSION POINT (STACK) ID NO(S): HMA-H2

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

HEATING MECHANISM: ☑ INDIRECT ☐ DIRECT

MAX. FIRING RATE (MMBTU/HOUR): **1.1 MMBTU/hr**

WOOD-FIRED BURNER

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

PERCENT MOISTURE OF FUEL: _____

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

FUEL FEED METHOD:

HEAT TRANSFER MEDIA: ☐ STEAM ☐ AIR ☐ OTHER (DESCRIBE) _____

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	

OIL/GAS-FIRED BURNER

TYPE OF BOILER: ☐ UTILITY ☑ INDUSTRIAL ☐ COMMERCIAL ☐ INSTITUTIONAL

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

OTHER FUEL-FIRED BURNER

TYPE(S) OF FUEL: _____ PE

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

TYPE OF FIRING: _____ TYPE(S) OF CONTROL(S) (IF ANY): _____

FUEL USAGE (INCLUDE STARTUP/BACKUP FUELS)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	SPECIFIC BTU CONTENT	SULFUR CONTENT (% BY WEIGHT)	ASH CONTENT (% BY WEIGHT)
Natural Gas			
No. 2 Fuel Oil/ultra-low sulfur diesel (0.0015% sulfu		**0.00015%**	

COMMENTS:

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

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

EMISSION SOURCE DESCRIPTION: **RAP Crushing System**	EMISSION SOURCE ID NO: **RAP-CRUSH, RAP-CNV, RAP-SCN**
	CONTROL DEVICE ID NO(S): **NA**
OPERATING SCENARIO **1** OF **1**	EMISSION POINT (STACK) ID NO(S): **NA**

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

1. Recycle Asphalt Crushing consisting of one (1) 65 TPH crusher, one (1) 8'X20' double deck scene, and four 36" conveyor Belts.

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 B
- ☐ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☑ Other (Form B9)

START CONSTRUCTION DATE:	DATE MANUFACTURED:
MANUFACTURER / MODEL NO.: **Telsmith HIS 2421**	EXPECTED OP. SCHEDULE: **12** HR/DAY **6** DAY/WK **50** WK/Y
IS THIS SOURCE SUBJEC ☑ NSPS (SUBPARTS?): **OOO**	☐ NESHAP (SUBPARTS?):
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB **15**	MAR-MAY **30** JUN-AUG **30** 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)	**See DEQ Emission Spreadsheet Appendix A**						
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	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
		See DEQ Emission Spreadsheet Appendix A						

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
		See DEQ Emission Spreadsheet Appendix A3			

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.

MPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOUR

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/Operat** **B9**

EMISSION SOURCE DESCRIPTION: **RAP Crushing System**	EMISSION SOURCE ID NO: RAP-CRUSH, RAP-CNV, RAP-SCN
	CONTROL DEVICE ID NO(S): **NA**
OPERATING SCENARIO: _____ OF _____	EMISSION POINT (STACK) ID NO(S): **NA**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

1. Recycle Asphalt Crushing consisting of one (1) 65 TPH crusher, one (1) 8'X20' double deck scene, and four 36" conveyor Belts.

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/HR)	LIMITATION(UNIT/HR)
RAP	**tons**	**65**	

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

COMMENTS:

Attach Additional Sheets as Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

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

EMISSION SOURCE DESCRIPTION: **Truck Mix Concrete Batch Plant (120 cubic yards per hour)**	EMISSION SOURCE ID NO: **RM-1 through RM-5**
	CONTROL DEVICE ID NO(S): **RMC-CD2**
OPERATING SCENARIO **1** OF **1**	EMISSION POINT (STACK) ID NO(S): **RMC-CD2**

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
Truck Mix Concrete Batch Plant (120 cubic yards per hour) Consiting of: One (1) 200-ton Cement Silo, One (1) 200-ton Flyash Silo, Truck Loadout point, 25-ton Cement/Flyash Weight Batcher, and One (1) 50-ton Aggregate Weight Batcher.

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)	☐ Manuf. of chemicals/coatings/inks (Form B7)
☐ Int.combustion engine/generator (Form B2)	☐ Coating/finishing/printing (Form	☐ Incineration (Form B8)
☐ Liquid storage tanks (Form B3)	☑ Storage silos/bins (Form B6)	☑ Other (Form B9)

START CONSTRUCTION DATE:	DATE MANUFACTURED:
MANUFACTURER / MODEL NO.:	EXPECTED OP. SCHEDULE: **12** HR/DAY **6** DAY/WK **50** WK/YR
IS THIS SOURCE SUBJEC ☑ NSPS (SUBPARTS?):	☐ NESHAP (SUBPARTS?):
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB **15**	MAR-MAY **30** JUN-AUG **30** SEP-NOV **25**

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL EMISSIONS (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)	**See DEQ Emission Spreadsheet Appendix A**						
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	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL EMISSIONS (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
		See DEQ Emission Spreadsheet Appendix A						

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
		See DEQ Emission Spreadsheet Appendix 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 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B6**

EMISSION SOURCE DESCRIPTION: **Ready Mix Cement Storage Silo (200-ton)**	EMISSION SOURCE ID NO: **RM-1**
	CONTROL DEVICE ID NO(S): **RMC-CD2**
OPERATING SCENARIO: 1 OF 1	EMISSION POINT(STACK) ID NO(S): **RMC-CD2**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

Filling, Storage, and loadout of Cement Storage Silo (200-Ton)

MATERIAL STORED: **Cement**				DENSITY OF MATERIAL (LB/FT3):	
CAPACITY	CUBIC FEET:			TONS: **200**	
DIMENSIONS (FEET)	HEIGHT: **80**	DIAMETER: **12**	***(OR)***	LENGTH:	WIDTH: HEIGHT:
NNUAL PRODUCT THROUGHPUT (TONS	ACTUAL:			MAXIMUM DESIGN CAPACITY: **200**	

PNEUMATICALLY FILLED	MECHANICALLY FILLED	FILLED FROM
☑ BLOWER	☐ SCREW CONVEYOR	☐ RAILCAR
☐ COMPRESSOR	☐ BELT CONVEYOR	☑ TRUCK
☐ OTHER:	☐ BUCKET ELEVATOR	☐ STORAGE PILE
	☐ OTHER:	☐ OTHER: **Plant**

NO. FILL TUBES: **1**	
MAXIMUM ACFM:	

MATERIAL IS UNLOADED TO:

Cement and Fly Ash Weight Batcher

BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO?

Gravity

MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): **40**

MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR): **5**

COMMENTS:

Attach Additional Sheets As Necessary

FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B6**

EMISSION SOURCE DESCRIPTION: **Flyash Storage Silo (200-ton)**	EMISSION SOURCE ID NO: **RM-2**
	CONTROL DEVICE ID NO(S): **RMC-CD2**
OPERATING SCENARIO: 1 OF 1	EMISSION POINT(STACK) ID NO(S): **RMC-CD2**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

Filling, Storage, and loadout of Fly Ash Storage Silo (200-Ton)

MATERIAL STORED: **Fly ash**				DENSITY OF MATERIAL (LB/FT3):	
CAPACITY	CUBIC FEET:			TONS: **200**	
DIMENSIONS (FEET)	HEIGHT: **65**	DIAMETER: **12**	***(OR)***	LENGTH:	WIDTH: HEIGHT:
NNUAL PRODUCT THROUGHPUT (TONS	ACTUAL:			MAXIMUM DESIGN CAPACITY: **200**	

PNEUMATICALLY FILLED	MECHANICALLY FILLED	FILLED FROM
☑ BLOWER	☐ SCREW CONVEYOR	☐ RAILCAR
☐ COMPRESSOR	☐ BELT CONVEYOR	☑ TRUCK
☐ OTHER:	☐ BUCKET ELEVATOR	☐ STORAGE PILE
	☐ OTHER:	☐ OTHER: **Plant**

NO. FILL TUBES: **1**

MAXIMUM ACFM:

MATERIAL IS UNLOADED TO:

Cement and Fly Ash Weight Batcher

BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO?

Screw Conveyor

MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): **50**

MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR): **5**

COMMENTS:

Attach Additional Sheets As Necessary

FORM C1

CONTROL DEVICE (FABRIC FILTER)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — C1

CONTROL DEVICE ID NO: **RMC-CD2**	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): **See Form A2**
EMISSION POINT (STACK) ID NC	POSITION IN SERIES OF CONTROLS NO. **1** OF **1** UNITS
OPERATING SCENARIO:	
	P.E. SEAL REQUIRED (PER 2q .0112)? ☐ YES ☐ NO

DESCRIBE CONTROL SYSTEM: **C&W Manufacturing - RA-140 - 6500 CFM to control emissions from cement/fly ash silos and aggregate and truck loading.**

POLLUTANTS COLLECTED:	**PM**	**PM10**		
BEFORE CONTROL EMISSION RATE (LB/HR):	**See Appendix A**			
CAPTURE EFFICIENCY:	%	%	%	%
CONTROL DEVICE EFFICIENCY:	**99.9** %	**99.9** %	%	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL AFTER CONTROL EMISSION RATE (LE	**See Appendix A**			

PRESSURE DROP (IN H_2O): MIN: MAX: **6** GAUGE? ☑ YES ☐ NO		
BULK PARTICLE DENSITY (LB/FT^3):	INLET TEMPERATURE (MIN MAX	
POLLUTANT LOADING RATE: ☐ LB/HR ☐ GR/FT^3	OUTLET TEMPERATUR MIN MAX	
INLET AIR FLOW RATE (ACFM): **6,500 cfm**	FILTER OPERATING TEMP (°f): **Ambient**	
NO. OF COMPARTMENTS: **2**	NO. OF BAGS PER COMPARTMENT: **36**	LENGTH OF BAG (IN.): **114**
NO. OF CARTRIDGES: **72**	FILTER SURFACE AREA PER CARTRIDGE (FT^2):	DIAMETER OF BAG (IN.): **8**
TOTAL FILTER SURFACE AREA (FT^2): **1,433**	AIR TO CLOTH RATIO: **4.54:1**	Filter material: **felt polyester bags**
DRAFT TYPE: ☑ INDUCED/NEGATIVE ☐ FORCED/POSITIVE	FILTER MATERIAL: ☐ WOVEN ☑ FELTED	

DESCRIBE CLEANING PROCEDU

☐ AIR PULSE ☐ SONIC
☑ REVERSE FLOW ☐ SIMPLE BAG COLLAPSE
☐ MECHANICAL/SHAKER ☐ RING BAG COLLAPSE
☐ OTHER:

DESCRIBE INCOMING AIR STREAM: **Hot Air from Drying and Mixing Drums in HMA Plant**

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	**40**	**40.2**
1-10	**60**	**100**
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

ON A SEPARATE PAGE, ATTACH A DIAGRAM SHOWING THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOUR

COMMENTS:

Attach Additional Sheets As Necessary

APPENDIX A. EMISSION CALCULATIONS

Emission Calculation Summary - PM, PM_{10}, $PM_{2.5}$

Carolina Sunrock
Burlington North

			Potential Emissions								
			PM Emissions		PM_{10} Emissions		$PM_{2.5}$ Emissions		Long term		
	ID No.	Emission Source Description	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	Notes 1	Notes 2
HMA Plant	CD1 Revised	Asphalt Plant Baghouse	8.2500	8.2500	5.7500	5.7500	5.425	5.425	1.23858	From 11.1-4 PM_{10} filterable is .0042 lb/ton and $PM_{2.5}$ filterable is .0029 lb/ton; therefore $PM_{2.5}$ EF= PM_{10}tot - PM_{10}condensible + $PM_{2.5}$condensible = 0.023- .0042 + .0029 = 0.0217	Based on DEQ HMA Plant Spreadsheet Calculator, except asphalt heaters are calculated separately in the DEQ Fuel Oil Spreadsheet Calculator due to use of ULSD
	HMA-H1	Asphalt Cement Heater (1.2 MMBtu/hr)	0.0283	0.1239	0.0283	0.1239	0.0086	0.0375	0.00857	Based on worst case fuel No. 2 fuel oil at 0.0015% sulfur ULSD fuel	Based on DEQ Fuel Oil Spreadsheet Calculator
	HMA-H2	Asphalt Cement Heater (1.1 MMBtu/hr)	0.0259	0.1136	0.0259	0.1136	0.0079	0.0344	0.00786	Based on worst case fuel No. 2 fuel oil at 0.0015% sulfur ULSD fuel	Based on DEQ Fuel Oil Spreadsheet Calculator
	HMASILO1	Asphalt Silo 1 Vent	0.0293	0.0293	0.0293	0.0293	0.0210	0.0210	0.00479	Set PM_{10}=PM; $PM_{2.5}$ calculated as an average of the Total PM and organic PM EF's in the DEQ spreadsheet	tpy based on proposed permit limit; calculated as: lb/hr * 500,000 tpy / 250 tons/hr / 2000 lb/ton
	HMASILO2	Asphalt Silo 2 Vent	0.0293	0.0293	0.0293	0.0293	0.0210	0.0210	0.00479	Set PM_{10}=PM; $PM_{2.5}$ calculated as an average of the Total PM and organic PM EF's in the DEQ spreadsheet	tpy based on proposed permit limit; calculated as: lb/hr * 500,000 tpy / 250 tons/hr / 2000 lb/ton
	HMASILO3	Asphalt Silo 3 Vent	0.0293	0.0293	0.0293	0.0293	0.0210	0.0210	0.00479	Set PM_{10}=PM; $PM_{2.5}$ calculated as an average of the Total PM and organic PM EF's in the DEQ spreadsheet	tpy based on proposed permit limit; calculated as: lb/hr * 500,000 tpy / 250 tons/hr / 2000 lb/ton
	HMASILO4	Asphalt Silo 4 Vent	0.0293	0.0293	0.0293	0.0293	0.0210	0.0210	0.00479	Set PM_{10}=PM; $PM_{2.5}$ calculated as an average of the Total PM and organic PM EF's in the DEQ spreadsheet	tpy based on proposed permit limit; calculated as: lb/hr * 500,000 tpy / 250 tons/hr / 2000 lb/ton
	HMASILO5	Asphalt Silo 5 Vent	0.0293	0.0293	0.0293	0.0293	0.0210	0.0210	0.00479	Set PM_{10}=PM; $PM_{2.5}$ calculated as an average of the Total PM and organic PM EF's in the DEQ spreadsheet	tpy based on proposed permit limit; calculated as: lb/hr * 500,000 tpy / 250 tons/hr / 2000 lb/ton
		Silo Filling Subtotal	0.1465	0.1465	0.1465	0.1465	0.1050	0.1050		Set PM_{10}=PM; $PM_{2.5}$ calculated as an average of the Total PM and organic PM EF's in the DEQ spreadsheet	tpy based on proposed permit limit; calculated as: lb/hr * 500,000 tpy / 250 tons/hr / 2000 lb/ton
	HMALO1	Asphalt Loadout 1	0.0261	0.0261	0.0261	0.0261	0.0216	0.0216	0.00493	Set PM_{10}=PM; $PM_{2.5}$ calculated as an average of the Total PM and organic PM EF's in the DEQ spreadsheet	tpy based on proposed permit limit; calculated as: lb/hr * 500,000 tpy / 250 tons/hr / 2000 lb/ton
	HMALO2	Asphalt Loadout 2	0.0261	0.0261	0.0261	0.0261	0.0216	0.0216	0.00493	Set PM_{10}=PM; $PM_{2.5}$ calculated as an average of the Total PM and organic PM EF's in the DEQ spreadsheet	tpy based on proposed permit limit; calculated as: lb/hr * 500,000 tpy / 250 tons/hr / 2000 lb/ton
	HMALO3	Asphalt Loadout 3	0.0261	0.0261	0.0261	0.0261	0.0216	0.0216	0.00493	Set PM_{10}=PM; $PM_{2.5}$ calculated as an average of the Total PM and organic PM EF's in the DEQ spreadsheet	tpy based on proposed permit limit; calculated as: lb/hr * 500,000 tpy / 250 tons/hr / 2000 lb/ton
	HMALO4	Asphalt Loadout 4	0.0261	0.0261	0.0261	0.0261	0.0216	0.0216	0.00493	Set PM_{10}=PM; $PM_{2.5}$ calculated as an average of the Total PM and organic PM EF's in the DEQ spreadsheet	tpy based on proposed permit limit; calculated as: lb/hr * 500,000 tpy / 250 tons/hr / 2000 lb/ton
	HMALO5	Asphalt Loadout 5	0.0261	0.0261	0.0261	0.0261	0.0216	0.0216	0.00493	Set PM_{10}=PM; $PM_{2.5}$ calculated as an average of the Total PM and organic PM EF's in the DEQ spreadsheet	tpy based on proposed permit limit; calculated as: lb/hr * 500,000 tpy / 250 tons/hr / 2000 lb/ton
		Loadout Subtotal	**0.1305**	**0.1305**	**0.1305**	**0.1305**	**0.1079**	**0.1079**		Set PM_{10}=PM; $PM_{2.5}$ calculated as an average of the Total PM and organic PM EF's in the DEQ spreadsheet	tpy based on proposed permit limit; calculated as: lb/hr * 500,000 tpy / 250 tons/hr / 2000 lb/ton
	RAP-CRUSH	RAP Impact Crusher (65 tons/hr max rated capacity)	0.3510	0.5400	0.1560	0.2400	0.0236	0.0363	0.008297	Used TCEQ's Rock Crushing Facility Emission Rate Calculation Worksheet (Rock Crushing Worksheet Version No.: Version 1.0 APDG6490v1 Last Revision Date: February 19, 2019) for $PM_{2.5}$ emission estimates. Where $PM_{2.5}$ emission factors (EF) are not provided in AP-42 Ch. 11.19.2-2, a ratio of aerodynamic particle size multipliers from AP-42 Ch. 13.2.4 was used to estimate $PM_{2.5}$ emission factors. $PM_{2.5}$ EF = (PM10 EF/0.35)*0.053	RAP is limited to 40% of the asphalt plant production. Tpy calculated as: lb/hr * 200,000 tpy / 65 tons/hr / 2000 lb/ton
	RAP-CNV	S Conveyors (individual = total/5)	0.1950	0.3000	0.0715	0.1100	0.0140	0.0215	0.004906	Used drop point $PM_{2.5}$ fraction from AP-42 13.2.4; $PM_{2.5}$ fraction of PM = 0.053 / 0.74 = 0.0716)	RAP is limited to 40% of the asphalt plant production. Tpy calculated as: lb/hr * 200,000 tpy / 65 tons/hr / 2000 lb/ton
	RAP-CNV	S Conveyors (total)	0.9750	1.5000	0.3575	0.5500	0.0698	0.1074		Used drop point $PM_{2.5}$ fraction from AP-42 13.2.4; $PM_{2.5}$ fraction of PM = 0.053 / 0.74 = 0.0716)	RAP is limited to 40% of the asphalt plant production. Tpy calculated as: lb/hr * 200,000 tpy / 65 tons/hr / 2000 lb/ton

	RAP-SCN	8' x 20' Double Deck Screen	1.6250	2.5000	0.5655	0.8700	0.0856	0.1317	0.030078	Used TCEQ's Rock Crushing Facility Emission Rate Calculation Worksheet (Rock Crushing Worksheet Version No.: Version 1.0 APDG6490v1 Last Revision Date: February 19, 2019) for $PM_{2.5}$ emission estimates. Where $PM_{2.5}$ emission factors (EF) are not provided in AP-42 Ch. 11.19.2-2, a ratio of aerodynamic particle size multipliers from AP-42 Ch. 13.2.4 was used to estimate $PM_{2.5}$ emission factors. $PM_{2.5}$ EF = (PM10 EF/0.35)*0.053	
		RAP Subtotal	**2.9510**	**4.5400**	**1.0790**	**1.6600**	**0.1791**	**0.2755**			
	SYP1	Stockyard Piles 1 - Truck Unloading	0.2221	0.2221	0.1050	0.1050	0.0159	0.0159	0.003631	See assumptions in calcs	
	SYP1	Stockyard Piles 1 - Wind Erosion	0.0066	0.0290	0.0033	0.0145	0.000496	0.0022	0.000496	See assumptions in calcs	
		SYP1 Subtotal	**0.2287**	**0.2510**	**0.1083**	**0.1195**	**0.0164**	**0.0181**			
Concrete Plant	CD2	Concrete Plant Baghouse (Cement Storage Silo, Fly Ash Silo, Truck Loadout Point, Cement/Fly Ash Weigh Batcher RM-1 thru RM-4)									
		truck mix	1.0013	4.3856	0.3755	1.6446	0.3755	1.6446		From DEQ spreadsheet concrete batch	
		cement silo	0.0266	0.1166	0.0091	0.0400	0.0091	0.0400		From DEQ spreadsheet concrete batch	
		suppl silo	0.0790	0.3462	0.0435	0.1906	0.0435	0.1906		From DEQ spreadsheet concrete batch	
	CD2	Revised CD2 total without sand/agg conveyors	1.1069	4.8483	0.4281	1.8752	0.4281	1.8752	0.428131	From DEQ concrete batch calculation spreadsheet, minus the sand/agg conveyors because those are incorrectly calculated (wrong assumptions for the count of the number of conveyors) in this sheet; therefore, they are calculated separately in the row below:	
	RMC_CNV1 & 2	Sand Agg Conveyor Drop Points (refined)	0.3733	1.6350	0.1766	0.7733	0.0267	0.1171	0.026736	Used this calculation in lieu of Sand/Agg emissions from NCDEQ emission spreadsheet Concrete Batch, in accordance with AP-42, Table 11.12-2, Footnote b.	
	RM-5	Aggregate Weigh Batcher (50 ton max capacity) (weigh hopper in DEQ SS)	0.9850	4.3141	0.5746	2.5166	0.0705	0.3090	0.070544	From DEQ spreadsheet concrete batch; except $PM_{2.5}$ is refined using drop point $PM_{2.5}$ fraction from AP-42 13.2.4; $PM_{2.5}$ fraction of PM = 0.053 / 0.74 = 0.0716)	
	SYP2	Stockyard Piles 2 - Truck Unloading	0.1866	0.8175	0.0883	0.3867	0.0134	0.0586	0.013368	Fugitive emissions; See assumptions in calculation sheet	
	SYP2	Stockyard Piles 2 - Wind Erosion	0.0066	0.0290	0.0033	0.0145	0.0004959	0.0022	0.000496	Fugitive emissions; See assumptions in calculation sheet	
		SYP2 Subtotal	**0.1933**	**0.8465**	**0.0916**	**0.4011**	**0.0139**	**0.0607**			
	ROADS-P	Paved Roads	0.8277	2.3702	0.1655	0.4740	0.0406	0.1164	0.026566	Fugitive emissions; See assumptions in calculation sheet	
	ROADS-U	Unpaved Roads	0.6280	1.3151	0.1731	0.3625	0.0173	0.0362	0.008276	Fugitive emissions; See assumptions in calculation sheet	
	Facility Wide Summary		15.87	28.88	8.88	14.45	6.45	8.52	1.85		

Emission Calculation Summary - NOx, SO_2, CO, and VOC

Carolina Sunrock
Burlington North

	ID No.	Emission Source Description	Potential Controlled Emissions NOx lb/hr	SO_2 lb/hr	CO lb/hr	VOC lb/hr	Potential Uncontrolled Emissions NOx tpy	SO_2 tpy	CO tpy	VOC tpy	Potential Controlled Emissions NOx tpy	SO_2 tpy	CO tpy	VOC tpy	Notes
HMA Plant	CD1 (HMA Dryer/Drum Emissions)	Asphalt Plant Baghouse	13.75	20.93	32.50	8.00	60.23	91.69	142.35	35.04	13.75	20.93	32.50	8.00	From DEQ spreadsheet HMA plant
	HMA-H1	Asphalt Cement Heater (1.2 MMBtu/hr)	0.1714	0.00183	0.0429	0.0075	0.7509	0.0080	0.1877	0.0075	0.7509	0.0080	0.1877	0.0075	Based on 15 ppm sulfur No. 2 fuel oil; From DEQ Spreadsheet Fuel Oil Combustion
	HMA-H2	Asphalt Cement Heater (1.1 MMBtu/hr)	0.1571	0.00167	0.0393	0.0016	0.6883	0.0073	0.1721	0.0069	0.6883	0.0073	0.1721	0.0069	Based on 15 ppm sulfur No. 2 fuel oil; From DEQ Spreadsheet Fuel Oil Combustion
	TOTAL		14.08	20.93	32.58	8.01	61.66	91.70	142.71	35.05	15.19	20.95	32.86	8.01	

Emission Source Description	Pollutant	TAP/HAP	CAS Number	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS)			POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS)		
				lb/hr	lb/yr	tpy	lb/hr	lb/yr	tpy
Asphalt Plant	Acetaldehyde	TH	75070	0.33	2847.00	1.42	0.33	650	0.325
	Acrolein	TH	107028	0.01	56.94	0.03	0.01	13	0.0065
	Antimony Unlisted Compounds	H	SBC-other	0.00	0.39	0.00	0.00	0.09	0.000045
	Arsenic Unlisted Compounds	TH	ASC-other	0.00	1.23	0.00	0.00	0.28	0.00014
	Benzene	TH	71432	0.10	867.38	0.43	0.10	198.0312	0.0990
	Benzo(a)pyrene	T	50328	0.00	0.04	0.00	0.00	0.0088	0.0000
	Beryllium Metal (unreacted)	TH	7440417	0.00	0.00	0.00	0.00	0	0
	Cadium Metal (elemental unreacted)	TH	7440439	0.00	0.90	0.00	0.00	0.205	0.0001025
	Carbon disulfide	TH	75150	0.00	5.45	0.00	0.00	1.24527	0.000622633
	Chromium unlisted cmpds (add w/chrom acid to get CRC)	H	CRC-other	0.00	11.06	0.01	0.00	2.525	0.0012625
	Chromic Acid (VI)	TH	7738945	0.00	0.99	0.00	0.00	0.225	0.0001125
	Cobalt Unlisted Compounds	H	COC-other	0.00	0.06	0.00	0.00	0.013	0.0000065
	Cumene	H	98828	0.00	10.02	0.01	0.00	2.287	0.001143711
	Ethyl benzene	H	100414	0.06	561.24	0.28	0.06	128.138	0.064068999
	Ethyl chloride (chloroethane)	H	75003	0.00	0.02	0.00	0.00	0.004	2.18345E-06
	Formaldehyde	TH	50000	0.80	6981.17	3.49	0.80	1593.874	0.796937001
	Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8	T	57653857	0.00	0.00	0.00	0.00	0.000001	3.25E-10
	Hexane, n-	TH	110543	0.24	2095.50	1.05	0.24	478.425108	0.239212554
	Hydrogen Chloride (hydrochloric acid)	TH	7647010	0.05	459.90	0.23	0.05	105	0.0525
	Hydrogen Sulfide	T	7783064	0.01	119.84	0.06	0.01	27.36	0.01368
	Lead Unlisted Compounds	H	PBC-other	0.00	32.85	0.02	0.00	7.5	0.00375
	Manganese Unlisted Compounds	T	MNC-other	0.00	16.86	0.01	0.00	3.85	0.001925
	Mercury, vapor	TH	7439976	0.00	5.69	0.00	0.00	1.3	0.00065
	Methyl bromide	H	74839	0.00	2.18	0.00	0.00	0.498203	0.000249102
	Methyl chloride	H	74873	0.00	1.37	0.00	0.00	0.311921	0.000155961
	Methyl chloroform	TH	71556	0.01	105.12	0.05	0.01	24	0.012
	Methyl ethyl ketone	TH	78933	0.01	58.67	0.03	0.01	13.395346	0.006697673
	Methylene chloride	TH	75092	0.00	0.07	0.00	0.00	0.016452	8.22601E-06
	Napthalene	H	91203	0.16	1442.95	0.72	0.16	329.441249	0.164720624
	Nickle Metal	TH	7440020	0.02	137.97	0.07	0.02	31.5	0.01575
	Perchloroethylene (tetrachloroethylene)	TH	127184	0.0001	0.7013	0.00	0.0001	0.160120	8.00598E-05
	Phenol	TH	108952	0.0010	8.8105	0.00	0.0010	2.011528	0.001005764
	Phosphorus Metal, Yellow or White	H	7723140	0.0070	61.3200	0.03	0.0070	14	0.007
	Polycyclic Organic Matter	H	POM	0.22	1927.20	0.96	0.22	440.00	0.22000003
	Propionaldehyde	H	123386	0.03	284.70	0.14	0.03	65.00	0.0325
	Quinone	H	106514	0.04	350.40	0.18	0.04	80.00	0.04
	Selenium Compounds	H	SEC	0.00	0.77	0.00	0.00	0.18	0.0000875
	Styrene	TH	100425	0.00	2.11	0.00	0.00	0.48	0.000240421
	Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	TH	1746016	0.00	0.00	0.00	0.00	0.00	5.25E-11
	Toluene	TH	108883	0.73	6386.67	3.19	0.73	1458.14	0.729072384
	Trichloroethylene	TH	79016	0.00	0.00	0.00	0.00	0.00	0
	Trichlorofluoromethane (CFC 111)	T	75694	0.00	0.12	0.00	0.00	0.03	1.35166E-05
	Trimethylpentane, 2,2,4-	H	540841	0.01	87.85	0.04	0.01	20.06	0.01002816
	Xylene	TH	1330207	0.06	528.72	0.26	0.06	120.71	0.060356265
	Xylene, o-	H	95476	0.00	22.50	0.01	0.00	5.14	0.002568392
HMA-H1 Asphalt Heater	Antimony Unlisted Compounds	H	SBC-Other	0	0	0.00	0	0	0
	Arsenic Unlisted Compounds	TH	ASC-Other	0.0000048	0.042048	0.00	0.0000048	0.042048	0.000021024
	Benzene	TH	71432	2.35714E-05	0.206485714	0.00	2.35714E-05	0.206486	0.000103243
	Beryllium Metal (unreacted)	TH	7440417	0.0000036	0.031536	0.00	0.0000036	0.031536	0.000015768
	Cadium Metal (elemental unreacted)	TH	7440439	0.0000036	0.031536	0.00	0.0000036	0.031536	0.000015768
	Chromic Acid (VI)	TH	7738945	0.0000036	0.031536	0.00	0.0000036	0.031536	0.000015768
	Cobalt Unlisted Compounds	H	COC-Other	0	0	0.00	0	0	0
	Ethylbenzene	H	100414	7.00534E-06	0.061366782	0.00	7.00534E-06	0.061367	3.06834E-05
	Fluorides (sum fluoride compounds)	T	16984488	0.000319714	2.800697143	0.00	0.000319714	2.800697	0.001400349
	Formaldehyde	TH	50000	0.000411429	3.604114286	0.00	0.000411429	3.604114	0.001802057
	Lead Unlisted Compounds	H	PBC-Other	0.0000108	0.094608	0.00	0.0000108	0.094608	0.000047304
	Manganese Unlisted Compounds	TH	MNC-Other	0.0000072	0.063072	0.00	0.0000072	0.063072	0.000031536
	Mercury, vapor	TH	7439976	0.0000036	0.031536	0.00	0.0000036	0.031536	0.000015768
	Methyl chloroform	TH	71566	2.02286E-06	0.017720229	0.00	2.02286E-06	0.017720	8.86011E-06
	Napthalene	H	91203	2.85429E-06	0.025003543	0.00	2.85429E-06	0.025004	1.25018E-05
	Nickle Metal	TH	7440020	0.0000036	0.031536	0.00	0.0000036	0.031536	0.000015768
	Phosphorus Metal, Yellow or White	H	7723140	0	0	0.00	0	0	0
	Polycyclic Organic Matter	H	POM	2.82857E-05	0.247782857	0.00	2.82857E-05	0.247783	0.000123891
	Selenium Compounds	H	SEC	0.000018	0.15768	0.00	0.000018	0.15768	0.00007884
	Toluene	TH	108883	0.000682911	5.982296395	0.00	0.000682911	5.982296	0.002991148
	Xylene	TH	1330207	1.2006E-05	0.10517263	0.00	1.2006E-05	0.10517263	5.25863E-05

HMA-H2 Asphalt Heater	Antimony Unlisted Compounds	H	SBC-Other	0	0	0.00	0	0	0
	Arsenic Unlisted Compounds	TH	ASC-Other	0.0000044	0.038544	0.00	0.0000044	0.038544	0.0000193
	Benzene	TH	71432	2.16071E-05	0.189278571	0.00	2.16071E-05	0.189279	0.0000946
	Beryllium Metal (unreacted)	TH	7440417	0.0000033	0.028908	0.00	0.0000033	0.028908	0.0000145
	Cadium Metal (elemental unreacted)	TH	7440439	0.0000033	0.028908	0.00	0.0000033	0.028908	0.0000145
	Chromic Acid (VI)	TH	7738945	0.0000033	0.028908	0.00	0.0000033	0.028908	0.0000145
	Cobalt Unlisted Compounds	H	COC-Other	0	0	0.00	0	0	0
	Ethylbenzene	H	100414	6.42156E-06	0.056252884	0.00	6.42156E-06	0.056253	0.0000281
	Fluorides (sum fluoride compounds)	T	16984488	0.000293071	2.567305714	0.00	0.000293071	2.567306	0.0012837
	Formaldehyde	TH	50000	0.000377143	3.303771429	0.00	0.000377143	3.303771	0.0016519
	Lead Unlisted Compounds	H	PBC-Other	0.0000099	0.086724	0.00	0.0000099	0.086724	0.000043
	Manganese Unlisted Compounds	TH	MNC-Other	0.0000066	0.057816	0.00	0.0000066	0.057816	0.000029
	Mercury, vapor	TH	7439976	0.0000033	0.028908	0.00	0.0000033	0.028908	0.000014
	Methyl chloroform	TH	71566	1.85429E-06	0.016243543	0.00	1.85429E-06	0.016244	0.000008
	Napthalene	H	91203	2.61643E-06	0.022919914	0.00	2.61643E-06	0.022920	1.146E-05
	Nickle Metal	TH	7440020	0.0000033	0.028908	0.00	0.0000033	0.028908	0.000014
	Phosphorus Metal, Yellow or White	H	7723140	0	0	0.00	0	0	0
	Polycyclic Organic Matter	H	POM	2.59286E-05	0.227134286	0.00	2.59286E-05	0.227134	0.000114
	Selenium Compounds	H	SEC	0.0000165	0.14454	0.00	0.0000165	0.14454	0.00007227
	Toluene	TH	108883	0.000626001	5.483771696	0.00	0.000626001	5.483772	0.002742
	Xylene	TH	1330207	1.10055E-05	0.096408244	0.00	1.10055E-05	0.096408	4.82041E-05
Concrete Batch Plant	Arsenic Unlisted Compounds	TH	ASC-OTHER	2.49E-03	2.18E+01	0.01	6.59E-05	5.77E-01	0.000288433
	Beryllium Metal (unreacted)	TH	7440-41-7	1.00E-05	8.77E-02	0.00	4.53E-06	3.97E-02	1.98627E-05
	Cadium Metal (elemental unreacted)	TH	7440-43-9	7.69E-06	6.74E-02	0.00	5.00E-07	4.38E-03	2.18917E-06
	Chromic Acid (VI)	TH	7738-94-5	4.25E-04	3.73E+00	0.00	1.58E-04	1.39E+00	0.000693044
	Lead Unlisted Compounds	H	PBC-OTHER	1.32E-03	1.16E+01	0.01	5.96E-05	5.22E-01	0.00026115
	Manganese Unlisted Compounds	TH	MNC-OTHER	7.67E-03	6.72E+01	0.03	7.49E-04	6.56E+00	0.003281611
	Nickle Metal	TH	7440-02-0	9.19E-04	8.05E+00	0.00	1.92E-04	1.68E+00	0.000842286
	Phosphorus Metal, Yellow or White	H	7223-14-0	1.72E-03	1.51E+01	0.01	4.71E-04	4.13E+00	0.00206422
	Selenium Compounds	H	SEC	9.43E-05	8.26E-01	0.00	4.68E-06	4.10E-02	2.0515E-05
TOTAL	Acetaldehyde	TH		3.2500E-01	2.8470E+03	1.4235E+00	3.2500E-01	6.5000E+02	3.2500E-01
	Acrolein	TH		6.5000E-03	5.6940E+01	2.8470E-02	6.5000E-03	1.3000E+01	6.5000E-03
	Antimony Unlisted Compounds	H		4.5000E-05	3.9420E-01	1.9710E-04	4.5000E-05	9.0000E-02	4.5000E-05
	Arsenic Unlisted Compounds	TH		2.6349E-03	2.3082E+01	1.1541E-02	2.1505E-04	9.3746E-01	4.6873E-04
	Benzene	TH		9.9016E-02	8.6738E+02	4.3369E-01	9.9016E-02	1.9803E+02	9.9016E-02
	Benzo(a)pyrene	T		4.4104E-06	3.8635E-02	1.9317E-05	4.4104E-06	8.8208E-03	4.4104E-06
	Beryllium Metal (unreacted)	TH		1.6909E-05	1.4813E-01	7.4063E-05	1.1435E-05	1.0017E-01	5.0085E-05
	Cadium Metal (elemental unreacted)	TH		1.1709E-04	1.0257E+00	5.1285E-04	1.0990E-04	2.6982E-01	1.3491E-04
	Carbon disulfide	TH		6.2263E-04	5.4543E+00	2.7271E-03	6.2263E-04	1.2453E+00	6.2263E-04
	Chromium unlisted cmpds (add w/chrom acid to get CRC)	H		1.2625E-03	1.1060E+01	5.5298E-03	1.2625E-03	2.5250E+00	1.2625E-03
	Chromic Acid (VI)	TH		5.4467E-04	4.7713E+00	2.3857E-03	2.7763E-04	1.6715E+00	8.3577E-04
	Cobalt Unlisted Compounds	H		6.5000E-06	5.6940E-02	2.8470E-05	6.5000E-06	1.3000E-02	6.5000E-06
	Cumene	H		1.1437E-03	1.0019E+01	5.0095E-03	1.1437E-03	2.2874E+00	1.1437E-03
	Ethyl benzene	H		6.4069E-02	5.6124E+02	2.8062E-01	6.4069E-02	1.2814E+02	6.4069E-02
	Ethyl chloride (chloroethane)	H		2.1834E-06	1.9127E-02	9.5635E-06	2.1834E-06	4.3669E-03	2.1834E-06
	Formaldehyde	TH		7.9694E-01	6.9812E+03	3.4906E+00	7.9694E-01	1.5939E+03	7.9694E-01
	Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8	T		3.2500E-10	2.8470E-06	1.4235E-09	3.2500E-10	6.5000E-07	3.2500E-10
	Hexane, n-	TH		2.3921E-01	2.0955E+03	1.0478E+00	2.3921E-01	4.7843E+02	2.3921E-01
	Hydrogen Chloride (hydrochloric acid)	TH		5.2500E-02	4.5990E+02	2.2995E-01	5.2500E-02	1.0500E+02	5.2500E-02
	Hydrogen Sulfide	T		1.3680E-02	1.1984E+02	5.9918E-02	1.3680E-02	2.7360E+01	1.3680E-02
	Lead Unlisted Compounds	H		5.0896E-03	4.4585E+01	2.2293E-02	3.8303E-03	8.2036E+00	4.1018E-03
	Manganese Unlisted Compounds	T		9.6131E-03	8.4211E+01	4.2105E-02	2.6880E-03	1.0534E+01	5.2671E-03
	Mercury, vapor	TH		6.5690E-04	5.7544E+00	2.8772E-03	6.5690E-04	1.3604E+00	6.8022E-04
	Methyl bromide	H		2.4910E-04	2.1821E+00	1.0911E-03	2.4910E-04	4.9820E-01	2.4910E-04
	Methyl chloride	H		1.5596E-04	1.3662E+00	6.8311E-04	1.5596E-04	3.1192E-01	1.5596E-04
	Methyl chloroform	TH		1.2000E-02	1.0512E+02	5.2560E-02	1.2000E-02	2.4000E+01	1.2000E-02
	Methyl ethyl ketone	TH		6.6977E-03	5.8672E+01	2.9336E-02	6.6977E-03	1.3395E+01	6.6977E-03
	Methylene chloride	TH		8.2260E-06	7.2060E-02	3.6030E-05	8.2260E-06	1.6452E-02	8.2260E-06
	Napthalene	H		1.6472E-01	1.4430E+03	7.2148E-01	1.6472E-01	3.2944E+02	1.6472E-01
	Nickle Metal	TH		1.6676E-02	1.4608E+02	7.3040E-02	1.5949E-02	3.3245E+01	1.6623E-02
	Perchloroethylene (tetrachloroethylene)	TH		8.0060E-05	7.0132E-01	3.5066E-04	8.0060E-05	1.6012E-01	8.0060E-05
	Phenol	TH		1.0058E-03	8.8105E+00	4.4052E-03	1.0058E-03	2.0115E+00	1.0058E-03
	Phosphorus Metal, Yellow or White	H		8.7218E-03	7.6403E+01	3.8201E-02	7.4713E-03	1.8128E+01	9.0642E-03
	Polycyclic Organic Matter	H		2.2005E-01	1.9277E+03	9.6384E-01	2.2005E-01	4.4047E+02	2.2024E-01
	Propionaldehyde	H		3.2500E-02	2.8470E+02	1.4235E-01	3.2500E-02	6.5000E+01	3.2500E-02
	Quinone	H		4.0000E-02	3.5040E+02	1.7520E-01	4.0000E-02	8.0000E+01	4.0000E-02
	Selenium Compounds	H		2.1633E-04	1.8951E+00	9.4754E-04	1.2668E-04	5.1825E-01	2.5913E-04
	Styrene	TH		2.4042E-04	2.1061E+00	1.0530E-03	2.4042E-04	4.8084E-01	2.4042E-04
	Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	TH		5.2500E-11	4.5990E-07	2.2995E-10	5.2500E-11	1.0500E-07	5.2500E-11
	Toluene	TH		7.2907E-01	6.3867E+03	3.1933E+00	7.2907E-01	1.4581E+03	7.2907E-01
	Trichloroethylene	TH		0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
	Trichlorofluoromethane (CFC 111)	T		1.3517E-05	1.1841E-01	5.9203E-05	1.3517E-05	2.7033E-02	1.3517E-05
	Trimethylpentane, 2,2,4-	H		1.0028E-02	8.7847E+01	4.3923E-02	1.0028E-02	2.0056E+01	1.0028E-02
	Xylene	TH		6.0379E-02	5.2892E+02	2.6446E-01	6.0379E-02	1.2091E+02	6.0457E-02
	Xylene, o-	H		2.5684E-03	2.2499E+01	1.1250E-02	2.5684E-03	5.1368E+00	2.5684E-03
	TOTAL HAP			**5.828**	**51050**	**25.525**	**5.809**	**11656.489**	**5.828**

For some states and projects fugitive emissions from paved roads are required to be calculated. This sheet incorporates fugitive emissions from paved roads.

Main Inputs Required:

trips/day
miles/roundtrip
days/yr trucks run
Average Vehicle weight (tons)

Methods:

Factors are calculated using the site specific silt content, Average vehicle weight, and the # of days with at least 0.254 mm of precipitation.
Once the emission factors are calculated it is multiplied by the vehicle miles traveled (VMT)
VMT is calculated by multiplying trips/day* miles per trip* days/yr vehicles run

Factors for Fugitive Paved Roads from AP-42, Ch. 13.2.1, Equations 1 and 2

Parameter	PM	PM_{10}	$PM_{2.5}$	Parameter Explanation
k =	0.011	0.0022	0.00054	Particle Size Multiplier (lb/VMT)
sL =	8.2			Silt Loading (g/m^2). Choose from 0.03 - 400 g/m^2.
W =	29			Average Vehicle Weight (tons). Choose from 2.0 - 42 tons.
N =	365			Number of Days in the Averaging Period
P =	120			Number of Days with at least 0.254 mm of Precipitation. Check Fig. 13.2.1-2 of AP-42 for P value of a specific site.
Particulate Emission Factor - Daily Basis				
E =	2.32	0.46	0.11	$E\ (lb/VMT) = k * sL^{0.91} * W^{1.02}$
Particulate Emission Factor - Annual Basis				
E =	2.13	0.43	0.10	$E\ (lb/VMT) = k * sL^{0.91} * W^{1.02} * (1 - (P/4N))$

Used quarry sL value from 13.2-1-2

The values in red need to be reselected for specific site.

Road Parameters & Emissions

Road	trips/day	miles/ roundtrip	days/yr	miles per day	miles per year	Assumed Control factor	PM Emissions lb/hr	PM Emissions lb/day	PM Emissions tons/yr	PM10 Emissions lb/hr	PM10 Emissions lb/day	PM10 Emissions tons/yr	PM2.5 Emissions lb/hr	PM2.5 Emissions lb/day	PM2.5 Emissions tons/yr
Plant (paved)	110	0.78	260	86	22308	90%	0.83	19.87	2.37	0.17	3.97	0.47	0.04	0.98	0.12

The values in red are site-specific

Example Calculations

PM Emissions = $\frac{2.13\ lb/VMT * 22{,}308\ mi/yr * (1-\%C)}{2000\ lb/ton}$ = 2.37 tons/yr

PM_{10} Emissions = $\frac{0.43\ lb/VMT * 22{,}308\ mi/yr * (1-\%C)}{2000\ lb/ton}$ = 0.47 tons/yr

$PM_{2.5}$ Emissions = $\frac{0.10\ lb/VMT * 22{,}308\ mi/yr * (1-\%C)}{2000\ lb/ton}$ = 0.12 tons/yr

For some states and projects fugitive emissions from unpaved roads are required to be calculated. This sheet incorporates fugitive emissions from unpaved roads.

Main Inputs Required:

trips/day
miles/roundtrip
days/yr trucks run
Average Vehicle weight (tons)

Methods:

Factors are calculated using the site specific silt content, Average vehicle weight, and the # of days with at least 0.254 mm of precipitation.
Once the emission factors are calculated it is multiplied by the vehicle miles traveled (VMT)
VMT is calculated by multiplying trips/day * miles per trip * days/yr vehicles run

Factors for Fugitive Unpaved Roads from AP-42, Ch. 13.2.2, Equations 1a and 2

Parameter	PM	PM_{10}	$PM_{2.5}$	Parameter Explanation
k =	4.9	1.5	0.15	Particle Size Multiplier (lb/VMT)
s =	7.1			Silt Content (%). Choose from 1.8%-25.2%.
W =	29			Mean Vehicle Weight (tons). Choose from 2-290 tons.
a =	0.7	0.9	0.9	Constants for Equation 1a
b =	0.45			
P =	120			Number of Days with at least 0.254mm of Precipitation. Check Fig. 13.2.1-2 of AP-42 for P value of a specific site.
Particulate Emission Factor - Daily Basis				
E =	9.42	2.60	0.26	$E\ (lb/VMT) = [\ k * (s/12)^a * (W/3)^b\ ] * (365 - P)/365$
Particulate Emission Factor - Annual Basis				
E =	6.32	1.74	0.17	$E\ (lb/VMT) = [\ k * (s/12)^a * (W/3)^b\ ] * (365 - P)/365$

The values in red are site specific.

Road Parameters & Emissions

Road	trips/day	miles/ roundtrip	days/yr	Vehicle Weight tons	miles per day	miles per year	Assumed Control factor	PM Emissions lb/hr	PM Emissions lb/day	PM Emissions tons/yr	PM10 Emissions lb/hr	PM10 Emissions lb/day	PM10 Emissions tons/yr	PM2.5 Emissions lb/hr	PM2.5 Emissions lb/day	PM2.5 Emissions tons/yr
Plant (unpaved)	50	0.16	260	29	8	2080	80%	0.628	15.07	1.32	0.173	4.15	0.36	0.017	0.42	0.04

Example Calculations

PM Emissions = $\frac{6.32\ lb/VMT * 2{,}080\ mi/yr * (1-\%C)}{2000\ lb/ton}$ = 1.32 tons/yr

PM_{10} Emissions = $\frac{1.74\ lb/VMT * 2{,}080\ mi/yr * (1-\%C)}{2000\ lb/ton}$ = 0.36 tons/yr

$PM_{2.5}$ Emissions = $\frac{0.17\ lb/VMT * 2{,}080\ mi/yr * (1-\%C)}{2000\ lb/ton}$ = 0.04 tons/yr

Drop Point Calculations

Insignificant Sources Drop Point onto Storage Piles

Factors for Drop Points:

Equations obtained from page 13.2.4-3 of AP-42.

E = k (0.0032) [(U/5)^1.3/(M/2)^1.4] (1-control eff/100) lb/ton

where: E = emission factor (lb/ton)
k = particle size multiplier (dimensionless)
U = mean wind speed mph (assume 1 mph since sources are located within the building; 15 mph for outside sources)
M = material moisture content (%) estimated from Table 13.2.4-1 of AP-42 or plant knowledge

Basis: List out all drop points
Calculate PM, PM 10 and PM-2.5 by changing Emission Factor based on wind speed and % moisture

Calculate the emission factor PER drop (transfer) using the above equation. For drop points including an enclosure building there are two methods for calculating emissions: Method 1 is to have a mean wind speed of 1 mph since transfer is within the building or Method 2 is to calculate as if outside using wind speed from actual met data and apply the corresponding building or enclosure control efficiency

For these sources the following assumptions were used and the appropriate control of enclosure:

k = 0.74 for PM ≤ 30 microns;
k = 0.35 for PM ≤ 10 microns;
k = 0.053 for PM ≤ 2.5 microns;
U = 6.21 mph based on 2014 - 2018 met data from Burlington, NC
M = 4.75 % estimated from Table 13.2.4-1 of AP-42 - average of various limestone products & sand

PM ≤ 30 microns: 2 * [(6.21 mph/5)^1.3 / (4.75/2)^1.4] = 9.35E-04 lb/ton
PM ≤ 10 microns: 2 * [(6.21 mph/5)^1.3 / (4.75/2)^1.4] = 4.42E-04 lb/ton
PM ≤ 2.5 microns: 2 * [(6.21 mph/5)^1.3 / (4.75/2)^1.4] = 6.70E-05 lb/ton

			Potential Emissions - Controlled									
			Percent Control	Max Throughput and Hours			PM		PM10		PM2.5	
	Source ID	# of Units [1]	Building or Device	(tph)	(tpy)	(hr/yr)	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Material Transfer												
Truck Unloading to Stockyard 1 Piles (Asphalt Plt)	SYP1	1	0%	237.50	475,000	2000	2.22E-01	2.22E-01	1.05E-01	1.05E-01	1.59E-02	1.59E-02
Truck Unloading to Stockyard 2 Piles (Conc Plt)	SYP2	1	0%	199.62	1,748,694	8760	1.87E-01	8.18E-01	8.83E-02	3.87E-01	1.34E-02	5.86E-02

Notes on Throughput: Asphalt plant maximum production rate is 250 tph and throughput limit is 500,000 tpy.
Typical aggregate content of hot mix asphalt is 95% (5% liquid asphalt binder), therefore aggregate throughput for asphalt plant is 500,000 x 0.95 = 475,000 tpy.
Concrete plant maximum production rate is 120 cy/hr; annual production is not limited.
1 cy concrete = 4024 lbs = 2.012 tons
Aggregate & sand content = (1884 + 1443)/4024 x 100 = 82.68% of concrete mix Ref: Concrete Batch Emissions Calculator, NC DEQ
Aggregate & sand rate for concrete plant = 120 x 2.012 x 82.68/100 = 199.62 tph. Annual throughput assumes 8760 hrs/yr.

Example Calculations:

1- Uncontrolled Emissions

Emissions (lb/hr) =Throughput (tons/hr) * Emission Factor (lb/ton) * Number of Drop Points
Emissions (tpy) =Throughput (tons/yr) * Emission Factor (lb/ton) * Number of Drop Points * (1 ton/2000 lb)
OR Emissions (tpy) = Hourly Emission (lb/hr) * Hours of Operation (hr/yr) * 1 ton/2000 lb

PM Potential Emissions (lbs/hr) = 237.5 tph * 0.00093 lb/ton * 1 drop points = 0.222 lbs/hr
PM Potential Emissions (ton/yr) = 475000 tpy * 0.00093 lb/ton * (1-ton/2000 lb) * 1 drop poin 0.222 tpy
OR PM Potential Emissions (tpy) = 0.22 lbs/hr * 2000 hours of operation * (1 ton/2000 lb) 0.222 tpy

Drop Point Calculations

Sand & Aggregate Storage Piles - Drop Point Emissions

Used in lieu of Sand/Agg emissions from NCDEQ emission spreadsheet Concrete Batch, per AP-42, Table 11.12-2, Footnote b.

Factors for Drop Points:

Equations obtained from page 13.2.4-3 of AP-42.

E = k (0.0032) [(U/5)^1.3/(M/2)^1.4] (1-control eff/100) lb/ton

where: E = emission factor (lb/ton)
k = particle size multiplier (dimensionless)
U = mean wind speed mph
M = material moisture content (%) estimated from Table 13.2.4-1 of AP-42 or plant knowledge

Basis: List out all drop points
Calculate PM, PM 10 and PM-2.5 by changing Emission Factor based on wind speed and % moisture

Calculate the emission factor PER drop (transfer) using the above equation. For drop points including an enclosure building there are two methods for calculating emissions:
Method 1 is to have a mean wind speed of 1 mph since transfer is within the building or Method 2 is to calculate as if outside using wind speed from actual met data and apply the corresponding building or enclosure control efficiency

For these sources the following assumptions were used and the appropriate control of enclosure:

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

k = 0.74 for PM ≤ 30 microns;
k = 0.35 for PM ≤ 10 microns;
k = 0.053 for PM ≤ 2.5 microns;
U = 6.21 mph based on 2014 - 2018 met data from Burlington, NC
M = 4.75 % estimated from Table 13.2.4-1 of AP-42 - average of various limestone products & sand

PM ≤ 30 microns: 032 * [(6.21 mph/5)^1.3 / (4.75/2)^1.4] = 9.35E-04 lb/ton
PM ≤ 10 microns: 032 * [(6.21 mph/5)^1.3 / (4.75/2)^1.4] = 4.42E-04 lb/ton
PM ≤ 2.5 microns: 032 * [(6.21 mph/5)^1.3 / (4.75/2)^1.4] = 6.70E-05 lb/ton

			Potential Emissions - Controlled									
			Percent Control	Max Throughput and Hours			PM		PM10		PM2.5	
	Source ID	# of Units [1]	Building or Device	(tph)	(tpy)	(hr/yr)	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Material Transfer												
Conveyors to Stockyard 2 Piles (Conc Plt)	SYP2	2	0%	199.62	1,748,694	8760	3.73E-01	1.64E+00	1.77E-01	7.73E-01	2.67E-02	1.17E-01

Notes on Throughput: Concrete plant maximum production rate is 120 cy/hr; annual production is not limited.
1 cy concrete = 4024 lbs = 2.012 tons
Aggregate & sand content = (1884 + 1443)/4024 x 100 = 82.68% of concrete mix Ref: Concrete Batch Emissions Calculator, NC DEQ
Aggregate & sand rate for concrete plant = 120 x 2.012 x 82.68/100 = 199.62 tph. Annual throughput assumes 8760 hrs/yr.
Sand & agg piles have 2 conveyor drop points: One from hopper to the weight batcher then weight batch to truck. Per email from Scott Martino 11/18/2020

Example Calculations:

1- Uncontrolled Emissions

Emissions (lb/hr) =Throughput (tons/hr) * Emission Factor (lb/ton) * Number of Drop Points
Emissions (tpy) =Throughput (tons/yr) * Emission Factor (lb/ton) * Number of Drop Points * (1 ton/2000 lb)
OR Emissions (tpy) = Hourly Emission (lb/hr) * Hours of Operation (hr/yr) * 1 ton/2000 lb

PM Potential Emissions (lbs/hr) = 199.62 tph * 0.00093 lb/ton * 2 drop points = 0.373 lbs/hr
PM Potential Emissions (ton/yr) = 1748694 tpy * 0.00093 lb/ton * (1-ton/2000 lb) * 2 drop points 1.635 tpy
OR PM Potential Emissions (tpy) = 0.37 lbs/hr * 8760 hours of operation * (1 ton/2000 lb) 1.635 tpy

Fugitive Storage Pile (Wind Erosion) Calculations

Carolina Sunrock

Burlington

Insignificant Sources

Asphalt Plant and Concrete Plant Storage Piles - Wind Erosion

Emission factor based on U.S. EPA Control of Open Fugitive Dust Sources. Research Triangle Park, North Carolina, EPA-450/3-88-008.

Control: Water Spray 80%

	TSP Emission Factor [1]	Surface Area [2]	PM			PM-10			PM-2.5		
Source	lb/day/acre	acre	lb/hr	lb/yr	tpy	lb/hr	lb/yr	tpy	lb/hr	lb/yr	tpy
Stockyard Piles 1	2.30	0.344	6.61E-03	5.79E+01	2.90E-02	3.31E-03	2.90E+01	1.45E-02	4.96E-04	4.34E+00	2.17E-03
Stockyard Piles 2	2.30	0.344	6.61E-03	5.79E+01	2.90E-02	3.31E-03	2.90E+01	1.45E-02	4.96E-04	4.34E+00	2.17E-03

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

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

where:

s, silt content (%):	3.9	s - silt content(%) for stone quarrying and processing, various limestone products, from AP-42 Table 13.2.4-1
p, number of days with rainfall greater than 0.01 inch:	120	Based on AP-42, Section 13.2.2, Figure 13.2.1-2.
f (time that wind exceeds 5.36 m/s - 12 mph) (%):	7.5	Based on 2014 - 2018 met data from Burlington, NC
PM_{10}/TSP ratio:	50%	PM_{10} is assumed to equal 50% of TSP based on U.S. EPA *Control of Open Fugitive Dust Sources*, Research Triangle Park, North Carolina, EPA-450/3-88-008. September 1988.
$PM_{2.5}$/TSP ratio:	7.5%	$PM_{2.5}$ is assumed to equal 7.5 % of TSP U.S. EPA Background Document for Revisions to Fine Fraction Ratios Used for AP-42 Fugitive Dust Emission Factors. November 2006.

2. Approximate pile dimensions: Stockyard Piles = 75 ft x 200 ft = 15000 ft2 = 0.344 acres

Reference: 002-Burlington North, page 3 (plant layout drawing)

ASPHALT EMISSIONS CALCULATOR REVISION F 07/18/2012 INPUT SCREEN

NCDENR

NOTICE: This spreadsheet is for your use only and should be used with caution. DENR does not guarantee the accuracy of the information contained. This spreadsheet is subject to continual revision and updating. It is your responsibility to be aware of the most current information available. DENR is not responsible for errors or omissions that may be contained herein.

Instructions: 1. Fill in all BLUE cells.
2.Ensure all pull down boxes and BLUE cells reflect correct conditions.
3. Read the README sheet.
4. Use the mouse pointer to read the tips in the "red cornered" input cells. (See Tools->Options->Comments if these are not displayed.

Company Name:	Carolina Sunrock LLC
Facility ID No.:	TBD
Permit No.:	TBD
Facility City:	Burlington
Facility County:	Caswell
Spreadsheet Prepared by:	Scott Martino

Is this spreadsheet being used for emissions inventory	2. NO		
Plant type:	Drum mix		
Fuel type:	Waste, No.4 or No.6 fuel oil-fired		
Fuel Sulfur Content:	0.50	%	(default value is 0.5 %)
Controls:	Fabric filter controls		

Dryer heat input:	80	million Btu per hour
Plant maximum production capacity:	250	tons per hour

Asphalt Properties			
Asphalt temperature:	325	degrees F	(default value of 325 degrees F)
Volatility loss (V):	-0.5	%	(default value of -0.5 %)

Silo Filling?	YES

RAP crushing on site?	YES				
Crushing Capacity?	65	tons per hour	No. of crushers:	1	
Hours of operation:	8760	hours per year	No. of screens:	1	
			No. of conveyors:	4	

Asphalt Cement Heater			
AC heater heat input:	0	million Btu per hour	(No.2 or diesel fuel oil -fired assumed)
Fuel Sulfur Content:	0.50	%	(default value is 0.5 %)
Hours of operation:	8760	hours per year	(default is 8760 hours per year unless specified otherwise)

Calculated Annual Production Limit:	1,494,010	tons per year
Requested Annual Production Limit:	500,000	tons per year
Requested Daily Production Limit:		tons per day

(if none desired leave default value =8760*tph)
Are you SURE you want a restriction? If you do not want a daily restriction, make sure the cell has the value 24 hours/day *250 tons per hour = 6000 tons per day.

Is this plant NSPS Subpart I affected?	YES	
Stack gas flow rate :	45,000	ACFM
Stack gas temperature :	240	oF
Stack % moisture:	33	%
Allowable emission rate under NSPS Subpart I:	7.80	lb/hr
Control efficiency required:	99.889	%
Does Method 5 data already exist?:	NO	
Method 5 determined emission rate:	40.00	lb/hr
Control efficiency based on test data:	99.429	%

Allowable emission rate under 2 D .0506:	55.39	lb/hr
Does this plant emit less than this limit ?:	Yes	*(based on emission factors)*
Control efficiency required:	99.209	%

Dryer Emissions
Criteria Pollutants

Pollutant	Uncontrolled Emission Factor (lb/ton)	Controlled Emission Factor (lb/ton)	uncontrolled emission rate (lb/hr)	controlled emission rate (lb/hr)	Title V, Potential Emissions (tpy) (no controls, 8760 hours per year operation)	PSD, Potential Emissions, (tpy) (with controls, 8760 hours per year operation)	Synthetic Minor, Potential Emissions (tpy) (with all operation restrictions)
Condensible PM (or PM_{10})	0.0654	0.0194	16.35	4.85			
Filterable PM	28	0.014	7000	3.5			
Filterable PM10	6.4	0.0039	1600	0.975			
Total PM	28	0.033	7000	8.25	55.4	36.1	8.3
Total PM10	6.5	0.023	1625	5.75	29.0	25.2	5.8
SO2	0.0837	0.0837	20.93	20.93	91.69	91.69	20.93
CO	0.1300	0.130	32.5	32.5	142.4	142.4	32.5
NOx	0.0550	0.055	13.75	13.75	60.2	60.2	13.8
VOC	0.0320	0.032	8	8	35.0	35.0	8.0
HAPs, TOTAL		0.010		2.5	11.0	11.0	2.5

Silo Filling plus Load Out Emissions, Criteria Pollutants

Pollutant	Emission Factor, combined (lb/ton)	emission rate (lb/hr)	Title V, Potential Emissions (tpy) (no controls, 8760 hours per year operation)	PSD, Potential Emissions, (tpy) (8760 hours per year operation)	Synthetic Minor, Potential Emissions (tpy) (with all operation restrictions)
Total PM	1.11E-03	2.77E-01	1.2	1.2	0.3
CO	2.53E-03	6.32E-01	2.8	2.8	0.6
VOC	1.61E-02	4.02E+00	17.6	17.6	4.0
HAPs, TOTAL	2.74E-04	6.85E-02	0.3	0.3	0.1

Rap Crusher Emissions

Pollutant	Emission Factor, all sources combined (lb/ton)	emission rate (lb/hr)	Title V, Potential Emissions (tpy) (no controls, 8760 hours per year operation)	PSD, Potential Emissions, (tpy) (8760 hours per year operation)	Synthetic Minor, Potential Emissions (tpy) (with all operation restrictions)
Total PM	0.0424	2.76E+00	12.1	12.1	2.8
Total PM10	0.0155	1.01E+00	4.4	4.4	1.0

Asphalt Cement Heater Emissions

Pollutant	Uncontrolled Emission Factor (lb/MMBtu)	emission rate (lb/hr)	Title V, Potential Emissions (tpy) (no controls, 8760 hours per year operation)	PSD, Potential Emissions, (tpy) (8760 hours per year operation)	Synthetic Minor, Potential Emissions (tpy) (with all operation restrictions)
Total PM	0.0235714	0.00E+00	0.0	0.0	0.0
Total PM10	0.0235714	0.00E+00	0.0	0.0	0.0
SO2	0.5071429	0.00E+00	0.0	0.0	0.0
CO	0.0357143	0.00E+00	0.0	0.0	0.0
NOx	0.1428571	0.00E+00	0.0	0.0	0.0
VOC	0.0024286	0.00E+00	0.0	0.0	0.0

Facility-wide Criteria Pollutant Emissions Summary

Pollutant	Controlled Emission Rate, lb/hr	Title V, Potential Emissions (tpy) (no controls, 8760 hours per year operation)	PSD, Potential Emissions, (tpy) (8760 hours per year operation)	Synthetic Minor, Potential Emissions (tpy) (with all operation restrictions)
Total PM	1.10E+01	68.7	49.4	11.3
Total PM10	6.76E+00	34.7	30.8	7.0
SO2	2.09E+01	91.7	91.7	20.9
CO	3.31E+01	145.1	145.1	33.1
NOx	1.38E+01	60.2	60.2	13.8
VOC	1.20E+01	52.7	52.7	12.0
HAPs, TOTAL	2.57E+00	11.3	11.3	2.6

Facility-wide Toxic Air Pollutants Summary

TAP	CAS No.	Action
Acetaldehyde (TH)	75070	NOTE 1
Acrolein (TH)	107028	NOTE 1
Arsenic unlisted cmpds (comp. of ASC) (TH)	ASC-other	NOTE 3
Benzene (TH)	71432	NOTE 3
Benzo(a)pyrene (T)	50328	NOTE 1
Beryllium metal (unreacted) (TH)	7440417	NOTE 1
Cadmium metal (elemental unreacted) (TH)	7440439	NOTE 2
Carbon disulfide (TH)	75150	NOTE 1
Formaldehyde (TH)	50000	NOTE 3
Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8 (T)	57653857	NOTE 1
Hexane, n- (TH)	110543	NOTE 1
Hydrogen Sulfide (T)	7783064	NOTE 1
Manganese unlisted compounds (T)	MNC-other	NOTE 1
Methyl chloroform (TH)	71556	NOTE 1

TAP	CAS No.	Action
Mercury, vapor (TH)	7439976	NOTE 2
Methyl ethyl ketone (TH)	78933	NOTE 1
Methylene chloride (TH)	75092	NOTE 1
Nickel metal (TH)	7440020	NOTE 2
Perchloroethylene (tetrachloroethylene) (TH)	127184	NOTE 1
Phenol (TH)	108952	NOTE 1
Soluble Chromate Compounds as Chrome VI (TH)	7738945	NOTE 1
Styrene (TH)	100425	NOTE 1
Tetrachlorodibenzo-p-dioxin, 2,3,7,8- (TH)	1746016	NOTE 1
Toluene (TH)	108883	NOTE 1
Trichloroethylene (TH)	79016	NOTE 1
Trichlorofluoromethane (CFC 111) (T)	75694	NOTE 1
Xylene (TH)	1330207	NOTE 1

NOTE 1: Include TAP in TPER stipulation.

NOTE 2: Include TAP in TPER stipulation with operation restrictions.

NOTE 3: Modeling Required. See "Toxic calculations" worksheet.

ASPHALT EMISSIONS CALCULATOR REVISION F 07/18/2012 - OUTPUT SCREEN

NCDENR

Instructions: Enter emission source / facility data on the "INPUT" tab/screen. The air emission results and summary of input data are viewed / printed on the "OUTPUT" tab/screen. The different tabs are on the bottom of this screen.

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SOURCE / FACILITY / USER INPUT SUMMARY (FROM INPUT SCREEN)

COMPANY:	Carolina Sunrock LLC	FACILITY ID NO.:	TBD
		PERMIT NUMBER:	TBD
EMISSION SOURCE DESCRIPTION:	NSPS affected 250 tph Waste, No.4 or No.6 fuel oil-fired, Drum mix asphalt plant (80 mmBtu/hr heat input, w/silofill, with RAP, sulfur=0.5%)	FACILITY CITY:	Burlington
		FACILITY COUNTY:	Caswell
Annual Production Limit:	500,000 ton/year	Daily Production Limit:	0 ton/day
SPREADSHEET PREPARED BY:	Scott Martino		

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION

AIR POLLUTANT EMITTED	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS)		POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS)	
	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM)	11.01	11.28		68.68		11.28
PARTICULATE MATTER<10 MICRONS (PM_{10})	6.76	7.03		34.67		7.03
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)						
SULFUR DIOXIDE (SO2)	20.93	20.93		91.69		20.93
NITROGEN OXIDES (NOx)	13.75	13.75		60.23		13.75
CARBON MONOXIDE (CO)	33.13	33.13		145.12		33.13
VOLATILE ORGANIC COMPOUNDS (VOC)	12.02	12.02		52.67		12.02
TOTAL HAP	2.57	2.57		11.25		2.57
LARGEST HAP (formaldehyde)	0.80	0.80		3.49		0.80

Attach INPUT worksheet

TOXIC / HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION

TOXIC / HAZARDOUS AIR POLLUTANT	CAS Number	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS)		POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS)		EMISSION FACTOR (lb/ton asphalt produced, with Fabric filter controls)
		lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	
Acetaldehyde (TH)	75070	3.25E-01	6.50E+02	3.25E-01	2847.00	3.25E-01	6.50E+02	1.3E-03
Acrolein (TH)	107028	6.50E-03	1.30E+01	6.50E-03	56.94	6.50E-03	1.30E+01	2.6E-05
Antimony unlisted compounds (H)	SBC-other	4.50E-05	9.00E-02	4.50E-05	0.39	4.50E-05	9.00E-02	1.8E-07
Arsenic unlisted cmpds (comp. of ASC) (TH)	ASC-other	1.40E-04	2.80E-01	1.40E-04	1.23	1.40E-04	2.80E-01	5.6E-07
Benzene (TH)	71432	9.90E-02	1.98E+02	9.90E-02	867.38	9.90E-02	1.98E+02	4.0E-04
Benzo(a)pyrene (T)	50328	4.41E-06	8.82E-03	4.41E-06	0.04	4.41E-06	8.82E-03	1.8E-08
Beryllium metal (unreacted) (TH)	7440417	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.0E+00
Cadmium metal (elemental unreacted) (TH)	7440439	1.03E-04	2.05E-01	1.03E-04	0.90	1.03E-04	2.05E-01	4.1E-07
Carbon disulfide (TH)	75150	6.23E-04	1.25E+00	6.23E-04	5.45	6.23E-04	1.25E+00	2.5E-06
Chromium unlisted cmpds (add w/chrom acid to get CRC) (H)	CRC-other	1.26E-03	2.53E+00	1.26E-03	11.06	1.26E-03	2.53E+00	5.1E-06
Chromic acid (VI) (component of solCR6 and CRC) (TH)	7738945	1.13E-04	2.25E-01	1.13E-04	0.99	1.13E-04	2.25E-01	4.5E-07
Cobalt unlisted compounds (H)	COC-other	6.50E-06	1.30E-02	6.50E-06	0.06	6.50E-06	1.30E-02	2.6E-08
Cumene (H)	98828	1.14E-03	2.29E+00	1.14E-03	10.02	1.14E-03	2.29E+00	4.6E-06
Ethyl benzene (H)	100414	6.41E-02	1.28E+02	6.41E-02	561.24	6.41E-02	1.28E+02	2.6E-04
Ethyl chloride (chloroethane) (H)	75003	2.18E-06	4.37E-03	2.18E-06	0.02	2.18E-06	4.37E-03	8.7E-09
Formaldehyde (TH)	50000	7.97E-01	1.59E+03	7.97E-01	6981.17	7.97E-01	1.59E+03	3.2E-03
Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8 (T)	57653857	3.25E-10	6.50E-07	3.25E-10	0.00	3.25E-10	6.50E-07	1.3E-12
Hexane, n- (TH)	110543	2.39E-01	4.78E+02	2.39E-01	2095.50	2.39E-01	4.78E+02	9.6E-04
Hydrogen Chloride (hydrochloric acid) (TH)	7647010	5.25E-02	1.05E+02	5.25E-02	459.90	5.25E-02	1.05E+02	2.1E-04
Hydrogen Sulfide (T)	7783064	1.37E-02	2.74E+01	1.37E-02	119.84	1.37E-02	2.74E+01	5.5E-05
Lead unlisted compounds (H)	PBC-other	3.75E-03	7.50E+00	3.75E-03	32.85	3.75E-03	7.50E+00	1.5E-05
Manganese unlisted compounds (T)	MNC-other	1.93E-03	3.85E+00	1.93E-03	16.86	1.93E-03	3.85E+00	7.7E-06
Mercury, vapor (TH)	7439976	6.50E-04	1.30E+00	6.50E-04	5.69	6.50E-04	1.30E+00	2.6E-06
Methyl bromide (H)	74839	2.49E-04	4.98E-01	2.49E-04	2.18	2.49E-04	4.98E-01	1.0E-06
Methyl chloride (H)	74873	1.56E-04	3.12E-01	1.56E-04	1.37	1.56E-04	3.12E-01	6.2E-07
Methyl chloroform (TH)	71556	1.20E-02	2.40E+01	1.20E-02	105.12	1.20E-02	2.40E+01	4.8E-05
Methyl ethyl ketone (TH)	78933	6.70E-03	1.34E+01	6.70E-03	58.67	6.70E-03	1.34E+01	2.7E-05
Methylene chloride (TH)	75092	8.23E-06	1.65E-02	8.23E-06	0.07	8.23E-06	1.65E-02	3.3E-08
Napthalene (H)	91203	1.65E-01	3.29E+02	1.65E-01	1442.95	1.65E-01	3.29E+02	6.6E-04
Nickel metal (TH)	7440020	1.58E-02	3.15E+01	1.58E-02	137.97	1.58E-02	3.15E+01	6.3E-05
Perchloroethylene (tetrachloroethylene) (TH)	127184	8.01E-05	1.60E-01	8.01E-05	0.70	8.01E-05	1.60E-01	3.2E-07
Phenol (TH)	108952	1.01E-03	2.01E+00	1.01E-03	8.81	1.01E-03	2.01E+00	4.0E-06
Phosphorus Metal, Yellow or White (H)	7723140	7.00E-03	1.40E+01	7.00E-03	61.32	7.00E-03	1.40E+01	2.8E-05
Polycyclic Organic Matter (H)	POM	2.20E-01	4.40E+02	2.20E-01	1927.20	2.20E-01	4.40E+02	8.8E-04
Propionaldehyde (H)	123386	3.25E-02	6.50E+01	3.25E-02	284.70	3.25E-02	6.50E+01	1.3E-04
Quinone (H)	106514	4.00E-02	8.00E+01	4.00E-02	350.40	4.00E-02	8.00E+01	1.6E-04
Selenium compounds (H)	SEC	8.75E-05	1.75E-01	8.75E-05	0.77	8.75E-05	1.75E-01	3.5E-07
Styrene (TH)	100425	2.40E-04	4.81E-01	2.40E-04	2.11	2.40E-04	4.81E-01	9.6E-07
Tetrachlorodibenzo-p-dioxin, 2,3,7,8- (TH)	1746016	5.25E-11	1.05E-07	5.25E-11	0.00	5.25E-11	1.05E-07	2.1E-13

Toluene (TH)	108883	7.29E-01	1.46E+03	7.29E-01	6386.67	7.29E-01	1.46E+03	2.9E-03
Trichloroethylene (TH)	79016	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.0E+00
Trichlorofluoromethane (CFC 111) (T)	75694	1.35E-05	2.70E-02	1.35E-05	0.12	1.35E-05	2.70E-02	5.4E-08
Trimethylpentane, 2,2,4- (H)	540841	1.00E-02	2.01E+01	1.00E-02	87.85	1.00E-02	2.01E+01	4.0E-05
Xylene (TH)	1330207	6.04E-02	1.21E+02	6.04E-02	528.72	6.04E-02	1.21E+02	2.4E-04
Xylene, o- (H)	95476	2.57E-03	5.14E+00	2.57E-03	22.50	2.57E-03	5.14E+00	1.0E-05

TOXIC AIR POLLUTANT EMISSIONS INFORMATION (FOR PERMITTING PURPOSES)

Expected actual emissions after controls and limitations consisting of an annual production limit of 500000 tons and a daily production limit of 0 tons.

TOXIC AIR POLLUTANT	CAS Num.	lb/hr	lb/day	lb/yr	Modeling Required?	EMISSION FACTOR (lb/ton asphalt produced, with Fabric filter controls)
Acetaldehyde (TH)	75070	3.25E-01	0.00E+00	6.50E+02	NO. Based on facility-wide potential.	1.30E-03
Acrolein (TH)	107028	6.50E-03	0.00E+00	1.30E+01	NO. Based on facility-wide potential.	2.60E-05
Arsenic unlisted cmpds (comp. of ASC) (TH)	ASC-other	1.40E-04	0.00E+00	2.80E-01	YES. Modeling required	5.60E-07
Benzene (TH)	71432	9.90E-02	0.00E+00	1.98E+02	YES. Modeling required	3.96E-04
Benzo(a)pyrene (T)	50328	4.41E-06	0.00E+00	8.82E-03	NO. Based on facility-wide potential.	1.76E-08
Beryllium metal (unreacted) (TH)	7440417	0.00E+00	0.00E+00	0.00E+00	NO. Based on facility-wide potential.	0.00E+00
Cadmium metal (elemental unreacted) (TH)	7440439	1.03E-04	0.00E+00	2.05E-01	NO. Because of operating restriction	4.10E-07
Carbon disulfide (TH)	75150	6.23E-04	0.00E+00	1.25E+00	NO. Based on facility-wide potential.	2.49E-06
Soluble Chromate compounds as Chrome (VI) (TH)	SOLCR6	1.13E-04	0.00E+00	2.25E-01	NO. Based on facility-wide potential.	4.50E-07
Formaldehyde (TH)	50000	7.97E-01	0.00E+00	1.59E+03	YES. Modeling required	3.19E-03
Hexane, n- (TH)	110543	2.39E-01	0.00E+00	4.78E+02	NO. Based on facility-wide potential.	9.57E-04
Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8 (T)	57653857	3.25E-10	0.00E+00	6.50E-07	NO. Based on facility-wide potential.	1.30E-12
Hydrogen Sulfide (T)	7783064	1.37E-02	0.00E+00	2.74E+01	NO. Based on facility-wide potential.	5.47E-05
Manganese unlisted compounds (T)	MNC-other	1.93E-03	0.00E+00	3.85E+00	NO. Based on facility-wide potential.	7.70E-06
Mercury, vapor (TH)	7439976	6.50E-04	0.00E+00	1.30E+00	NO. Because of operating restriction	2.60E-06
Methylene chloride (TH)	75092	8.23E-06	0.00E+00	1.65E-02	NO. Based on facility-wide potential.	3.29E-08
Methyl chloroform (TH)	71556	1.20E-02	0.00E+00	2.40E+01	NO. Based on facility-wide potential.	4.80E-05
Methyl ethyl ketone (TH)	78933	6.70E-03	0.00E+00	1.34E+01	NO. Based on facility-wide potential.	2.68E-05
Nickel metal (TH)	7440020	1.58E-02	0.00E+00	3.15E+01	NO. Because of operating restriction	6.30E-05
Perchloroethylene (tetrachloroethylene) (TH)	127184	8.01E-05	0.00E+00	1.60E-01	NO. Based on facility-wide potential.	3.20E-07
Phenol (TH)	108952	1.01E-03	0.00E+00	2.01E+00	NO. Based on facility-wide potential.	4.02E-06
Styrene (TH)	100425	2.40E-04	0.00E+00	4.81E-01	NO. Based on facility-wide potential.	9.62E-07
Tetrachlorodibenzo-p-dioxin, 2,3,7,8- (TH)	1746016	5.25E-11	0.00E+00	1.05E-07	NO. Based on facility-wide potential.	2.10E-13
Toluene (TH)	108883	7.29E-01	0.00E+00	1.46E+03	NO. Based on facility-wide potential.	2.92E-03
Trichloroethylene (TH)	79016	0.00E+00	0.00E+00	0.00E+00	NO. Based on facility-wide potential.	0.00E+00
Trichlorofluoromethane (CFC 111) (T)	75694	1.35E-05	0.00E+00	2.70E-02	NO. Based on facility-wide potential.	5.41E-08
Xylene (TH)	1330207	6.04E-02	0.00E+00	1.21E+02	NO. Based on facility-wide potential.	2.41E-04

Toxic Air Pollutant (TAP) emission rate calculations page

This sheet presents the emission rate calculations that are necessary for modeling determinations.

Pollutant	CAS No.	emissions from dryer	emissions from handling	TPER	Units	TPER	Units	dryer: Controlled Emission Factor (lb/ton)	dryer: Controlled Emission Rate (lb/hour)	Silo Filling: Emission factor (lb/ton)	Silo Filling: Emission Rate (lb/hr)	Loadout: Emission factor (lb/ton)	Loadout: Emission Rate (lb/hr)	total handling: Emission Factor (lb/ton)	total handling: Emission Rate (lb/hour)	total: Controlled Emission Factor (lb/ton)	total: Controlled Emission Rate (lb/hour)	Controlled Emission Rate (lb/day)	Controlled Emission Rate (lb/year)	Controlled w/Limitations Emission Rate (lb/day)	Controlled w/Limitations Emission Rate (lb/year)	Controlled ER greater than TPER ?	Controlled w/Limitations ER greater than TPER ?	Comments
Acetaldehyde (TH)	75070	yes	no	6.8	lb/hr			1.30E-03	3.25E-01							1.30E-03	3.25E-01	7.80E+00	2.85E+03	0.00E+00	6.50E-02	No		NOTE 1
Acrolein (TH)	107028	yes	no	0.02	lb/hr			2.60E-05	6.50E-03							2.60E-05	6.50E-03	1.56E-01	5.69E+01	0.00E+00	1.30E+01	No		NOTE 1
Formaldehyde (TH)	50000	yes	yes	0.04	lb/hr			3.10E-03	7.75E-01	8.41E-05	2.10E-02	3.66E-06	9.15E-04	8.775E-05	2.19E-02	3.19E-03	7.97E-01	1.91E+01	6.98E+03	0.00E+00	1.59E+03	Yes		NOTE 3
Phenol (TH)	108952	no	yes	0.24	lb/hr					0.00E+00	0.00E+00	4.02E-06	1.01E-03	4.02E-06	1.01E-03	4.02E-06	1.01E-03	2.41E-02	8.81E+00	0.00E+00	2.01E+00	No		NOTE 1
Styrene (TH)	100425	no	yes	2.7	lb/hr					6.58E-07	1.65E-04	3.04E-07	7.59E-05	9.62E-07	2.40E-04	9.62E-07	2.40E-04	5.77E-03	2.11E+00	0.00E+00	4.81E-01	No		NOTE 1
Trichlorofluoromethane (CFC 111) (T)	75694	no	yes	140	lb/hr					0.00E+00	0.00E+00	5.41E-08	1.35E-05	5.41E-08	1.35E-05	5.41E-08	1.35E-05	3.24E-04	1.18E-01	0.00E+00	2.70E-02	No		NOTE 1
Methyl chloroform (TH)	71556	yes	yes	64	lb/hr	250	lb/day	4.80E-05	1.20E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.80E-05	1.20E-02	2.88E-01	1.05E+02	0.00E+00	2.40E+01	No	No	NOTE 1
Methyl ethyl ketone (TH)	78933	yes	yes	22.4	lb/hr	78	lb/day	2.00E-05	5.00E-03	4.75E-06	1.19E-03	2.04E-06	5.09E-04	6.79E-06	1.70E-03	2.68E-05	6.70E-03	1.61E-01	5.87E+01	0.00E+00	1.34E+01	No	No	NOTE 1
Toluene (TH)	108883	yes	yes	14.4	lb/hr	98	lb/day	2.90E-03	7.25E-01	7.56E-06	1.89E-03	8.73E-06	2.18E-03	1.63E-05	4.07E-03	2.92E-03	7.29E-01	1.75E+01	6.39E+03	0.00E+00	1.46E+03	No	No	NOTE 1
Xylene (TH)	1330207	yes	yes	16.4	lb/hr	57	lb/day	2.00E-04	5.00E-02	2.44E-05	6.09E-03	1.71E-05	4.26E-03	4.14E-05	1.04E-02	2.41E-04	6.04E-02	1.45E+00	5.29E+02	0.00E+00	1.21E+02	No	No	NOTE 1
Methylene chloride (TH)	75092	no	yes	0.39	lb/hr	1600	lb/year			3.29E-08	8.23E-06	0.00E+00	0.00E+00	3.29E-08	8.23E-06	3.29E-08	8.23E-06	1.97E-04	7.21E-02	0.00E+00	1.65E-02	No	No	NOTE 1
Soluble Chromate compounds as Chrome (VI) (TH)	SOLCR6	yes	no	0.013	lb/day			4.50E-07	1.13E-04							4.50E-07	1.13E-04	2.70E-03	9.86E-01	0.00E+00	2.25E-01	No	No	NOTE 1
Hexane, n- (TH)	110543	yes	yes	23	lb/day			9.38E-04	2.35E-01	1.22E-05	3.05E-03	6.24E-06	1.56E-03	1.84E-05	4.61E-03	9.57E-04	2.39E-01	5.74E+00	2.10E+03	0.00E+00	4.78E+02	No	No	NOTE 1
Manganese unlisted compounds (T)	MNC-other	yes	no	0.63	lb/day			7.70E-06	1.93E-03							7.70E-06	1.93E-03	4.62E-02	1.69E+01	0.00E+00	3.85E+00	No	No	NOTE 1
Mercury, vapor (TH)	7439976	yes	no	0.013	lb/day			2.60E-06	6.50E-04							2.60E-06	6.50E-04	1.56E-02	5.69E+00	0.00E+00	1.30E+00	Yes	No	NOTE 2
Nickel metal (TH)	7440020	yes	no	0.13	lb/day			6.30E-05	1.58E-02							6.30E-05	1.58E-02	3.78E-01	1.38E+02	0.00E+00	3.15E+01	Yes	No	NOTE 2
Carbon disulfide (TH)	75150	no	yes	3.9	lb/day					1.95E-06	4.87E-04	5.41E-07	1.35E-04	2.49E-06	6.23E-04	2.49E-06	6.23E-04	1.49E-02	5.45E+00	0.00E+00	1.25E+00	No	No	NOTE 1
Tetrachlorodibenzo-p-dioxin, 2,3,7,8- (TH)	1746016	yes	no	0.0002	lb/yr			2.10E-13	5.25E-11							2.10E-13	5.25E-11	1.26E-09	4.60E-07	0.00E+00	1.05E-07	No	No	NOTE 1
Arsenic unlisted cmpds (comp. of ASC) (TH)	ASC-other	yes	no	0.016	lb/yr			5.60E-07	1.40E-04							5.60E-07	1.40E-04	3.36E-03	1.23E+00	0.00E+00	2.80E-01	Yes	Yes	NOTE 3
Benzene (TH)	71432	yes	yes	8.1	lb/yr			3.90E-04	9.75E-02	3.90E-06	9.75E-04	2.16E-06	5.41E-04	6.06E-06	1.52E-03	3.96E-04	9.90E-02	2.38E+00	8.67E+02	0.00E+00	1.98E+02	Yes	Yes	NOTE 3
Benzo(a)pyrene (T)	50328	yes	yes	2.2	lb/yr			9.80E-09	2.45E-06	0.00E+00	0.00E+00	7.84E-09	1.96E-06	7.84E-09	1.96E-06	1.76E-08	4.41E-06	1.06E-04	3.86E-02	0.00E+00	8.82E-03	No	No	NOTE 1
Hydrogen Sulfide (T)	7783064	yes	yes	1.7	lb/day			5.18E-05	1.30E-02	1.46E-06	3.65E-04	1.46E-06	3.65E-04	2.92E-06	7.30E-04	5.47E-05	1.37E-02	3.28E-01	1.20E+02	0.00E+00	2.74E+01	No	No	NOTE 1
Beryllium metal (unreacted) (TH)	7440417	yes	no	0.28	lb/yr			0.00E+00	0.00E+00							0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	No	No	NOTE 1
Cadmium metal (elemental unreacted) (TH)	7440439	yes	no	0.37	lb/yr			4.10E-07	1.03E-04							4.10E-07	1.03E-04	2.46E-03	8.98E-01	0.00E+00	2.05E-01	Yes	No	NOTE 2
Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8 (T)	57653857	yes	no	0.0051	lb/yr			1.30E-12	3.25E-10							1.30E-12	3.25E-10	7.80E-09	2.85E-06	0.00E+00	6.50E-07	No	No	NOTE 1
Hydrogen Chloride (hydrochloric acid) (TH)	7647010	yes	no	0.18	lb/hr			2.10E-04	5.25E-02							2.10E-04	5.25E-02	1.26E+00	4.60E+02	0.00E+00	1.05E+02	No		NOTE 1
Perchloroethylene (tetrachloroethylene) (TH)	127184	no	yes	13000	lb/yr					0.00E+00	0.00E+00	3.20E-07	8.01E-05	3.20E-07	8.01E-05	3.20E-07	8.01E-05	1.92E-03	7.01E-01	0.00E+00	1.60E-01	No	No	NOTE 1
Trichloroethylene (TH)	79016	no	yes	4000	lb/yr					0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	No	No	NOTE 1
Naphthalene (H)	91203	yes	yes					6.50E-04	1.63E-01	4.62E-06	1.16E-03	4.26E-06	1.07E-03	8.88E-06	2.22E-03	6.59E-04	1.65E-01	3.95E+00	1.44E+03	0.00E+00	3.29E+02			
Phosphorus Metal, Yellow or White (H)	7723140	yes	no					2.80E-05	7.00E-03							2.80E-05	7.00E-03	1.68E-01	6.13E+01	0.00E+00	1.40E+01			
Polycyclic Organic Matter (H)	POM	yes	no					8.80E-04	2.20E-01							8.80E-04	2.20E-01	5.28E+00	1.93E+03	0.00E+00	4.40E+02			
Propionaldehyde (H)	123386	yes	no					1.30E-04	3.25E-02							1.30E-04	3.25E-02	7.80E-01	2.85E+02	0.00E+00	6.50E+01			
Quinone (H)	106514	yes	no					1.60E-04	4.00E-02							1.60E-04	4.00E-02	9.60E-01	3.50E+02	0.00E+00	8.00E+01			
Selenium compounds (H)	SEC	yes	no					3.50E-07	8.75E-05							3.50E-07	8.75E-05	2.10E-03	7.67E-01	0.00E+00	1.75E-01			
Trimethylpentane, 2,2,4- (H)	540841	yes	yes					4.00E-05	1.00E-02	3.78E-08	9.44E-06	7.49E-08	1.87E-05	1.13E-07	2.82E-05	4.01E-05	1.00E-02	2.41E-01	8.78E+01	0.00E+00	2.01E+01			
Antimony unlisted compounds (H)	SBC-other	yes	no					1.80E-07	4.50E-05							1.80E-07	4.50E-05	1.08E-03	3.94E-01	0.00E+00	9.00E-02			
Chromium unlisted cmpds (add w/chrom acid to get CRC) (H)	CRC-other	yes	no					5.05E-06	1.26E-03							5.05E-06	1.26E-03	3.03E-02	1.11E+01	0.00E+00	2.53E+00			
Cobalt unlisted compounds (H)	COC-other	yes	no					2.60E-08	6.50E-06							2.60E-08	6.50E-06	1.56E-04	5.69E-02	0.00E+00	1.30E-02			
Ethyl benzene (H)	100414	yes	yes					2.40E-04	6.00E-02	4.63E-06	1.16E-03	1.16E-05	2.91E-03	1.63E-05	4.07E-03	2.56E-04	6.41E-02	1.54E+00	5.61E+02	0.00E+00	1.28E+02			
Lead unlisted compounds (H)	PBC-other	yes	no					1.50E-05	3.75E-03							1.50E-05	3.75E-03	9.00E-02	3.29E+01	0.00E+00	7.50E+00			
Methyl bromide (H)	74839	no	yes							5.97E-07	1.49E-04	3.99E-07	9.98E-05	9.96E-07	2.49E-04	9.96E-07	2.49E-04	5.98E-03	2.18E+00	0.00E+00	4.98E-01			
Cumene (H)	98828	no	yes					0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.57E-06	1.14E-03	4.57E-06	1.14E-03	4.57E-06	1.14E-03	2.74E-02	1.00E+01	0.00E+00	2.29E+00			
Ethyl chloride (chloroethane) (H)	75003	no	yes					0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.73E-09	2.18E-06	8.73E-09	2.18E-06	8.73E-09	2.18E-06	5.24E-05	1.91E-02	0.00E+00	4.37E-03			
Methyl chloride (H)	74873	no	yes					0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.24E-07	1.56E-04	6.24E-07	1.56E-04	6.24E-07	1.56E-04	3.74E-03	1.37E+00	0.00E+00	3.12E-01			
Xylene, o- (H)	95476	no	yes					6.95E-06	1.74E-03	3.33E-06	8.32E-04	1.03E-05	2.57E-03	2.74E-04	6.85E-02	1.03E-05	2.57E-03	6.16E-02	2.25E+01	0.00E+00	5.14E+00			
HAPs, TOTAL								1.00E-02	2.50E+00	1.87E-04	4.68E-02	8.66E-05	2.17E-02	2.74E-04	6.85E-02	1.03E-02	2.57E+00	6.16E+01	2.25E+04	0.00E+00	5.14E+03			

Emission factors taken from AP-42,Table 11.19.2-2, 8/04, Crushed Stone Processing and Pulverized Mineral Processing

RAP crusher

maximum capacity	65	tph
hours of operation	8760	hours

	emission factors (dry) (lb/ton)		emissions (lb/hr)		emissions ton/yr	
	TSP	**PM-10**	**TSP**	**PM-10**	**TSP**	**PM-10**
primary crusher	0.0054	0.0024	0.351	0.156	1.54	0.68
screening	0.025	0.0087	1.625	0.5655	7.12	2.48
conveyor transfer point	0.012	0.0044	0.78	0.286	3.42	1.25
		total	**2.76**	**1.01**	**12.07**	**4.41**

combined EF	0.0424	0.0155

Emissions summary from Silo Filling and Loadout operations

Pollutant	CAS Nos.	Emission Factors (lb/ton) Silo Filling SCC-3-05-002-13	Emission Factors (lb/ton) Load out SCC-3-05-002-14	Potential Emissions (lb/hr) Silo Filling SCC-3-05-002-13	Potential Emissions (lb/hr) Load out SCC-3-05-002-14	Emission factors (lb/ton) Silo Filling plus Load Out
Total PM		5.86E-04	5.22E-04	1.46E-01	1.30E-01	1.11E-03
CO		1.18E-03	1.35E-03	2.95E-01	3.37E-01	2.53E-03
VOC		1.22E-02	3.91E-03	3.05E+00	9.77E-01	1.61E-02
PAH HAPs TOTAL		2.89E-05	2.02E-05	7.24E-03	5.05E-03	4.92E-05
Volatile organic HAPs, TOTAL		1.58E-04	6.24E-05	3.96E-02	1.56E-02	2.21E-04
HAPs, TOTAL		1.87E-04	8.66E-05	4.68E-02	2.17E-02	2.74E-04
Benzo(a)pyrene (T)	50328	0.00E+00	7.84E-09	0.00E+00	1.96E-06	7.84E-09
Napthalene (H)	91203	4.62E-06	4.26E-06	1.16E-03	1.07E-03	8.88E-06
Phenol (TH)	108952	0.00E+00	4.02E-06	0.00E+00	1.01E-03	4.02E-06
Benzene (TH)	71432	3.90E-06	2.16E-06	9.75E-04	5.41E-04	6.06E-06
Methyl bromide (H)	74839	5.97E-07	3.99E-07	1.49E-04	9.98E-05	9.96E-07
Methyl ethyl ketone (TH)	78933	4.75E-06	2.04E-06	1.19E-03	5.09E-04	6.79E-06
Carbon disulfide (TH)	75150	1.95E-06	5.41E-07	4.87E-04	1.35E-04	2.49E-06
Cumene (H)	98828	0.00E+00	4.57E-06	0.00E+00	1.14E-03	4.57E-06
Ethyl benzene (H)	100414	4.63E-06	1.16E-05	1.16E-03	2.91E-03	1.63E-05
Ethyl chloride (chloroethane) (H)	75003	0.00E+00	8.73E-09	0.00E+00	2.18E-06	8.73E-09
Formaldehyde (TH)	50000	8.41E-05	3.66E-06	2.10E-02	9.15E-04	8.77E-05
Hexane, n- (TH)	110543	1.22E-05	6.24E-06	3.05E-03	1.56E-03	1.84E-05
Methyl chloride (H)	74873	0.00E+00	6.24E-07	0.00E+00	1.56E-04	6.24E-07
Methyl chloroform (TH)	71556	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Methylene chloride (TH)	75092	3.29E-08	0.00E+00	8.23E-06	0.00E+00	3.29E-08
Perchloroethylene (tetrachloroethylene) (TH)	127184	0.00E+00	3.20E-07	0.00E+00	8.01E-05	3.20E-07
Styrene (TH)	100425	6.58E-07	3.04E-07	1.65E-04	7.59E-05	9.62E-07
Toluene (TH)	108883	7.56E-06	8.73E-06	1.89E-03	2.18E-03	1.63E-05
Trichloroethylene (TH)	79016	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Trichlorofluoromethane (CFC 111) (T)	75694	0.00E+00	5.41E-08	0.00E+00	1.35E-05	5.41E-08
Trimethylpentane, 2,2,4- (H)	540841	3.78E-08	7.49E-08	9.44E-06	1.87E-05	1.13E-07
Xylene (TH)	1330207	2.44E-05	1.71E-05	6.09E-03	4.26E-03	4.14E-05
Xylene, o- (H)	95476	6.95E-06	3.33E-06	1.74E-03	8.32E-04	1.03E-05
Hydrgen Sulfide (T)	7783064	1.46E-06	1.46E-06	3.65E-04	3.65E-04	2.92E-06

Plant maximum production capacity:	250	tons per hour
Requested Annual Production Limit:	500,000	tons per year
Requested Daily Production Limit:	0	tons per day

V	-0.5	%
t	325	oF
	785	oR

Table 11.1-14

Predictive Emission Factor Equations for Load-out and silo Filling Operations

source	pollutant	EF (lb/ton)
Load out SCC-3-05-002-14	Total PM	0.000521937
	Organic PM	0.000340937
	TOC	0.004158948
	CO	0.00134924
Silo Filling SCC-3-05-002-13	Total PM	0.000585889
	Organic PM	0.000253889
	TOC	0.012186685
	CO	0.001179981

Table 11.1-15
Speciation Profiles for Load-out, Silo Filling and Asphalt Storage Emissions - Organic PM based Compounds

		Spec. profile for Load-out and yard emissions	Spec. profile for Silo filling and asphalt storage tank emissions	loadout emission factors (lb/ton)	Silo filling emission factors (lb/ton)
		% Compound / Organic PM	% Compound / Organic PM		
Benzo(a)pyrene (T)	50328	0.0023	0	7.84155E-09	0
Napthalene (H)	91203	1.25	1.82	4.26171E-06	4.62078E-06
PAH HAPs TOTAL		5.93	11.4	2.02176E-05	2.89434E-05
Phenol (TH)	108952	1.18	0	4.02306E-06	0

Table 11.1-16

Speciation Profiles for Load-out, Silo Filling and Asphalt Storage Emissions - Organic Volatile based Compounds

		Spec. profile for Load-out and yard emissions	Spec. profile for Silo filling and asphalt	loadout emission factors (lb/ton)	Silo filling emission factors (lb/ton)
		% Compound / TOC	% Compound / TOC		
VOC		94	100	0.003909411	0.012186685
Benzene (TH)	71432	0.052	0.032	2.16265E-06	3.89974E-06
Methyl bromide (H)	74839	0.0096	0.0049	3.99259E-07	5.97148E-07
Methyl ethyl ketone (TH)	78933	0.049	0.039	2.03788E-06	4.75281E-06
Carbon disulfide (TH)	75150	0.013	0.016	5.40663E-07	1.94987E-06
Cumene (H)	98828	0.11	0	4.57484E-06	0
Ethyl benzene (H)	100414	0.28	0.038	1.16451E-05	4.63094E-06
Ethyl chloride (chloroethane) (H)	75003	0.00021		8.73379E-09	0
Formaldehyde (TH)	50000	0.088	0.69	3.65987E-06	8.40881E-05
Hexane, n- (TH)	110543	0.15	0.1	6.23842E-06	1.21867E-05
Methyl chloride (H)	74873	0.015		6.23842E-07	0
Methyl chloroform (TH)	71556	0	0	0	0
Methylene chloride (TH)	75092	0	0.00027	0	3.29041E-08
Perchloroethylene (tetrachloroethylene) (TH)	127184	0.0077	0	3.20239E-07	0
Styrene (TH)	100425	0.0073	0.0054	3.03603E-07	6.58081E-07
Toluene (TH)	108883	0.21	0.062	8.73379E-06	7.55574E-06
Trichloroethylene (TH)	79016	0	0	0	0
Trichlorofluoromethane (CFC 111) (T)	75694	0.0013	0	5.40663E-08	0
Trimethylpentane, 2,2,4- (H)	540841	0.0018	0.00031	7.48611E-08	3.77787E-08
Xylene (TH)	1330207	0.41	0.2	1.70517E-05	2.43734E-05
Xylene, o- (H)	95476	0.08	0.057	3.32716E-06	6.94641E-06
Volatile organic HAPs, TOTAL		1.5	1.3	6.23842E-05	0.000158427

		loadout emission factors (lb/ton)	Silo filling emission factors (lb/ton)
Hydrogen Sulfide	7783064	0.00000146	0.00000146

*** These emissions factors were taken from the October 12, 2005 letter from Keith Overcash stating the emissions factors resulting from testing at Mangum Asphalt Services, Knightdale, Wake County, and at S.T. Wooten Asphalt Services, Sanford, Lee County.

FUEL OIL COMBUSTION EMISSIONS CALCULATOR REVISION G 11/5/2012 - INPUT SCREEN

NCDENR

Instructions: Enter emission source / facility data on the "INPUT" tab/screen. The air emission results and summary of input data are viewed / printed on the "OUTPUT" tab/screen. The different tabs are on the bottom of this screen.

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Directions: Enter and select information in the boxes that are highlighted in blue:

COMPANY NAME:	Carolina Sunrock
FACILITY ID NUMBER:	
PERMIT NUMBER	
FACILITY CITY:	Burlington
FACILITY COUNTY:	Caswell
SPREADSHEET PREPARED BY:	Aimee Andrews
EMISSION SOURCE DESCRIPTION:	No. 2 oil-fired Boiler
EMISSION SOURCE ID NO.:	HMA-H1
LATEST CONSTRUCTION/MODIFICATION DATE:	2021
SELECT THE TYPE OF BOILER FROM THE LISTS BELOW:	26

Boilers=>100 mmBtu/hr

1 = No. 6 oil-fired, normal firing (U)
2 = No. 6 oil-fired, normal firing (I)
3 = No. 6 oil-fired, normal firing (C)
4 = No. 6 oil-fired, normal firing, low Nox burner (U)
5 = No. 6 oil-fired, normal firing, low Nox burner (I)
6 = No. 6 oil-fired, normal firing, low Nox burner (C)
7 = No. 6 oil-fired, tangential firing (U)
8 = No. 6 oil fired, tangential firing, low Nox burner (U)
9 = No. 5 oil-fired, normal firing (U)
10 = No. 5 oil-fired, normal firing (I)
11 = No. 5 oil-fired, tangential firing (U)
12 = No. 4 oil-fired, normal firing (U)
13 = No. 4 oil-fired, normal firing (I)
14 = No. 4 oil-fired, tangential firing (U)
15 = No. 2 oil-fired (U)
16 = No. 2 oil-fired (I)

Boilers=>100 mmBtu/hr (cont'd)

17 = No. 2 oil-fired (C)
18 = No. 2 oil-fired, LNB/FGR (U)
19 = No. 2 oil-fired, LNB/FGR (I)
20 = No. 2 oil-fired, LNB/FGR (C)
21 = Vertical fired utility boiler

Small Boilers <100 mmBtu/hr

22 = No. 6 oil-fired (I)
23 = No. 6 oil-fired (C)
24 = No. 5 oil-fired (C)
25 = No. 4 oil-fired (C)
26 = No. 2 oil-fired (I)
27 = No. 2 oil-fired (C)
28 = Residential Furnace

Note: The emission factors for fuel oil-fired boilers depend on the boiler size and application type. In the listing of boiler types, the following notation is used: U = Utility boilers (producing steam for the generation of electricity), I = Industrial boilers (generating steam or hot water for process heat, electricity generation, or space heat), C = Commercial or institutional (used for space heating of commercial or instutional facilities) and residential (furnaces used for space heating purposes). Please be sure to select the proper boiler from the lists above.

EMISSION SOURCE INPUT DATA

MAXIMUM HEAT INPUT (MILLION BTU PER HOUR):	1.20	MMBTU/HR
ACTUAL ANNUAL FUEL USAGE (GALLONS PER YEAR):		GAL/YR
MAXIMUM ANNUAL FUEL USAGE (GALLONS PER YEAR)	75,085.7	GAL/YR
MAXIMUM FUEL SULFUR CONTENT (%):	0.00	% - (TYPEOVER IF NECESSARY - DEFAULT VALUE = 2.1 FOR RESIDUAL FUEL OIL OR 0.5 FOR DISTILLATE FUEL OIL)

FUEL HEATING VALUE

FUEL HEATING VALUE (BTU/GAL): 140,000 BTU/GAL

DEFAULT WILL APPEAR AS FOLLOWS (not used for Greenhouse Gas calcs --See below for GHG defaults):
150,000 BTU/GAL FOR No. 6, 5, and 4 FUEL OIL
140,000 BTU/GAL ALL OTHERS
(TYPE OVER NUMBER AT RIGHT IF YOU HAVE SITE SPECIFIC DATA)

CONTROL DEVICE INPUT DATA

Note: Select the type of control devices from the pull-down menus below. Default control effiencies will appear for each control device that is selected. The user may enter a different control efficiency to override these values if site specific data is available.

TYPE OF PARTICULATE CONTROL: NONE/OTHER
AVERAGE PARTICULATE CONTROL EFF.: 0

TYPE OF POSTCOMBUSTION SULFUR DIOXIDE CONTROL: NONE/OTHER
AVERAGE SULFUR DIOXIDE CONTROL EFF.: 0

TYPE OF NITROGEN OXIDE CONTROL: NONE/OTHER
AVERAGE NITROGEN OXIDE CONTROL EFF.: 0

REQUESTED PERMIT LIMITATIONS (IF APPLICABLE)

REQUESTED MAXIMUM FUEL USAGE LIMIT (GALLONS PER YEAR)	75,085.7	GAL/YR
REQUESTED MAXIMUM FUEL SULFUR CONTENT (%)	0.00	%

(TYPEOVER IF NECESSARY - DEFAULT VALUES ARE THE CALCULATED POTENTIAL AND THE MAXIMUM SULFUR CONTENT AS SHOWN IN THE EMISSION SOURCE INPUT DATA SECTION)

ADDITIONAL INFORMATION FOR GREENHOUSE GAS EMISSIONS

ENTER CALCULATION TIER
from EPA Mandatory Reporting Rule (MRR) Subpart C -
www.epa.gov/climatechange/emissions/ghgrulemaking.html
TIER 1: DEFAULT HIGH HEAT VALUE AND DEFAULT EF

NOTE: EF is "Emission Factor"

SINCE TIER 3 IS NOT BEING USED,
FUEL CARBON CONTENT WILL NOT BE USED
2.7600 kg Carbon/gal

SELECT FUEL TYPE: Distillate Fuel Oil No. 2

HIGH HEAT VALUE (HHV) FOR GHGs

FOR TIER 1 and TIER 3, the FUEL HEATING VALUE entered above is overriden with the EPA DEFAULT from Table C-1 of the EPA MRR:

Distillate Fuel Oil No. 2	0.138 mmBTU/gal	THIS VALUE WILL BE USED FOR GHG calcuations- actual emissions
Distillate Fuel Oil No. 4	0.146 mmBTU/gal	
Residual Fuel Oil No. 5	0.14 mmBTU/gal	
Residual Fuel Oil No. 6	0.15 mmBTU/gal	

FOR TIER 2, the FUEL HEATING VALUE entered above is used. The value entered must be the annual average HHV of the fuel determined using procedures in the EPA MRR (see 98.33(a)(2))

Distillate Fuel Oil No. 2 DEFAULT HHV OF 0.138 mmBTU/gal THIS VALUE WILL BE USED FOR GHG calcuations- actual emissions

FUEL OIL COMBUSTION EMISSIONS CALCULATOR REVISION G 11/5/2012 - OUTPUT SCREEN

Instructions: Enter emission source / facility data on the "INPUT" tab/screen. The air emission results and summary of input data are viewed / printed on the "OUTPUT" tab/screen. The different tabs are on the bottom of this screen.

This spreadsheet is for your use only and should be used with caution. DENR does not guarantee the accuracy of the information contained. This spreadsheet is subject to continual revision and updating. It is your responsibility to be aware of the most current information available. DENR is not responsible for errors or omissions that may be contained herein.

SOURCE / FACILITY / USER INPUT SUMMARY (FROM INPUT SCREEN)

COMPANY:	Carolina Sunrock	MAX HEAT INPUT:	1.20	MMBTU/HR
FACILITY ID NO.:	0	FUEL HEAT VALUE:	140,000	BTU/GAL
PERMIT NUMBER:	0	HHV for GHG CALCULATIONS:	0.138	mm BTU/GAL
FACILITY CITY:	Burlington	ACTUAL ANNUAL FUEL USAGE:	0	GAL/YR
FACILITY COUNTY:	Caswell	MAXIMUM ANNUAL FUEL USAGE:	75,086	GAL/YR
USER NAME:	Aimee Andrews	MAXIMUM SULFUR CONTENT:	0.0	%
EMISSION SOURCE DESCRIPTION:	No. 2 oil-fired Boiler	**REQUESTED PERMIT LIMITATIONS**		
EMISSION SOURCE ID NO.:	HMA-H1	MAX. FUEL USAGE:	75,086	GAL/YR
		MAX. SULFUR CONTENT:	0.0015	%

TYPE OF CONTROL DEVICES	POLLUTANT	CONTROL EFF.
NONE/OTHER	PM	0
NONE/OTHER	SO2	0
NONE/OTHER	NOx	0

METHOD USED TO COMPUTE ACTUAL GHG EMISSIONS: TIER 1: DEFAULT HIGH HEAT VALUE AND DEFAULT EF

CARBON CONTENT USED FOR GHGS (kg C/gal): CARBON CONTENT NOT USED FOR CALCULATION TIER CHOSEN

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION

AIR POLLUTANT EMITTED	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	ACTUAL EMISSIONS (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	EMISSION FACTOR (lb/10³ gal) uncontrolled	EMISSION FACTOR (lb/10³ gal) controlled
TOTAL PARTICULATE MATTER (PM) (FPM+CPM)	0.03	0.00	0.03	0.12	0.03	0.12	3.30E+00	3.30E+00
FILTERABLE PM (FPM)	0.02	0.00	0.02	0.08	0.02	0.08	2.00E+00	2.00E+00
CONDENSABLE PM (CPM)	0.01	0.00	0.01	0.05	0.01	0.05	1.30E+00	1.30E+00
FILTERABLE PM<10 MICRONS (PM_{10})	0.01	0.00	0.01	0.04	0.01	0.04	1.00E+00	1.00E+00
FILTERABLE PM<2.5 MICRONS ($PM_{2.5}$)	0.00	0.00	0.00	0.01	0.00	0.01	2.50E-01	2.50E-01
SULFUR DIOXIDE (SO_2)	0.00	0.00	0.00	0.01	0.00	0.01	2.13E-01	2.13E-01
NITROGEN OXIDES (NO_x)	0.17	0.00	0.17	0.75	0.17	0.75	2.00E+01	2.00E+01
CARBON MONOXIDE (CO)	0.04	0.00	0.04	0.19	0.04	0.19	5.00E+00	5.00E+00
VOLATILE ORGANIC COMPOUNDS (VOC)	0.00	0.00	0.00	0.01	0.00	0.01	2.00E-01	2.00E-01
LEAD	0.00	0.00	0.00	0.00	0.00	0.00	1.26E-03	1.26E-03

TOXIC / HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION

TOXIC / HAZARDOUS AIR POLLUTANT		CAS NUMBER	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/yr	EMISSION FACTOR (lb/10³ gal) uncontrolled	EMISSION FACTOR (lb/10³ gal) controlled
Antimony Unlisted Compounds	(H)	SBC-Other	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.00E+00	0.00E+00
Arsenic Unlisted Compounds	(TH)	ASC-Other	4.8E-06	0.0E+00	4.8E-06	4.2E-02	4.8E-06	4.2E-02	5.60E-04	5.60E-04
Benzene	(TH)	71432	2.4E-05	0.0E+00	2.4E-05	2.1E-01	2.4E-05	2.1E-01	2.75E-03	2.75E-03
Beryllium Metal (unreacted)	(TH)	7440417	3.6E-06	0.0E+00	3.6E-06	3.2E-02	3.6E-06	3.2E-02	4.20E-04	4.20E-04
Cadium Metal (elemental unreacted)	(TH)	7440439	3.6E-06	0.0E+00	3.6E-06	3.2E-02	3.6E-06	3.2E-02	4.20E-04	4.20E-04
Chromic Acid (VI)	(TH)	7738945	3.6E-06	0.0E+00	3.6E-06	3.2E-02	3.6E-06	3.2E-02	4.20E-04	4.20E-04
Cobalt Unlisted Compounds	(H)	COC-Other	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.00E+00	0.00E+00
Ethylbenzene	(H)	100414	7.0E-06	0.0E+00	7.0E-06	6.1E-02	7.0E-06	6.1E-02	8.17E-04	8.17E-04
Fluorides (sum fluoride compounds)	(T)	16984488	3.2E-04	0.0E+00	3.2E-04	2.8E+00	3.2E-04	2.8E+00	3.73E-02	3.73E-02
Formaldehyde	(TH)	50000	4.1E-04	0.0E+00	4.1E-04	3.6E+00	4.1E-04	3.6E+00	4.80E-02	4.80E-02
Lead Unlisted Compounds	(H)	PBC-Other	1.1E-05	0.0E+00	1.1E-05	9.5E-02	1.1E-05	9.5E-02	1.26E-03	1.26E-03
Manganese Unlisted Compounds	(TH)	MNC-Other	7.2E-06	0.0E+00	7.2E-06	6.3E-02	7.2E-06	6.3E-02	8.40E-04	8.40E-04
Mercury, vapor	(TH)	7439976	3.6E-06	0.0E+00	3.6E-06	3.2E-02	3.6E-06	3.2E-02	4.20E-04	4.20E-04
Methyl chloroform	(TH)	71566	2.0E-06	0.0E+00	2.0E-06	1.8E-02	2.0E-06	1.8E-02	2.36E-04	2.36E-04
Napthalene	(H)	91203	2.9E-06	0.0E+00	2.9E-06	2.5E-02	2.9E-06	2.5E-02	3.33E-04	3.33E-04
Nickle Metal	(TH)	7440020	3.6E-06	0.0E+00	3.6E-06	3.2E-02	3.6E-06	3.2E-02	4.20E-04	4.20E-04
Phosphorus Metal, Yellow or White	(H)	7723140	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.00E+00	0.00E+00
POM rates uncontrolled	(H)	POM	2.8E-05	0.0E+00	2.8E-05	2.5E-01	2.8E-05	2.5E-01	3.30E-03	3.30E-03
Selenium compounds	(H)	SEC	1.8E-05	0.0E+00	1.8E-05	1.6E-01	1.8E-05	1.6E-01	2.10E-03	2.10E-03
Toluene	(TH)	108883	6.8E-04	0.0E+00	6.8E-04	6.0E+00	6.8E-04	6.0E+00	7.97E-02	7.97E-02
Xylene	(TH)	1330207	1.2E-05	0.0E+00	1.2E-05	1.1E-01	1.2E-05	1.1E-01	1.40E-03	1.40E-03
Total HAP	(H)		1.2E-03	0.0E+00	1.2E-03	1.1E+01	1.2E-03	1.1E+01	1.4E-01	1.4E-01
Largest HAP	(H)		6.83E-04	0.00E+00	6.83E-04	5.98E+00	6.83E-04	5.98E+00	7.97E-02	7.97E-02

TOXIC AIR POLLUTANT EMISSIONS INFORMATION (FOR PERMITTING PURPOSES)

TOXIC AIR POLLUTANT		CAS Num.	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr	EMISSION FACTOR (lb/10³ gal) uncontrolled	EMISSION FACTOR (lb/10³ gal) controlled
Arsenic Unlisted Compounds	(TH)	ASC-Other	4.80E-06	1.15E-04	4.20E-02	5.60E-04	5.60E-04
Benzene	(TH)	71432	2.36E-05	5.66E-04	2.06E-01	2.75E-03	2.75E-03
Beryllium Metal (unreacted)	(TH)	7440417	3.60E-06	8.64E-05	3.15E-02	4.20E-04	4.20E-04
Cadium Metal (elemental unreacted)	(TH)	7440439	3.60E-06	8.64E-05	3.15E-02	4.20E-04	4.20E-04
Soluble chromate compounds, as chromium (VI) e	(TH)	SolCR6	3.60E-06	8.64E-05	3.15E-02	4.20E-04	4.20E-04
Fluorides (sum fluoride compounds)	(T)	16984488	3.20E-04	7.67E-03	2.80E+00	3.73E-02	3.73E-02
Formaldehyde	(TH)	50000	4.11E-04	9.87E-03	3.60E+00	4.80E-02	4.80E-02
Manganese Unlisted Compounds	(TH)	MNC-Other	7.20E-06	1.73E-04	6.31E-02	8.40E-04	8.40E-04
Mercury, vapor	(TH)	7439976	3.60E-06	8.64E-05	3.15E-02	4.20E-04	4.20E-04
Methyl chloroform	(TH)	71566	2.02E-06	4.85E-05	1.77E-02	2.36E-04	2.36E-04
Nickle Metal	(TH)	7440020	3.60E-06	8.64E-05	3.15E-02	4.20E-04	4.20E-04
Toluene	(TH)	108883	6.83E-04	1.64E-02	5.98E+00	7.97E-02	7.97E-02
Xylene	(TH)	1330207	1.20E-05	2.88E-04	1.05E-01	1.40E-03	1.40E-03

GREENHOUSE GAS EMISSIONS INFORMATION (FOR EMISSIONS INVENTORY PURPOSES) - CONSISTENT WITH EPA MANDATORY REPORTING RULE (MRR) METHOD

GHG - POTENTIAL TO EMIT NOT BASED ON EPA MRR METHOD

Distillate Fuel Oil No. 2

GREENHOUSE GAS POLLUTANT	ACTUAL EMISSIONS — EPA MRR CALCULATION METHOD: TIER 1 metric tons/yr	ACTUAL EMISSIONS metric tons/yr, CO2e	ACTUAL EMISSIONS short tons/yr	POTENTIAL EMISSIONS - utilize max heat input capacity and EPA MRR Emission Factors short tons/yr	POTENTIAL EMISSIONS - utilize max heat input capacity and EPA MRR Emission Factors short tons/yr, CO2e	POTENTIAL EMISSIONS With Requested Emission Limitation - utilize requested fuel limit and EPA MRR Emission Factors short tons/yr	POTENTIAL EMISSIONS With Requested Emission Limitation - utilize requested fuel limit and EPA MRR Emission Factors short tons/yr, CO2e
CARBON DIOXIDE (CO_2)	0.00	0.00	0.00	857.01	857.01	857.01	857.01
METHANE (CH_4)	0.00E+00	0.00E+00	0.00E+00	3.48E-02	7.30E-01	3.48E-02	7.30E-01
NITROUS OXIDE (N_2O)	0.00E+00	0.00E+00	0.00E+00	6.95E-03	2.16E+00	6.95E-03	2.16E+00
	TOTAL	**0.00**		TOTAL	**859.90**	TOTAL	**859.90**

NOTES: 1) CO2e means CO2 equivalent

2) The DAQ Air Emissions Reporting Online (AERO) system requires short tons and the EPA MRR requires metric tons

FUEL OIL COMBUSTION EMISSIONS CALCULATOR REVISION G 11/5/2012 - INPUT SCREEN

NCDENR

Instructions: Enter emission source / facility data on the "INPUT" tab/screen. The air emission results and summary of input data are viewed / printed on the "OUTPUT" tab/screen. The different tabs are on the bottom of this screen.

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Directions: Enter and select information in the boxes that are highlighted in blue:

COMPANY NAME:	Carolina Sunrock LLC
FACILITY ID NUMBER:	
PERMIT NUMBER	
FACILITY CITY:	Burlington
FACILITY COUNTY:	Caswell
SPREADSHEET PREPARED BY:	Aimee Andrews
EMISSION SOURCE DESCRIPTION:	No. 2 oil-fired Boiler
EMISSION SOURCE ID NO.:	HMA-H2
LATEST CONSTRUCTION/MODIFICATION DATE:	2021
SELECT THE TYPE OF BOILER FROM THE LISTS BELOW:	26

Boilers=>100 mmBtu/hr

1 = No. 6 oil-fired, normal firing (U)
2 = No. 6 oil-fired, normal firing (I)
3 = No. 6 oil-fired, normal firing (C)
4 = No. 6 oil-fired, normal firing, low Nox burner (U)
5 = No. 6 oil-fired, normal firing, low Nox burner (I)
6 = No. 6 oil-fired, normal firing, low Nox burner (C)
7 = No. 6 oil-fired, tangential firing (U)
8 = No. 6 oil fired, tangential firing, low Nox burner (U)
9 = No. 5 oil-fired, normal firing (U)
10 = No. 5 oil-fired, normal firing (I)
11 = No. 5 oil-fired, tangential firing (U)
12 = No. 4 oil-fired, normal firing (U)
13 = No. 4 oil-fired, normal firing (I)
14 = No. 4 oil-fired, tangential firing (U)
15 = No. 2 oil-fired (U)
16 = No. 2 oil-fired (I)

Boilers=>100 mmBtu/hr (cont'd)

17 = No. 2 oil-fired (C)
18 = No. 2 oil-fired, LNB/FGR (U)
19 = No. 2 oil-fired, LNB/FGR (I)
20 = No. 2 oil-fired, LNB/FGR (C)
21 = Vertical fired utility boiler

Small Boilers <100 mmBtu/hr

22 = No. 6 oil-fired (I)
23 = No. 6 oil-fired (C)
24 = No. 5 oil-fired (C)
25 = No. 4 oil-fired (C)
26 = No. 2 oil-fired (I)
27 = No. 2 oil-fired (C)
28 = Residential Furnace

Note: The emission factors for fuel oil-fired boilers depend on the boiler size and application type. In the listing of boiler types, the following notation is used: U = Utility boilers (producing steam for the generation of electricity), I = Industrial boilers (generating steam or hot water for process heat, electricity generation, or space heat), C = Commercial or institutional (used for space heating of commercial or instutional facilities) and residential (furnaces used for space heating purposes). Please be sure to select the proper boiler from the lists above.

EMISSION SOURCE INPUT DATA

MAXIMUM HEAT INPUT (MILLION BTU PER HOUR):	1.10	MMBTU/HR
ACTUAL ANNUAL FUEL USAGE (GALLONS PER YEAR):		GAL/YR
MAXIMUM ANNUAL FUEL USAGE (GALLONS PER YEAR)	68,828.6	GAL/YR
MAXIMUM FUEL SULFUR CONTENT (%):	0.00	% - (TYPEOVER IF NECESSARY - DEFAULT VALUE = 2.1 FOR RESIDUAL FUEL OIL OR 0.5 FOR DISTILLATE FUEL OIL)

FUEL HEATING VALUE

FUEL HEATING VALUE (BTU/GAL): 140,000 BTU/GAL

DEFAULT WILL APPEAR AS FOLLOWS (not used for Greenhouse Gas calcs --See below for GHG defaults):
150,000 BTU/GAL FOR No. 6, 5, and 4 FUEL OIL
140,000 BTU/GAL ALL OTHERS
(TYPE OVER NUMBER AT RIGHT IF YOU HAVE SITE SPECIFIC DATA)

CONTROL DEVICE INPUT DATA

Note: Select the type of control devices from the pull-down menus below. Default control effiencies will appear for each control device that is selected. The user may enter a different control efficiency to override these values if site specific data is available.

TYPE OF PARTICULATE CONTROL: NONE/OTHER	AVERAGE PARTICULATE CONTROL EFF.: 0
TYPE OF POSTCOMBUSTION SULFUR DIOXIDE CONTROL: NONE/OTHER	AVERAGE SULFUR DIOXIDE CONTROL EFF.: 0
TYPE OF NITROGEN OXIDE CONTROL: NONE/OTHER	AVERAGE NITROGEN OXIDE CONTROL EFF.: 0

REQUESTED PERMIT LIMITATIONS (IF APPLICABLE)

REQUESTED MAXIMUM FUEL USAGE LIMIT (GALLONS PER YEAR)	68,828.6	GAL/YR
REQUESTED MAXIMUM FUEL SULFUR CONTENT (%)	0.00	%

(TYPEOVER IF NECESSARY - DEFAULT VALUES ARE THE CALCULATED POTENTIAL AND THE MAXIMUM SULFUR CONTENT AS SHOWN IN THE EMISSION SOURCE INPUT DATA SECTION)

ADDITIONAL INFORMATION FOR GREENHOUSE GAS EMISSIONS

ENTER CALCULATION TIER
from EPA Mandatory Reporting Rule (MRR) Subpart C -
www.epa.gov/climatechange/emissions/ghgrulemaking.html
NOTE: EF is "Emission Factor"

TIER 1: DEFAULT HIGH HEAT VALUE AND DEFAULT EF

SINCE TIER 3 IS NOT BEING USED,
FUEL CARBON CONTENT WILL NOT BE USED

2.7600 kg Carbon/gal

SELECT FUEL TYPE: Distillate Fuel Oil No. 2

HIGH HEAT VALUE (HHV) FOR GHGs

FOR TIER 1 and TIER 3, the FUEL HEATING VALUE entered above is overriden with the EPA DEFAULT from Table C-1 of the EPA MRR:

Distillate Fuel Oil No. 2	0.138 mmBTU/gal	THIS VALUE WILL BE USED FOR GHG calcuations- actual emissions
Distillate Fuel Oil No. 4	0.146 mmBTU/gal	
Residual Fuel Oil No. 5	0.14 mmBTU/gal	
Residual Fuel Oil No. 6	0.15 mmBTU/gal	

FOR TIER 2, the FUEL HEATING VALUE entered above is used. The value entered must be the annual average HHV of the fuel determined using procedures in the EPA MRR (see 98.33(a)(2))

Distillate Fuel Oil No. 2 DEFAULT HHV OF 0.138 mmBTU/gal THIS VALUE WILL BE USED FOR GHG calcuations- actual emissions

FUEL OIL COMBUSTION EMISSIONS CALCULATOR REVISION G 11/5/2012 - OUTPUT SCREEN

Instructions: Enter emission source / facility data on the "INPUT" tab/screen. The air emission results and summary of input data are viewed / printed on the "OUTPUT" tab/screen. The different tabs are on the bottom of this screen.

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SOURCE / FACILITY / USER INPUT SUMMARY (FROM INPUT SCREEN)

COMPANY:	Carolina Sunrock LLC	MAX HEAT INPUT:	1.10	MMBTU/HR
FACILITY ID NO.:	0	FUEL HEAT VALUE:	140,000	BTU/GAL
PERMIT NUMBER:	0	HHV for GHG CALCULATIONS:	0.138	mm BTU/GAL
FACILITY CITY:	Burlington	ACTUAL ANNUAL FUEL USAGE:	0	GAL/YR
FACILITY COUNTY:	Caswell	MAXIMUM ANNUAL FUEL USAGE:	68,829	GAL/YR
USER NAME:	Aimee Andrews	MAXIMUM SULFUR CONTENT:	0.0	%
EMISSION SOURCE DESCRIPTION:	No. 2 oil-fired Boiler	**REQUESTED PERMIT LIMITATIONS**		
EMISSION SOURCE ID NO.:	HMA-H2	MAX. FUEL USAGE:	68,829	GAL/YR
		MAX. SULFUR CONTENT:	0.0015	%

TYPE OF CONTROL DEVICES	POLLUTANT	CONTROL EFF.
NONE/OTHER	PM	0
NONE/OTHER	SO2	0
NONE/OTHER	NOx	0

METHOD USED TO COMPUTE ACTUAL GHG EMISSIONS: TIER 1: DEFAULT HIGH HEAT VALUE AND DEFAULT EF

CARBON CONTENT USED FOR GHGS (kg C/gal): CARBON CONTENT NOT USED FOR CALCULATION TIER CHOSEN

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION

AIR POLLUTANT EMITTED	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	ACTUAL EMISSIONS (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	EMISSION FACTOR (lb/10³ gal) uncontrolled	EMISSION FACTOR (lb/10³ gal) controlled
TOTAL PARTICULATE MATTER (PM) (FPM+CPM)	0.03	0.00	0.03	0.11	0.03	0.11	3.30E+00	3.30E+00
FILTERABLE PM (FPM)	0.02	0.00	0.02	0.07	0.02	0.07	2.00E+00	2.00E+00
CONDENSABLE PM (CPM)	0.01	0.00	0.01	0.04	0.01	0.04	1.30E+00	1.30E+00
FILTERABLE PM<10 MICRONS (PM_{10})	0.01	0.00	0.01	0.03	0.01	0.03	1.00E+00	1.00E+00
FILTERABLE PM<2.5 MICRONS ($PM_{2.5}$)	0.00	0.00	0.00	0.01	0.00	0.01	2.50E-01	2.50E-01
SULFUR DIOXIDE (SO_2)	0.00	0.00	0.00	0.01	0.00	0.01	2.13E-01	2.13E-01
NITROGEN OXIDES (NO_x)	0.16	0.00	0.16	0.69	0.16	0.69	2.00E+01	2.00E+01
CARBON MONOXIDE (CO)	0.04	0.00	0.04	0.17	0.04	0.17	5.00E+00	5.00E+00
VOLATILE ORGANIC COMPOUNDS (VOC)	0.00	0.00	0.00	0.01	0.00	0.01	2.00E-01	2.00E-01
LEAD	0.00	0.00	0.00	0.00	0.00	0.00	1.26E-03	1.26E-03

TOXIC / HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION

TOXIC / HAZARDOUS AIR POLLUTANT		CAS NUMBER	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/yr	EMISSION FACTOR (lb/10³ gal) uncontrolled	EMISSION FACTOR (lb/10³ gal) controlled
Antimony Unlisted Compounds	(H)	SBC-Other	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.00E+00	0.00E+00
Arsenic Unlisted Compounds	(TH)	ASC-Other	4.4E-06	0.0E+00	4.4E-06	3.9E-02	4.4E-06	3.9E-02	5.60E-04	5.60E-04
Benzene	(TH)	71432	2.2E-05	0.0E+00	2.2E-05	1.9E-01	2.2E-05	1.9E-01	2.75E-03	2.75E-03
Beryllium Metal (unreacted)	(TH)	7440417	3.3E-06	0.0E+00	3.3E-06	2.9E-02	3.3E-06	2.9E-02	4.20E-04	4.20E-04
Cadium Metal (elemental unreacted)	(TH)	7440439	3.3E-06	0.0E+00	3.3E-06	2.9E-02	3.3E-06	2.9E-02	4.20E-04	4.20E-04
Chromic Acid (VI)	(TH)	7738945	3.3E-06	0.0E+00	3.3E-06	2.9E-02	3.3E-06	2.9E-02	4.20E-04	4.20E-04
Cobalt Unlisted Compounds	(H)	COC-Other	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.00E+00	0.00E+00
Ethylbenzene	(H)	100414	6.4E-06	0.0E+00	6.4E-06	5.6E-02	6.4E-06	5.6E-02	8.17E-04	8.17E-04
Fluorides (sum fluoride compounds)	(T)	16984488	2.9E-04	0.0E+00	2.9E-04	2.6E+00	2.9E-04	2.6E+00	3.73E-02	3.73E-02
Formaldehyde	(TH)	50000	3.8E-04	0.0E+00	3.8E-04	3.3E+00	3.8E-04	3.3E+00	4.80E-02	4.80E-02
Lead Unlisted Compounds	(H)	PBC-Other	9.9E-06	0.0E+00	9.9E-06	8.7E-02	9.9E-06	8.7E-02	1.26E-03	1.26E-03
Manganese Unlisted Compounds	(TH)	MNC-Other	6.6E-06	0.0E+00	6.6E-06	5.8E-02	6.6E-06	5.8E-02	8.40E-04	8.40E-04
Mercury, vapor	(TH)	7439976	3.3E-06	0.0E+00	3.3E-06	2.9E-02	3.3E-06	2.9E-02	4.20E-04	4.20E-04
Methyl chloroform	(TH)	71566	1.9E-06	0.0E+00	1.9E-06	1.6E-02	1.9E-06	1.6E-02	2.36E-04	2.36E-04
Napthalene	(H)	91203	2.6E-06	0.0E+00	2.6E-06	2.3E-02	2.6E-06	2.3E-02	3.33E-04	3.33E-04
Nickle Metal	(TH)	7440020	3.3E-06	0.0E+00	3.3E-06	2.9E-02	3.3E-06	2.9E-02	4.20E-04	4.20E-04
Phosphorus Metal, Yellow or White	(H)	7723140	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.00E+00	0.00E+00
POM rates uncontrolled	(H)	POM	2.6E-05	0.0E+00	2.6E-05	2.3E-01	2.6E-05	2.3E-01	3.30E-03	3.30E-03
Selenium compounds	(H)	SEC	1.7E-05	0.0E+00	1.7E-05	1.4E-01	1.7E-05	1.4E-01	2.10E-03	2.10E-03
Toluene	(TH)	108883	6.3E-04	0.0E+00	6.3E-04	5.5E+00	6.3E-04	5.5E+00	7.97E-02	7.97E-02
Xylene	(TH)	1330207	1.1E-05	0.0E+00	1.1E-05	9.6E-02	1.1E-05	9.6E-02	1.40E-03	1.40E-03
Total HAP	(H)		1.1E-03	0.0E+00	1.1E-03	9.9E+00	1.1E-03	9.9E+00	1.4E-01	1.4E-01
Largest HAP	(H)		6.26E-04	0.00E+00	6.26E-04	5.48E+00	6.26E-04	5.48E+00	7.97E-02	7.97E-02

TOXIC AIR POLLUTANT EMISSIONS INFORMATION (FOR PERMITTING PURPOSES)

TOXIC AIR POLLUTANT		CAS Num.	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr	EMISSION FACTOR (lb/10³ gal) uncontrolled	EMISSION FACTOR (lb/10³ gal) controlled
Arsenic Unlisted Compounds	(TH)	ASC-Other	4.40E-06	1.06E-04	3.85E-02	5.60E-04	5.60E-04
Benzene	(TH)	71432	2.16E-05	5.19E-04	1.89E-01	2.75E-03	2.75E-03
Beryllium Metal (unreacted)	(TH)	7440417	3.30E-06	7.92E-05	2.89E-02	4.20E-04	4.20E-04
Cadium Metal (elemental unreacted)	(TH)	7440439	3.30E-06	7.92E-05	2.89E-02	4.20E-04	4.20E-04
Soluble chromate compounds, as chromium (VI)	(TH)	SolCR6	3.30E-06	7.92E-05	2.89E-02	4.20E-04	4.20E-04
Fluorides (sum fluoride compounds)	(T)	16984488	2.93E-04	7.03E-03	2.57E+00	3.73E-02	3.73E-02
Formaldehyde	(TH)	50000	3.77E-04	9.05E-03	3.30E+00	4.80E-02	4.80E-02
Manganese Unlisted Compounds	(TH)	MNC-Other	6.60E-06	1.58E-04	5.78E-02	8.40E-04	8.40E-04
Mercury, vapor	(TH)	7439976	3.30E-06	7.92E-05	2.89E-02	4.20E-04	4.20E-04
Methyl chloroform	(TH)	71566	1.85E-06	4.45E-05	1.62E-02	2.36E-04	2.36E-04
Nickle Metal	(TH)	7440020	3.30E-06	7.92E-05	2.89E-02	4.20E-04	4.20E-04
Toluene	(TH)	108883	6.26E-04	1.50E-02	5.48E+00	7.97E-02	7.97E-02
Xylene	(TH)	1330207	1.10E-05	2.64E-04	9.64E-02	1.40E-03	1.40E-03

GREENHOUSE GAS EMISSIONS INFORMATION (FOR EMISSIONS INVENTORY PURPOSES) - CONSISTENT WITH EPA MANDATORY REPORTING RULE (MRR) METHOD

GHG - POTENTIAL TO EMIT NOT BASED ON EPA MRR METHOD

Distillate Fuel Oil No. 2	ACTUAL EMISSIONS			POTENTIAL EMISSIONS - utilize max heat input capacity and EPA MRR Emission Factors		POTENTIAL EMISSIONS With Requested Emission Limitation - utilize requested fuel limit and EPA MRR Emission Factors	
GREENHOUSE GAS POLLUTANT	EPA MRR CALCULATION METHOD: TIER 1						
	metric tons/yr	metric tons/yr, CO2e	short tons/yr	short tons/yr	short tons/yr, CO2e	short tons/yr	short tons/yr, CO2e
CARBON DIOXIDE (CO_2)	0.00	0.00	0.00	785.59	785.59	785.59	785.59
METHANE (CH_4)	0.00E+00	0.00E+00	0.00E+00	3.19E-02	6.69E-01	3.19E-02	6.69E-01
NITROUS OXIDE (N_2O)	0.00E+00	0.00E+00	0.00E+00	6.37E-03	1.98E+00	6.37E-03	1.98E+00
	TOTAL	**0.00**		TOTAL	**788.24**	TOTAL	**788.24**

NOTES: 1) CO2e means CO2 equivalent

2) The DAQ Air Emissions Reporting Online (AERO) system requires short tons and the EPA MRR requires metric tons

CONCRETE BATCH PLANT EMISSIONS CALCULATOR - INPUT SCREEN

REVISION D; October 15, 2015

Instructions: Enter emission source / facility data on the "INPUT" tab/screen. The air emission results and summary of input data are viewed / printed on the "OUTPUT" tab/screen. The different tabs are on the bottom of this screen.

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Directions: Enter and select information in the boxes that are highlighted in blue:

General Facility Information

COMPANY NAME:	Carolina Sunrock LLC
FACILITY ID NUMBER:	TBD
PERMIT NUMBER	TBD
FACILITY CITY:	Prospect Hill
FACILITY COUNTY:	Caswell
SPREADSHEET PREPARED BY:	Scott Martino

General Facility Information

MAXIMUM HOURLY THROUGHPUT AT TRUCK LOAD OUT	120	(yd^3/hour)
ACTUAL ANNUAL PRODUCTION	1,051,200	(yd^3/year)
MAXIMUM ANNUAL PRODUCTION*	1,051,200	(yd^3/year)

*Default maximum annual production is maximum hourly throughput times 8,760 hours per year. Enter another limit if applicable (i.e. for arsenic modeling).

Facility Production Information

PERCENT OF ANNUAL LOADOUT THROUGH TRUCK MIX	100	(% by volume)
PERCENT OF ANNUAL LOADOUT THROUGH CENTRAL MIX	0	(% by volume)

Facility Emissions Control Information

IS THERE A CONTROL DEVICE ON THE TRUCK MIX?	2	(1=No, 2=Yes)
IS THERE A CONTROL DEVICE ON THE CENTRAL MIX?	1	(1=No, 2=Yes)

Material Composition Information

			Typical NC Comp.*
Cement	448	lbs	*410 lbs*
Supplement	148	lbs	*120 lbs*
Coarse Aggregate	1980	lbs	*1884 lbs*
Sand	1440	lbs	*1443 lbs*
Water	140	lbs	*167 lbs*
Total	4156	lbs	*4024 lbs*

** North Carolina typical material composition is based on data from industry contacts. User may enter site-specific data.*

15A NCAC 2D .0515 "Particulates from Miscellaneous Industrial Processes"

	Cement Silo	Flyash silo	Sand&Agg Weigh hopper	Truck mix[1]	Central mix[1]	
Enter the process rate if different from default, otherwise leave blank						
Process Rate[2]	25	25	205.200	240.96	0.000	tons/hr
Maximum Allowable Emission Rate[3]	35.4	35.4	58.8	60.5	0.0	lbs/hr
PM Emission Rate Before controls	18.250	78.500	0.985	52.210	0.000	lbs/hr
PM Emission Rate After Controls	0.025	0.223	0.001	1.001	0.000	lbs/hr
Assumed control device efficiency for weigh hopper[4]			99.9%			
Complies with 2D .0515?	yes	yes	yes	yes	yes	
Control device required to comply?	no	yes	no	no	no	

[1] *Emission factors for truck/central mix include emissions from cement & supplement weigh hoppers.*

[2] *Default process rate for silo loading is 25 tons per hour. Default process weight for sand & aggr weigh hopper includes only aggr & sand. Default process rate for truck mix and central mix includes all components except water since assumes water is added directly to truck.*

[3] *Allowable emission rate should be calculated to 3 significant digits.*

[4] *Default efficiency is 99.9% for bagfilters. Enter 0 if weigh hopper is not controlled.*

CONCRETE BATCH PLANT EMISSIONS CALCULATOR - OUTPUT SCREEN

REVISION D; October 15, 2015

NCDENR

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SOURCE / FACILITY / USER INPUT SUMMARY (FROM INPUT SCREEN)

General Facility Information

COMPANY NAME:	**Carolina Sunrock LLC**
FACILITY ID NUMBER:	**TBD**
PERMIT NUMBER	**TBD**
FACILITY CITY:	**Burlington**
FACILITY COUNTY:	**Caswell**
SPREADSHEET PREPARED BY:	**Scott Martino**

General Facility Information

MAXIMUM HOURLY THROUGHPUT AT TRUCK LOAD OUT	**120**	(yd^3/hour)
ACTUAL ANNUAL PRODUCTION	**1051200**	(yd^3/year)

Facility Production Information

PERCENT OF ANNUAL LOADOUT THROUGH TRUCK MIX	**100**	(% by volume)
PERCENT OF ANNUAL LOADOUT THROUGH CENTRAL MIX	**0**	(% by volume)

Facility Emissions Control Information

IS THERE A CONTROL DEVICE ON THE TRUCK MIX?	**2**	(1=No, 2=Yes)
IS THERE A CONTROL DEVICE ON THE CENTRAL MIX?	**1**	(1=No, 2=Yes)

Material Composition Information

			Typical NC Comp.*
Cement	**448**	lbs	*410 lbs*
Supplement	**148**	lbs	*120 lbs*
Coarse Aggregate	**1980**	lbs	*1884 lbs*
Sand	**1440**	lbs	*1443 lbs*
Water	**140**	lbs	*167 lbs*
Total	**4156**	lbs	*4024 lbs*

** North Carolina typical material composition is based on data from industry contacts. User may enter site-specific data.*

PARTICULATE MATTER EMISSIONS INFORMATION

PARTICULATE EMISSIONS	Pollutant	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	ACTUAL EMISSIONS (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
truck mix*	PM	1.001	4.386	52.210	228.678	1.001	4.386
	PM10	0.375	1.645	14.912	65.314	0.375	1.645
central mix*	PM	0.000	0.000	0.000	0.000	0.000	0.000
	PM10	0.000	0.000	0.000	0.000	0.000	0.000
cement silo	PM	0.027	0.117	19.622	85.946	0.027	0.117
	PM10	0.009	0.040	12.634	55.335	0.009	0.040
suppl. Silo	PM	0.079	0.346	27.883	122.128	0.079	0.346
	PM10	0.044	0.191	9.768	42.784	0.044	0.191
weigh hopper** [sand & aggr.]	PM	0.985	4.314	0.985	4.314	0.985	4.314
	PM10	0.575	2.517	0.575	2.517	0.575	2.517
sand & aggr.	PM	3.003	13.155	3.003	13.155	3.003	13.155
	PM10	1.433	6.275	1.433	6.275	1.433	6.275
TOTAL PM	PM	5.095	**22.318**	103.704	**454.222**	5.095	**22.318**
TOTAL PM10	PM10	2.435	**10.667**	39.321	**172.225**	2.435	**10.667**
Title V Potential	PM10						**0.231**

*Truck/Central mix emission factors include emissions from cement & supplement weigh hopper(s).

**Actual/Potential weigh hopper (sand & aggr) emissions assumed uncontrolled since AP-42 reports "no data" for controlled.

CONCRETE BATCH PLANT EMISSIONS CALCULATOR - OUTPUT SCREEN

REVISION D; October 15, 2015

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TOXIC / HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION

POLLUTANT	CAS NUMBER	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS)		POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS)	
		lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
Arsenic Unlisted Compounds (TH)	ASC-OTHER	6.59E-05	5.77E-01	2.49E-03	2.18E+01	6.59E-05	5.77E-01
Beryllium metal (TH)	7440-41-7	4.53E-06	3.97E-02	1.00E-05	8.77E-02	4.53E-06	3.97E-02
Cadmium Metal (TH)	7440-43-9	5.00E-07	4.38E-03	7.69E-06	6.74E-02	5.00E-07	4.38E-03
Chromic Acid (TH)	7738-94-5	1.58E-04	1.39E+00	4.25E-04	3.73E+00	1.58E-04	1.39E+00
Lead Unlisted Compounds (H)	PBC-OTHER	5.96E-05	5.22E-01	1.32E-03	1.16E+01	5.96E-05	5.22E-01
Manganese Unlisted compounds (TH)	MNC-OTHER	7.49E-04	6.56E+00	7.67E-03	6.72E+01	7.49E-04	6.56E+00
Nickel metal (TH)	7440-02-0	1.92E-04	1.68E+00	9.19E-04	8.05E+00	1.92E-04	1.68E+00
Phosphorus Metal Yellow or White (H)	7223-14-0	4.71E-04	4.13E+00	1.72E-03	1.51E+01	4.71E-04	4.13E+00
Selenium compounds (H)	SEC	4.68E-06	4.10E-02	9.43E-05	8.26E-01	4.68E-06	4.10E-02
Total HAPs		1.71E-03	1.49E+01	1.47E-02	1.28E+02	1.71E-03	1.49E+01
Highest HAP Manganese		7.49E-04	6.56E+00	7.67E-03	6.72E+01	7.49E-04	6.56E+00

TOXIC AIR POLLUTANT EMISSIONS INFORMATION (FOR PERMITTING PURPOSES)

EXPECTED EMISSIONS AFTER CONTROLS / LIMITATIONS

(Daily calculations are based on maximum hourly plant capacity operating at 24 hours per day. If over the TPER, the faciltiy should more closely analyze the maximum daily emisions based on actual operation. Annual calculations are based on the actual annual production as entered on the INPUT worksheet.)

POLLUTANT	CAS NUMBER	lb/hr	lb/day	lb/yr	TPER
Arsenic Unlisted Compounds (TH)	ASC-OTHER			0.5769	0.053 lb/yr
Beryllium metal (TH)	7440-41-7			0.040	0.28 lb/yr
Cadmium Metal (TH)	7440-43-9			0.004	0.37 lb/yr
Chromic Acid (TH)	7738-94-5		0.0038		0.013 lb/day
Manganese Unlisted compounds (TH)	MNC-OTHER		0.018		0.63 lb/day
Nickel metal (TH)	7440-02-0		0.005		0.13 lb/day

CONCRETE BATCH PLANT EMISSIONS CALCULATOR - TAP CALCULATIONS

REVISION D; October 15, 2015

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ARSENIC (HAP/TAP) EMISSIONS INFORMATION

ARSENIC EMISSIONS		ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS)		POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS)	
Source	**Pollutant**	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
truck mix	Arsenic	5.69E-05	4.98E-01	2.43E-03	2.13E+01	5.69E-05	4.98E-01
central mix	Arsenic	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
cement silo	Arsenic	1.14E-07	9.98E-04	4.52E-05	3.96E-01	1.14E-07	9.98E-04
supplement silo*	Arsenic	8.88E-06	7.78E-02	8.88E-06	7.78E-02	8.88E-06	7.78E-02
TOTAL	**Arsenic**	**6.59E-05**	**5.77E-01**	**2.49E-03**	**2.18E+01**	**6.59E-05**	**5.77E-01**

(Arsenic TPER: 0.053 lb/yr)

BERYLLIUM (HAP/TAP) EMISSIONS INFORMATION

BERYLLIUM EMISSIONS		ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS)		POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS)	
Source	**Pollutant**	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
truck mix	Beryllium	3.72E-06	3.26E-02	8.73E-06	7.64E-02	3.72E-06	3.26E-02
central mix	Beryllium	-	-	-	-	-	-
cement silo	Beryllium	1.31E-08	1.14E-04	4.81E-07	4.21E-03	1.31E-08	1.14E-04
supplement silo*	Beryllium	8.03E-07	7.03E-03	8.03E-07	7.03E-03	8.03E-07	7.03E-03
TOTAL	**Beryllium**	**4.53E-06**	**3.97E-02**	**1.00E-05**	**8.77E-02**	**4.53E-06**	**3.97E-02**

(Beryllium TPER: 0.28 lb/yr)

CADMIUM (HAP/TAP) EMISSIONS INFORMATION

CADMIUM EMISSIONS		ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS)		POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS)	
Source	**Pollutant**	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
truck mix	Cadmium	3.24E-07	2.84E-03	1.22E-06	1.07E-02	3.24E-07	2.84E-03
central mix	Cadmium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
cement silo	Cadmium	-	-	6.29E-06	5.51E-02	-	-
supplement silo*	Cadmium	1.76E-07	1.54E-03	1.76E-07	1.54E-03	1.76E-07	1.54E-03
TOTAL	**Cadmium**	**5.00E-07**	**4.38E-03**	**7.69E-06**	**6.74E-02**	**5.00E-07**	**4.38E-03**

(Cadmium TPER: 0.37 lb/yr)

CHROMIUM (HAP/TAP) EMISSIONS INFORMATION

CHROMIUM EMISSIONS		ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS)		POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS)	
Source	**Pollutant**	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
truck mix	Chromium	1.47E-04	1.28E+00	4.08E-04	3.57E+00	1.47E-04	1.28E+00
central mix	Chromium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
cement silo	Chromium	7.80E-07	6.83E-03	6.77E-06	5.93E-02	7.80E-07	6.83E-03
supplement silo*	Chromium	1.08E-05	9.49E-02	1.08E-05	9.49E-02	1.08E-05	9.49E-02
TOTAL	**Chromium**	**1.58E-04**	**1.39E+00**	**4.25E-04**	**3.73E+00**	**1.58E-04**	**1.39E+00**

(Chromium TPER: 0.013 lb/day)

CONCRETE BATCH PLANT EMISSIONS CALCULATOR - TAP CALCULATIONS

REVISION D; October 15, 2015

NCDENR

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LEAD (HAP) EMISSIONS INFORMATION

LEAD EMISSIONS		ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS)		(AFTER CONTROLS / LIMITS)	
Source	**Pollutant**	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
truck mix	Lead	5.47E-05	4.79E-01	1.29E-03	1.13E+01	5.47E-05	4.79E-01
central mix	Lead	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
cement silo	Lead	2.93E-07	2.57E-03	1.98E-05	1.73E-01	2.93E-07	2.57E-03
supplement silo*	Lead	4.62E-06	4.05E-02	4.62E-06	4.05E-02	4.62E-06	4.05E-02
TOTAL	**Lead**	**5.96E-05**	**5.22E-01**	**1.32E-03**	**1.16E+01**	**5.96E-05**	**5.22E-01**

MANGANESE (HAP/TAP) EMISSIONS INFORMATION

MANGANESE EMISSIONS		ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS)		(AFTER CONTROLS / LIMITS)	
Source	**Pollutant**	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
truck mix	Manganese	7.44E-04	6.52E+00	2.19E-03	1.92E+01	7.44E-04	6.52E+00
central mix	Manganese	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
cement silo	Manganese	3.14E-06	2.75E-02	5.48E-03	4.80E+01	3.14E-06	2.75E-02
supplement silo*	Manganese	2.27E-06	1.99E-02	2.27E-06	1.99E-02	2.27E-06	1.99E-02
TOTAL	**Manganese**	**7.49E-04**	**6.56E+00**	**7.67E-03**	**6.72E+01**	**7.49E-04**	**6.56E+00**

(Manganese TPER: 0.63 lb/day)

NICKEL (HAP/TAP) EMISSIONS INFORMATION

NICKEL EMISSIONS		ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS)		(AFTER CONTROLS / LIMITS)	
Source	**Pollutant**	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
truck mix	Nickel	1.71E-04	1.50E+00	4.26E-04	3.73E+00	1.71E-04	1.50E+00
central mix	Nickel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
cement silo	Nickel	1.12E-06	9.84E-03	4.73E-04	4.14E+00	1.12E-06	9.84E-03
supplement silo*	Nickel	2.02E-05	1.77E-01	2.02E-05	1.77E-01	2.02E-05	1.77E-01
TOTAL	**Nickel**	**1.92E-04**	**1.68E+00**	**9.19E-04**	**8.05E+00**	**1.92E-04**	**1.68E+00**

(Nickel TPER: 0.13 lb/day)

PHOSPHORUS (HAP) EMISSIONS INFORMATION

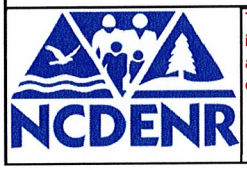
PHOSPHORUS EMISSIONS		ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS)		(AFTER CONTROLS / LIMITS)	
Source	**Pollutant**	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
truck mix	Phosphorus	4.40E-04	3.85E+00	1.37E-03	1.20E+01	4.40E-04	3.85E+00
central mix	Phosphorus	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
cement silo	Phosphorus	-	-	3.17E-04	2.78E+00	-	-
supplement silo*	Phosphorus	3.14E-05	2.75E-01	3.14E-05	2.75E-01	3.14E-05	2.75E-01
TOTAL	**Phosphorus**	**4.71E-04**	**4.13E+00**	**1.72E-03**	**1.51E+01**	**4.71E-04**	**4.13E+00**

SELENIUM (HAP) EMISSIONS INFORMATION

SELENIUM EMISSIONS		ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS)		(AFTER CONTROLS / LIMITS)	
Source	**Pollutant**	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
truck mix	Selenium	4.04E-06	3.54E-02	9.37E-05	8.21E-01	4.04E-06	3.54E-02
central mix	Selenium	-	-	-	-	-	-
cement silo	Selenium	-	-	-	-	-	-
supplement silo*	Selenium	6.43E-07	5.63E-03	6.43E-07	5.63E-03	6.43E-07	5.63E-03
TOTAL	**Selenium**	**4.68E-06**	**4.10E-02**	**9.43E-05**	**8.26E-01**	**4.68E-06**	**4.10E-02**

CONCRETE BATCH PLANT EMISSIONS CALCULATOR - TAP CALCULATIONS

REVISION D; October 15, 2015



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*The before controls potential emissions for the supplement silo are based on after controls since the AP-42 shows "no data" for before controls emission factors for HAPs.

APPENDIX B. ORIGINAL TAP DISPERSION MODELING BY RTP ENVIRONMENTAL

15A NCAC 02Q .0700 Toxic Air Pollutant Procedures

Under the North Carolina air toxics regulations, facility-wide modeling and permitting is required if total facility-wide emissions of air toxics emitted from non-exempt, new or modified emission units exceed the toxic pollutant de minimis emission rates (a.k.a., "TPERS") established under the 15A NCAC 02Q .0700 regulations.

For the proposed facility, modeling is triggered for the following pollutants since total facility wide emissions exceed the respective TPERs: arsenic, benzene, formaldehyde, mercury, cadmium and nickel. Sunrock is submitting this air dispersion modeling analysis and requests TAP limits be added to the permit according to the following table.

TAP Permit Limits for the Project

Emission Point	Source Description	Arsenic (lb/yr)	Benzene (lb/yr)	Cadmium (lb/yr	Formal-dehyde (lb/hr)	Mercury (lb/day)	Nickel (lb/day)
CD1	Hot Mix Asphalt	14.37	7,752.60	62.02	40.50	0.58	5.90
CD2	Concrete Batch Plant	6.77		0.30			0.07
ESH2	Asphalt Heater	0.49	0.19	2.17	0.01	0.00	0.00
ESH1	Liquid Asphalt Heater	0.45	0.18	1.99	0.01	0.00	0.00
F1	Asphalt Silo	0.00	42.05	0.00	0.04	0.00	0.00
F2	Cement Silo	0.35	0.00	0.00	0.00	0.00	0.00

TOXIC AIR POLLUTANT MODELING ANALYSIS FOR THE PROPOSED CAROLINA SUNROCK HOT MIX ASPHALT AND CONCRETE BATCH PLANT IN CASWELL COUNTY NORTH CAROLINA

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Raleigh, NC 27609

September 2019

Table of Contents

Tables and Figures

1.0 INTRODUCTION

Carolina Sunrock LLC ("Sunrock") is proposing to construct a greenfield hot mix asphalt and concrete batch plant in Caswell County North Carolina. The proposed construction will result in emissions of six regulated North Carolina Toxic Air Pollutant ("TAP") pollutants. Modeling of these six pollutants has been conducted to demonstrate compliance with the Acceptable Ambient Levels ("AALs") of 15A NCAC 2D.1104. The modeled emissions have been established at levels to allow for facility operational flexibility by backcalculating the maximum emission rate for each source which allows for compliance with the AAL. Sunrock requests that the TAP permit limits be reestablished at the modeled compliant rates found in Table 2 of this report.

The modeling analyses presented herein conforms with the procedures specified in the Guidelines for Evaluating the Air Quality Impacts of Toxic Pollutants in North Carolina.[1]

[1] Guidelines for Evaluating the Air Quality Impacts of Toxic Pollutants in North Carolina, North Carolina Department of Environment and Natural Resources, Division of Air Quality Section. July 2017.

2.0 FACILITY LOCATION AND SITE DESCRIPTION

The Sunrock facility will be in southern Caswell county, along North Carolina Highway 62, approximately 11 miles northeast of Burlington on US 1. The approximate Universal Transverse Mercator (UTM) coordinates of the facility are 650,208m east and 4,013,069m north (NAD 83, Zone 17) at an elevation of 200m above mean sea level. Figure 1 shows the general location of the facility. Figure 2 shows the more specific facility location on the USGS 7.5 minute USGS quadrangles.

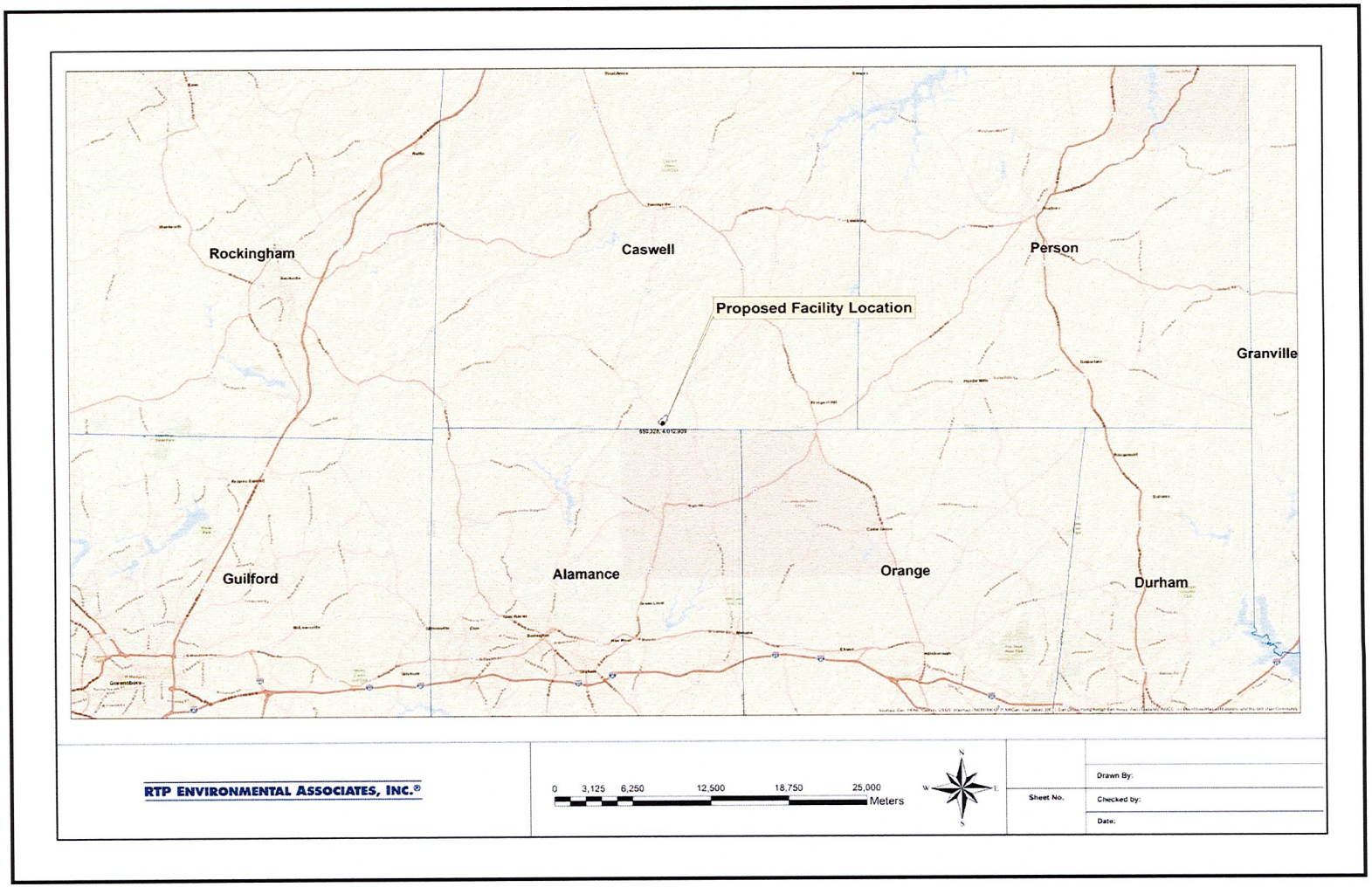

Figure 1. General Location of the Sunrock Burlington North Facility

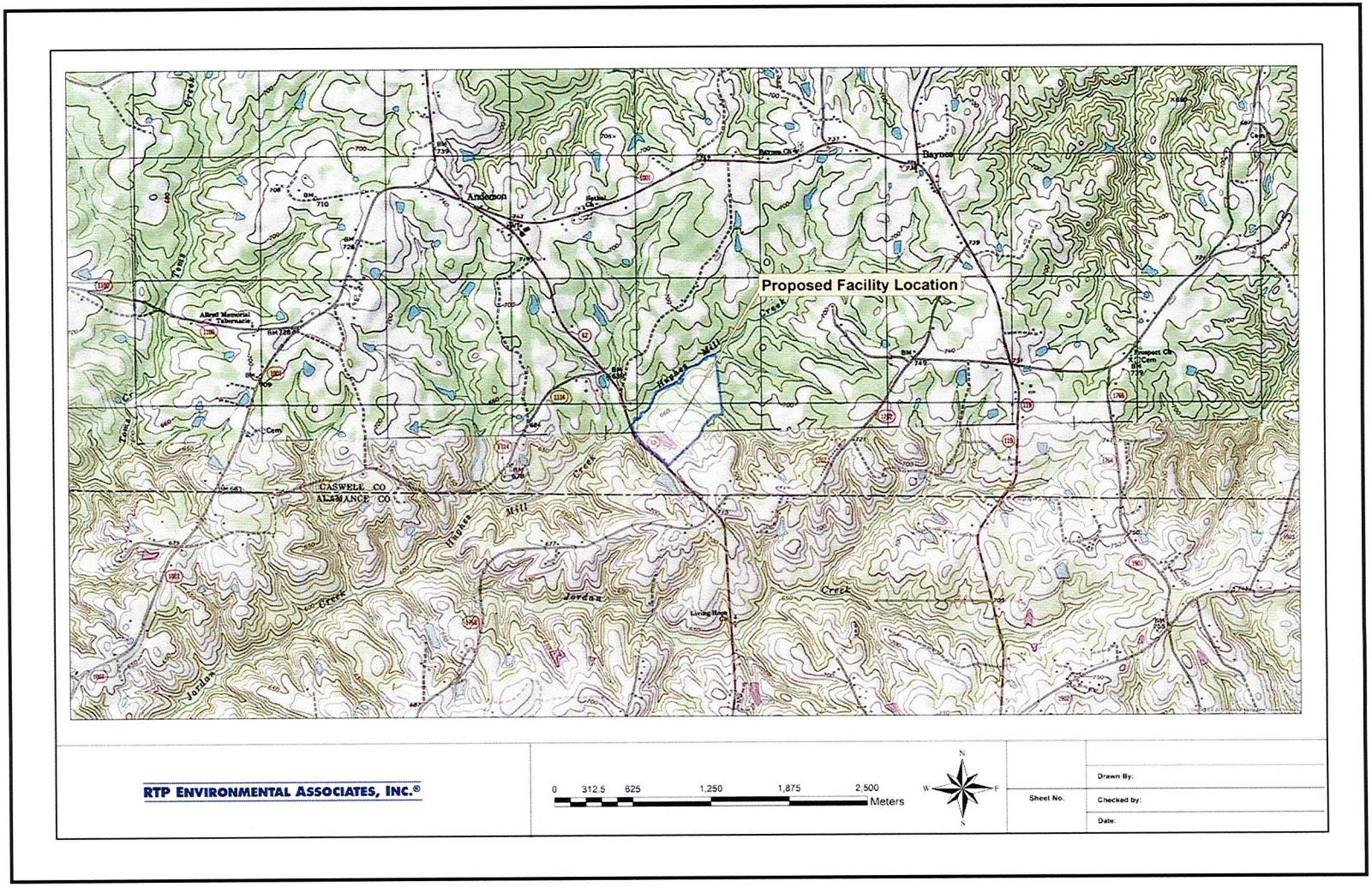

Figure 2. Specific Location of the Sunrock Burlington North Facility

3.0 MODEL SELECTION

Version 18081 of the AMS/EPA Regulatory Model (AERMOD) was used to conduct the dispersion modeling analysis. Please note that the EPA has recently released version 19191 of AERMOD. However, this version has yet to be incorporated into the BEEST modeling system employed by RTP Environmental. The recent update should not affect the modeled concentrations provided herein. AERMOD is the most appropriate model for calculating ambient concentrations near the Sunrock facility based on the model's ability to incorporate multiple sources and source types, the model's ability to incorporate building wake effects, and the model's ability to calculate concentrations within the cavity recirculation zone. It is also one of the models recommended for such studies by the North Carolina Department of Environmental Quality ("DEQ"). All model options were selected as recommended in the EPA Guidelines on Air Quality Models[2].

AERMOD is a Gaussian plume dispersion model that is based on planetary boundary layer principals for characterizing atmospheric stability. The model evaluates the non-Gaussian vertical behavior of plumes during convective conditions with the probability density function and the superposition of several Gaussian plumes. AERMOD is a modeling system with three components: AERMAP is the terrain preprocessor program, AERMET is the meteorological data preprocessor, and AERMOD includes the dispersion modeling algorithms.

AERMOD was developed to calculate concentrations in both simple and complex terrain. As with CTDMPLUS, AERMOD uses the dividing streamline concept to address plume interactions with elevated terrain.

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[2] Guidelines on Air Quality Models, Appendix W of 40 CFR Part 51, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina. January 17, 2017.

4.0 MODEL SETUP AND APPLICATION

AERMOD contains three modules: two pre-processors and the dispersion model. Model receptor elevations and height scales are developed with the AERMAP pre-processor, meteorological data are developed with the AERMET pre-processor, and the model algorithms are applied with AERMOD. Application of each of these three modules is discussed in the following sections.

4.1 *AERMAP*

The terrain pre-processor AERMAP was used to extract receptor elevation data from USGS National Elevation Data ("NED") files for use as input to AERMOD. One arc-second resolution NED data files were obtained. Receptor locations were based on North American Datum of 1983 ("NAD83"). AERMAP was used to generate the elevation and height scale for each receptor. The height scale is a measure of the height and distance of the local terrain feature that has the greatest influence on dispersion for that receptor.

The modeled receptor grid included approximately 7,300 receptors. The grid consisted of two Cartesian grids and discrete receptors placed along the facility property line at 50m intervals. The first Cartesian grid extended approximately 2,500m from the property line in all directions, with a dense receptor spacing of 100m. The second Cartesian grid extended from 2,500 to 7,500m from the property line, with receptor spacing of 250m.

Generally, a fine-mesh receptor grid is placed around the location of maximum concentrations to pinpoint the absolute maximum concentrations calculated from a facility. Additional modeling using a fine-mesh receptor grid was not necessary however, because the maximum pollutant concentrations occurred within 500m of the property line. The receptor spacing in this region is 100m; therefore, no fine

mesh receptor grid was required. Figure 3 shows the near field receptors that were employed in the analysis.

4.2 *AERMET*

The meteorological data pre-processor AERMET was used to develop meteorological data for the AERMOD modeling system. The AERMET software processes surface meteorological data and twice-daily upper air sounding data into the proper format using a three-stage process. The first stage extracts the data and administers several data quality checks. The second stage merges the data, and the third stage estimates the required boundary layer parameters and writes the data in a format readable by AERMOD. Five years (2014-2018) of "AERMOD-ready" meteorological data were obtained from the DEQ. The AERMET data were processed by the DEQ using AERMET Version 18081. The DEQ's sequential hourly surface data from the National Weather Service (NWS) station in Danville, VA (WBAN No. 13728) and upper air data from Greensboro, NC (WBAN No. 13723) were used. These data are the most representative data for modeling facilities in Caswell County.

4.3 *AERMOD*

AERMOD was run in the regulatory default mode using the rural land use dispersion option. The land use typing scheme of Auer was used to determine the proper land use classification of the site.[3] Specifically, the USGS land use coverages were obtained for the area. The land use classification codes were then categorized as either urban or rural, based on the USGS land use classification codes. It was

[3] Auer, Jr., A.H. "Correlation of Land Use and Cover with Meteorological Anomalies." Journal of Applied Meteorology, 17:636-643, 1978.

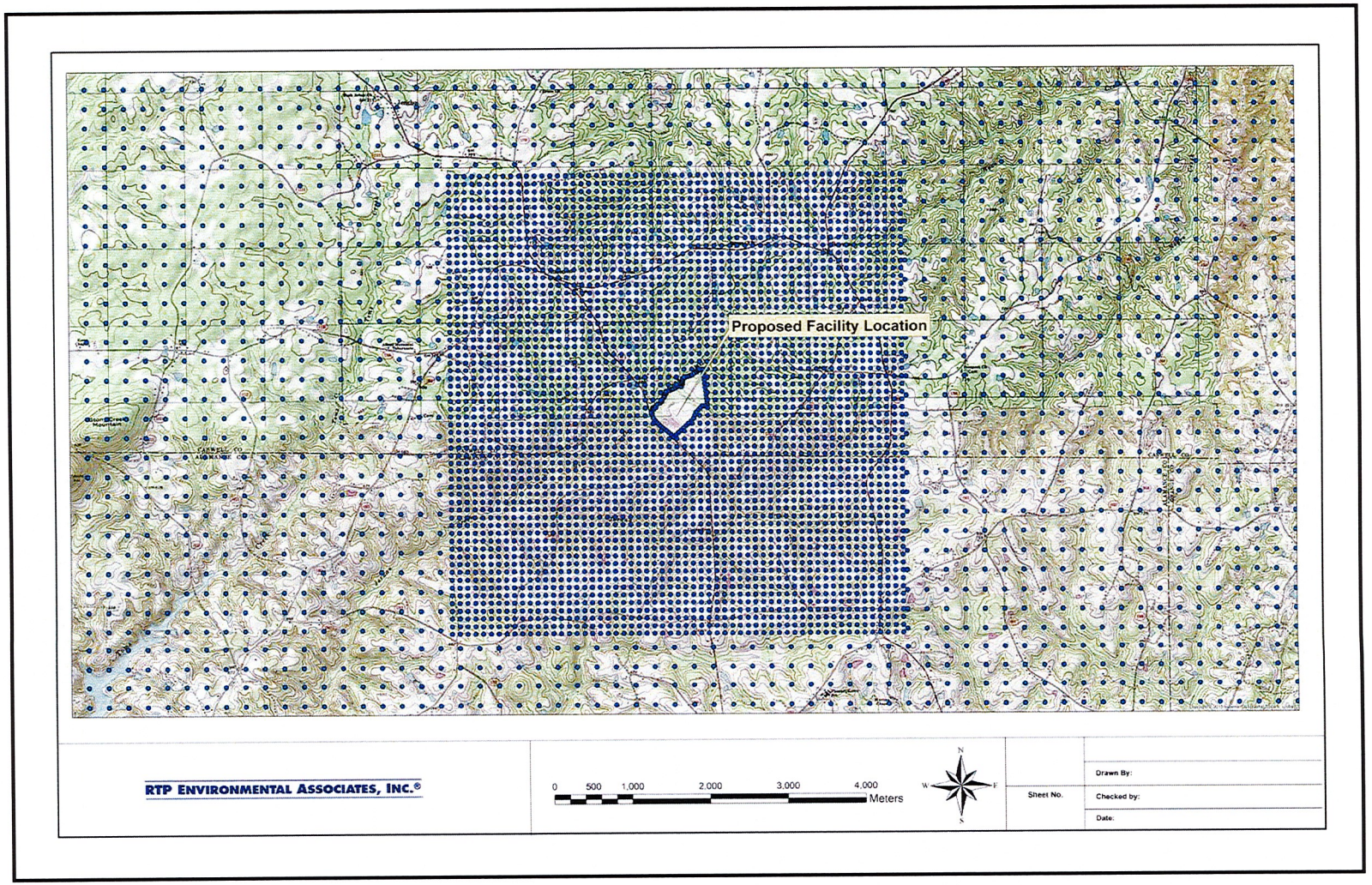

Figure 3. Receptors Employed in the Sunrock Modeling Analysis

determined that the land use within the 3km radius of the area comprises less than 50% of the following land use types, as defined by Auer:

- I1 - Heavy Industrial - major chemical, steel and fabrication industries; generally 3-5 story buildings - grass and tree growth extremely rare; <5% vegetation;
- I2 - Light Industrial - rail yards, truck depots, warehouses, industrial parks, minor fabrications; generally 1-3 story buildings - very limited grass, trees almost totally absent; <5% vegetation;
- C1 - Commercial - office and apartment buildings, hotels; >10 story heights - limited grass and trees; <15% vegetation;
- R2 - Compact Residential - single, some multiple, family dwelling with close spacing; generally < 2 story; garages no driveways - limited lawn sizes and shade trees; <30% vegetation; and
- R3 - Compact Residential - old multi-family dwellings with close lateral separation; generally <2 story; garages no driveways - limited lawn sizes, old established shade trees; <35% vegetation.

Therefore, the land use within 3km of the facility was determined to be rural.

5.0 SOURCE INPUT PARAMETERS AND MODELED EMISSIONS

The modeled point source stack parameter data (e.g., stack height, diameter, velocity and temperature) were obtained from Sunrock and are presented in Table 1. The modeled emission rates are presented in Table 2. The potential emissions were modeled initially and then the model was iterated to determine the maximum emissions that could occur and allow the facility to comply with the AALs.

Sunrock requests that these AAL compliant emission rates shown in Table 2 be incorporated as permit conditions so that the facility can maintain maximum operational flexibility.

Table 1. Sunrock TAP Model Input Data

Model Source No.	Source ID	Source Description	UTM East (m)	UTM North (m)	Base Elevation (m)	Stack Height (ft)	Gas Temperature (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)
Point Sources									
1	CD_1	Hot Mix Asphalt	650207.90	4013086.92	201.32	30.2	240.0	96.5	3.1
2	CD_2	Concrete Batch Plant and Silo Filling	650220.86	4013028.42	203.17	35.0	77.0	80.0	1.5
3	ESH_2	Asphalt Cement Heater	650203.84	4013069.45	201.50	9.0	325.0	0.03	1.0
4	ESH_1	Heater for Liquid Asphalt Tank	650190.21	4013088.27	200.30	15.0	325.0	0.03	0.2
Volume Sources									
Model Source No.	**Source ID**	**Source Description**	**UTM East (m)**	**UTM North (m)**	**Base Elevation (m)**	**Height (ft)**	**Initial Horizontal Dimension (ft)**	**Initial Vertical Dimension (ft)**	
5	F1	Asphalt Silo Loadout	650185.20	4013059.18	200.90	40.00	5.81	18.60	
6	F2	Cement Silo Loadout	650231.19	4013023.90	203.91	32.50	5.81	15.12	

Table 2. Sunrock Modeled TAP Emissions (lb/hr)

Model Source No.	Source ID	Source Description	Modeled Emissions (lb/hr)					
			Arsenic (As)	Benzene (Bz)	Nickel (Ni)	Mercury (Hg)	Formaldehyde (Form)	Cadmium (Cd)
1	CD_1	Hot Mix Asphalt	1.64E-03	8.85E-01	2.46E-01	2.42E-02	4.05E+01	7.08E-03
2	CD_2	Concrete Batch Plant and Silo Filling	7.73E-04	0.00E+00	2.99E-03	0.00E+00	0.00E+00	3.44E-05
3	ESH_2	Asphalt Cement Heater	5.63E-05	2.21E-05	5.60E-05	1.34E-04	1.44E-02	2.48E-04
4	ESH_1	Heater for Liquid Asphalt Tank	5.16E-05	2.02E-05	5.14E-05	1.23E-04	1.32E-02	2.27E-04
5	F1	Asphalt Silo Loadout	0.00E+00	4.80E-03	0.00E+00	0.00E+00	4.48E-02	0.00E+00
6	F2	Cement Silo Loadout	3.94E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

5.1 *Good Engineering Practice (GEP) Stack Height*

A good engineering practice ("GEP") stack height evaluation was conducted to determine if inclusion of building wake effects would be required in the modeling analysis. Procedures used in this analysis were in accordance with those described in the EPA document Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations - Revised).[4]

GEP formula stack height, as defined in 40 CFR 51, is expressed as GEP = Hb + 1.5L, where Hb is the building height and L is the lesser of the building height or maximum projected width. Nearby is defined as the distance up to five times the lesser of the height or width of a structure, but not greater than one-half mile. Both the height and width of the structure are determined from the frontal area of the structure projected onto a plane perpendicular to the wind. Since the stack heights at the GSC facility were determined to be affected by building downwash, AERMOD was run considering building wake effects. Direction-specific building dimensions were calculated using the EPA's BPIP-PRIME computer program (Version 04274). Figure 4 provides a plot plan showing the buildings and sources modeled.

[4] Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for Stack Height Regulations (Revised). EPA-450/4-80-023R, U.S. Environmental Protection Agency. June 1985.

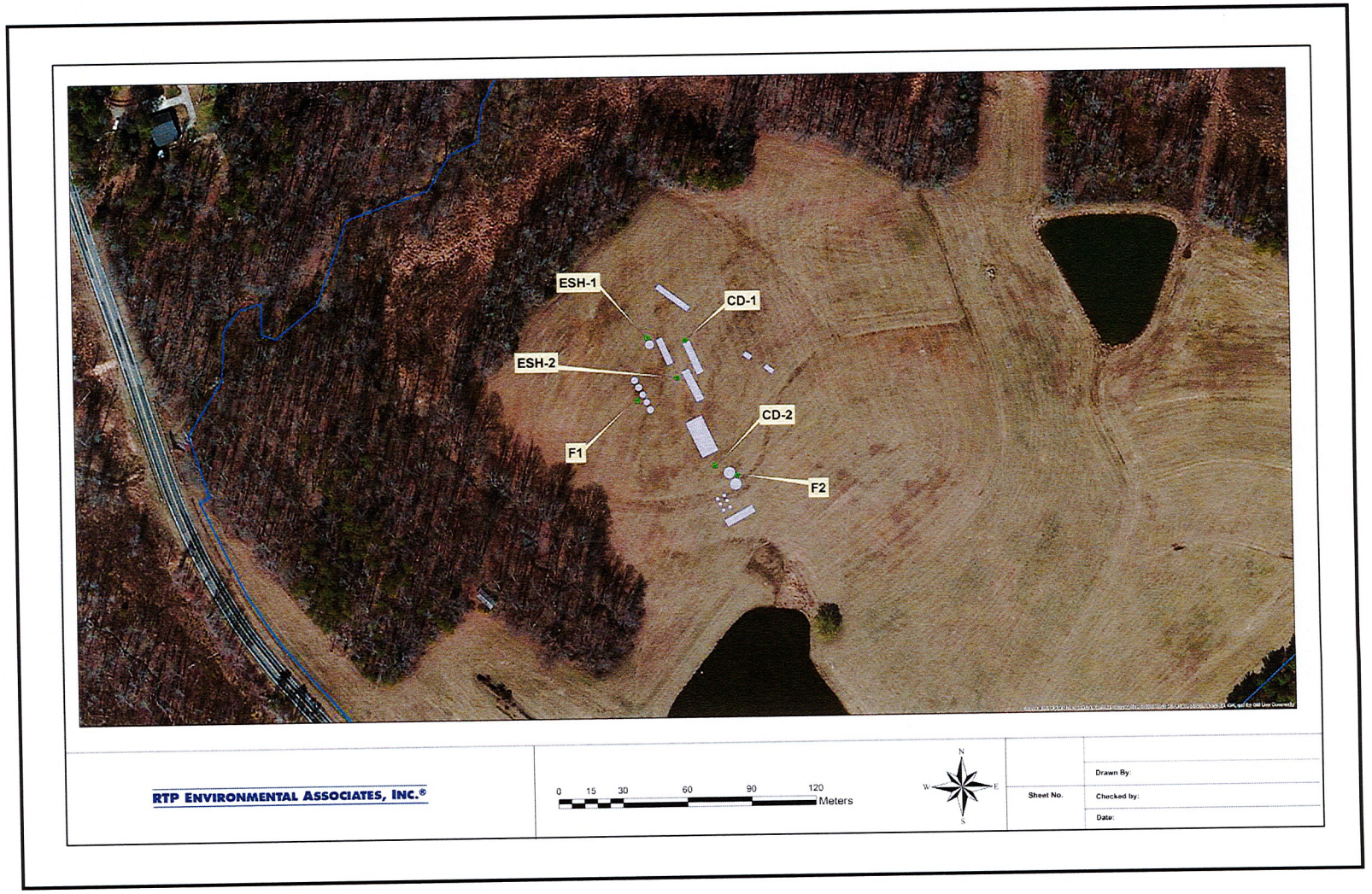

Figure 4. Sunrock Plot Plan

6.0 MODELING METHODOLOGY

Impacts resulting from AERMOD using hourly meteorological data are considered to be part of a refined analysis by the DEQ. A five- year meteorological dataset was modeled. The maximum concentrations for the five-year period were calculated and compared to the applicable AAL(s) for each pollutant.

7.0 RESULTS

The AERMOD analysis results are presented in Table 3. The maximum combined impacts from all sources are presented. As shown, the impacts for each TAP are compliant with the AALs. Attachment A provides the model protocol checklist and tax map (as obtained from the Caswell County GIS server). Attachment B contains the model summary output. Actual model input and output files, including the BPIP-PRIME and AERMAP files, are included on the enclosed diskette.

Table 3. AERMOD Model Summary Results

Pollutant	Averaging Period	Maximum Modeled Impact (µg/m³)	Acceptable Ambient Level (AAL) (µg/m³)	Percent of AAL
Arsenic	Annual	0.0020	0.0021	94.8%
Benzene	Annual	0.11	0.12	95.0%
Cadmium	Annual	0.0052	0.0055	95.1%
Formaldehyde	1-hour	143	150	95.0%
Mercury	24-hour	0.057	0.060	95.2%
Nickel	24-hour	0.57	0.60	95.1%

7.1 Summary and Conclusions

Emissions of NC regulated toxic air pollutants are emitted from the Sunrock facility. These pollutants were evaluated in an air quality modeling analysis. The calculated potential emissions from each source result in ambient concentrations less than the AALs. Emissions were therefore maximized such that total facility impacts were just below the AALs. Maximizing emissions in this manner allows maximum facility operational flexibility while ensuring that ground level impacts do not exceed levels designed to protect human health and welfare. Sunrock requests that the maximized emissions be incorporated as permit conditions.

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ATTACHMENT A

Model Supporting Data

- Model Input Data
- Volume Source Calculations
- Model Protocol Checklist
- Tax Parcel Map

Carolina Sunrock - Burlington North Model Input (NAD83, Z17)- 9/9/2019

Source ID	Source Description	Easting (m)	Northing (m)	Base Elevation (m)	Stack Height (ft)	Temp. (°F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	As (lb/hr)	Bz (lb/hr)	Ni (lb/hr)	Hg (lb/hr)	Form (lb/hr)	Cd (lb/hr)
CD_1	Hot Mix Asphalt	650207.90	4013086.92	201.32	30.2	240.0	96.5	3.1	1.64E-03	8.85E-01	2.46E-01	2.42E-02	4.05E+01	7.08E-03
CD_2	Concrete Batch Plant and Silo Filling	650220.86	4013028.42	203.17	35.0	77.0	80.0	1.5	7.73E-04	0.00E+00	2.99E-03	0.00E+00	0.00E+00	3.44E-05
ESH_2	Asphalt Cement Heater	650203.84	4013069.45	201.50	9.0	325.0	0.03	1.0	5.63E-05	2.21E-05	5.60E-05	1.34E-04	1.44E-02	2.48E-04
ESH_1	Heater for Liquid Asphalt Tank	650190.21	4013088.27	200.30	15.0	325.0	0.03	0.2	5.16E-05	2.02E-05	5.14E-05	1.23E-04	1.32E-02	2.27E-04

Volume Source Input

Source ID	Source Description	Easting (m)	Northing (m)	Base Elevation (m)	Release Height (ft)	Initial Horizontal Dimension s_Y (ft)	Initial Vertical Dimension s_Z (ft)	As (lb/hr)	Bz (lb/hr)	Ni (lb/hr)	Hg (lb/hr)	Form (lb/hr)	Cd (lb/hr)
F1	Asphalt Silo Loadout	650185.20	4013059.18	200.90	40.00	5.81	18.60	0.00E+00	4.86E-03	0.00E+00	0.00E+00	4.66E-02	0.00E+00
F2	Cement Silo Loadout	650231.19	4013023.90	203.91	32.50	5.81	15.12	1.04E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Carolina Sunrock Burlington North Volume Source Parameter Calculation

		Source Dimensions						Initial Dispersion Coefficients		
Model ID	Source Description	Length (ft)	Width (ft)	Square Root of Area (ft)	Structure Height/Vertical Dimension (ft)	Source Adjacent to Building?	Release Height (ft)	Initial Horizontal Dimension s_Y (ft)	Initial Vertical Dimension s_Z (ft)	Reference
F1	Asphalt Silo Loadout	25.0	25.0	25.0	80.0	Yes	40.0	5.81	18.60	Notes 1, 2, & 3
F2	Cement Silo Loadout	25.0	25.0	25.0	65.0	Yes	32.5	5.81	15.12	Notes 1, 2, & 3

Note 1: Release height of elevated source if not on or adjacent to building. One half structure height for source located on or adjacent to building
Note 2: Sigma Y value calculated as the square root of the area of release (length of side) divided by 4.3 (Table 3-1 of AERMOD Manual for single volume source).
Note 3. Sigma Z value for elevated source on or adjacent (within 5L) to a building calculated based on the building/structure height divided by 2.15.
Note 4: Sigma Z value for elevated source not on or adjacent to a building calculated as the vertical dimension of source divided by 4.3.

Characteristics calculated based on Table 3-1 of AERMOD Manual.

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: Carolina Sunrock Corp **Facility ID:** 9100111 **Address:** 200 Horizon Drive Raleigh, NC 27615	**Consultant (if applicable):** RTP Environmental
Contact Name: Scott Martino	**Contact Name:** David Keen
Phone Number: (919) 747-6336 **Email:** smartino@thesunrockgroup.com	**Phone Number:** (919) 845-1422 x41 **Email:** keen@rtpenv.com

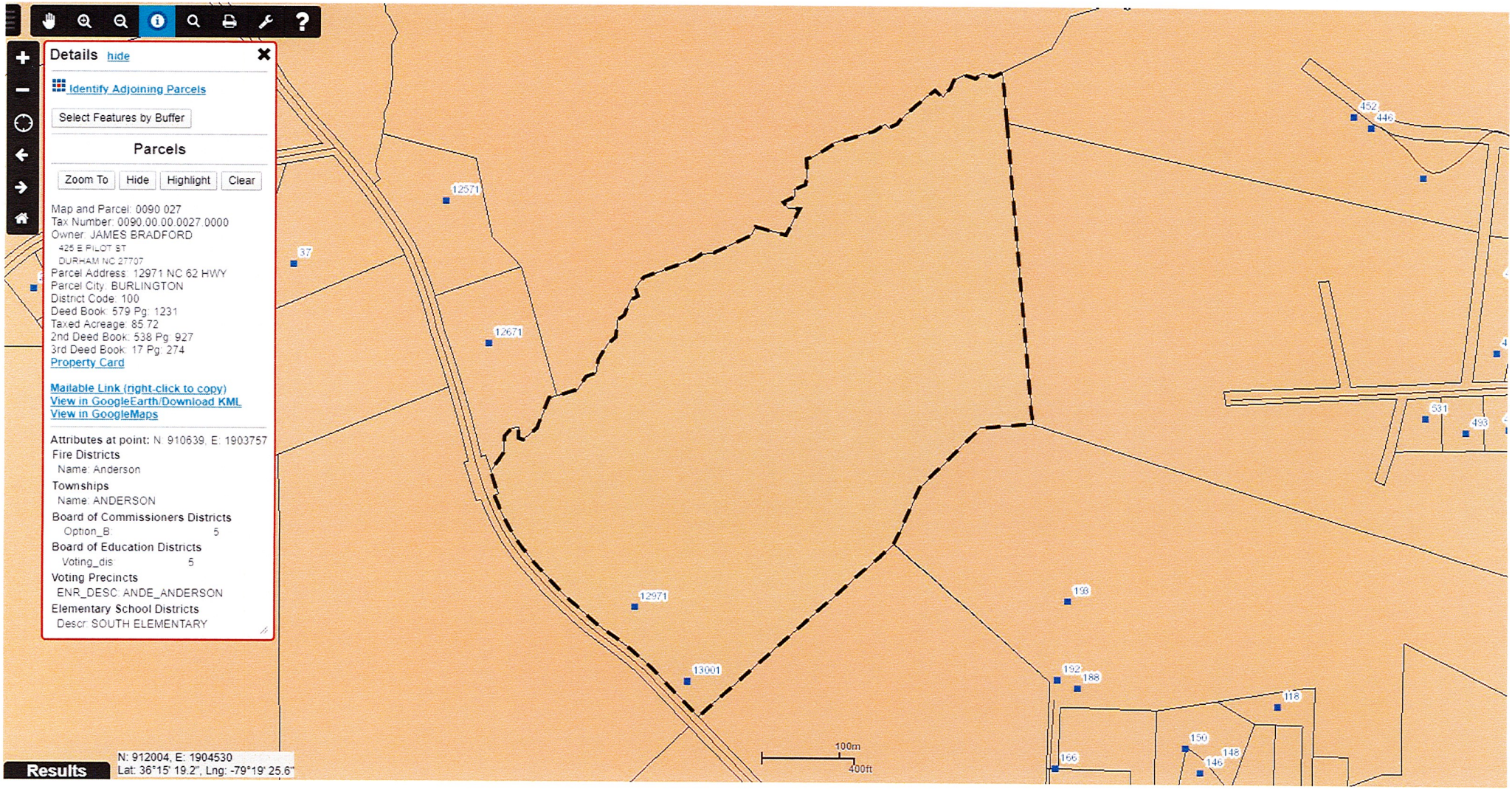
GENERAL

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.	Sec 2
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).	Tables 1&2
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.	Scaled to AAL
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.	Figs 3&4
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.	Atch A
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.	Fig. 1
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*	NA - AERMOD used

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

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.	Section 4
Source / Source emission parameters: Provide a table listing the sources modeled and the applicable source emission parameters. *See NC Form 3 - Appendix A.*	Tables 1 & 2
GEP Analysis: Use BPIP-Prime with AERMOD.	Sect5.1
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.*	NA-AERMOD used
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.	Section 4.1
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.*	Section 4.1
Meteorology: Indicate the AQAB, pre-processed, 5-year data set used in the modeling demonstration: (*See Section 5.5 and Appendix B)* AERMOD See Section 4.2 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.*	Sect 7
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.	on disc


Details hide
Identify Adjoining Parcels
Select Features by Buffer
Parcels
Zoom To
Hide
Highlight
Clear
Map and Parcel: 0090 027
Tax Number: 0090.00.00.0027.0000
Owner: JAMES BRADFORD
425 E PILOT ST
DURHAM NC 27707
Parcel Address: 12971 NC 62 HWY
Parcel City: BURLINGTON
District Code: 100
Deed Book: 579 Pg: 1231
Taxed Acreage: 85.72
2nd Deed Book: 538 Pg: 927
3rd Deed Book: 17 Pg: 274
Property Card
Mailable Link (right-click to copy)
View in GoogleEarth/Download KML
View in GoogleMaps
Attributes at point: N: 910639, E: 1903757
Fire Districts
Name: Anderson
Townships
Name: ANDERSON
Board of Commissioners Districts
Option_B: 5
Board of Education Districts
Voting_dis 5
Voting Precincts
ENR_DESC: ANDE_ANDERSON
Elementary School Districts
Descr: SOUTH ELEMENTARY
12571
37
12671
12971
13001
452
446
531
493
198
192
188
118
150
148
146
166
100m
400ft
Results
N: 912004, E: 1904530
Lat: 36°15' 19.2", Lng: -79°19' 25.6"

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ATTACHMENT B

Model Summary Output

9-10-19 Carolina Sunrock Burlington North TAP Analysis - First Pass Results (Initial Emissions)

Model	File	Pollutant	Average	Group	Rank	Conc/Dep	East (X)	North (Y)	Elev	Hill	Flag	Time	Met File	Sources	Groups	Receptors
AERMOD 18081	Sunrock Burlington North_2018_AS.SUM	AS	ANNUAL	ALL	1ST	0.00017	650055.4	4012903	199.17	199.17	0	1 YEARS	DAN2018_WET.SFC	5	1	7335
AERMOD 18081	Sunrock Burlington North_2017_AS.SUM	AS	ANNUAL	ALL	1ST	0.00016	650362.6	4013375	191.87	191.87	0	1 YEARS	DAN2017_AVG.SFC	5	1	7335
AERMOD 18081	Sunrock Burlington North_2015_AS.SUM	AS	ANNUAL	ALL	1ST	0.00015	650055.4	4012903	199.17	199.17	0	1 YEARS	DAN2015_WET.SFC	5	1	7335
AERMOD 18081	Sunrock Burlington North_2016_AS.SUM	AS	ANNUAL	ALL	1ST	0.00015	650055.4	4012903	199.17	199.17	0	1 YEARS	DAN2016_AVG.SFC	5	1	7335
AERMOD 18081	Sunrock Burlington North_2014_AS.SUM	AS	ANNUAL	ALL	1ST	0.00014	650055.4	4012903	199.17	199.17	0	1 YEARS	DAN2014_AVG.SFC	5	1	7335
AERMOD 18081	Sunrock Burlington North_2017_BZ.SUM	BZ	ANNUAL	ALL	1ST	0.01269	650362.6	4013375	191.87	191.87	0	1 YEARS	DAN2017_AVG.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2014_BZ.SUM	BZ	ANNUAL	ALL	1ST	0.01111	650362.6	4013375	191.87	191.87	0	1 YEARS	DAN2014_AVG.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2016_BZ.SUM	BZ	ANNUAL	ALL	1ST	0.01099	650362.6	4013375	191.87	191.87	0	1 YEARS	DAN2016_AVG.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2018_BZ.SUM	BZ	ANNUAL	ALL	1ST	0.01099	650362.6	4013375	191.87	191.87	0	1 YEARS	DAN2018_WET.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2015_BZ.SUM	BZ	ANNUAL	ALL	1ST	0.01023	650362.6	4013375	191.87	191.87	0	1 YEARS	DAN2015_WET.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2017_CD.SUM	CD	ANNUAL	ALL	1ST	0.00008	650362.6	4013375	191.87	191.87	0	1 YEARS	DAN2017_AVG.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2014_CD.SUM	CD	ANNUAL	ALL	1ST	0.00007	650362.6	4013375	191.87	191.87	0	1 YEARS	DAN2014_AVG.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2016_CD.SUM	CD	ANNUAL	ALL	1ST	0.00007	650362.6	4013375	191.87	191.87	0	1 YEARS	DAN2016_AVG.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2018_CD.SUM	CD	ANNUAL	ALL	1ST	0.00007	650362.6	4013375	191.87	191.87	0	1 YEARS	DAN2018_WET.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2015_CD.SUM	CD	ANNUAL	ALL	1ST	0.00006	650362.6	4013375	191.87	191.87	0	1 YEARS	DAN2015_WET.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2014_FORM.SUM	FORM	1-HR	ALL	1ST	2.80099	650677.6	4013317	208.75	208.75	0	14052803	DAN2014_AVG.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2015_FORM.SUM	FORM	1-HR	ALL	1ST	2.73004	650677.6	4013317	208.75	208.75	0	15011901	DAN2015_WET.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2018_FORM.SUM	FORM	1-HR	ALL	1ST	2.64264	650420.9	4012871	206.22	206.22	0	18033019	DAN2018_WET.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2016_FORM.SUM	FORM	1-HR	ALL	1ST	2.63599	650388.9	4012841	204.24	204.24	0	16051420	DAN2016_AVG.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2017_FORM.SUM	FORM	1-HR	ALL	1ST	2.63138	650677.6	4013317	208.75	208.75	0	17012905	DAN2017_AVG.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2015_HG.SUM	HG	24-HR	ALL	1ST	0.00153	650055.4	4012903	199.17	199.17	0	15100424	DAN2015_WET.SFC	3	1	7335
AERMOD 18081	Sunrock Burlington North_2018_HG.SUM	HG	24-HR	ALL	1ST	0.00151	650086.2	4012872	201.06	201.06	0	18091424	DAN2018_WET.SFC	3	1	7335
AERMOD 18081	Sunrock Burlington North_2017_HG.SUM	HG	24-HR	ALL	1ST	0.00107	650055.4	4012903	199.17	199.17	0	17042424	DAN2017_AVG.SFC	3	1	7335
AERMOD 18081	Sunrock Burlington North_2016_HG.SUM	HG	24-HR	ALL	1ST	0.00086	650388.9	4012841	204.24	204.24	0	16012324	DAN2016_AVG.SFC	3	1	7335
AERMOD 18081	Sunrock Burlington North_2014_HG.SUM	HG	24-HR	ALL	1ST	0.00075	650388.9	4012841	204.24	204.24	0	14110224	DAN2014_AVG.SFC	3	1	7335
AERMOD 18081	Sunrock Burlington North_2018_NI.SUM	NI	24-HR	ALL	1ST	0.03663	650086.2	4012872	201.06	201.06	0	18091424	DAN2018_WET.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2015_NI.SUM	NI	24-HR	ALL	1ST	0.03646	650055.4	4012903	199.17	199.17	0	15100424	DAN2015_WET.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2017_NI.SUM	NI	24-HR	ALL	1ST	0.02468	650055.4	4012903	199.17	199.17	0	17042424	DAN2017_AVG.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2016_NI.SUM	NI	24-HR	ALL	1ST	0.02117	650388.9	4012841	204.24	204.24	0	16012324	DAN2016_AVG.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2014_NI.SUM	NI	24-HR	ALL	1ST	0.01821	650388.9	4012841	204.24	204.24	0	14110224	DAN2014_AVG.SFC	4	1	7335

9-10-19 Carolina Sunrock Burlington North TAP Analysis - First Pass Results (Initial Emissions)

Pollutant	Average	Group	Rank	Conc/Dep	AAL	%AAL
AS	ANNUAL	ALL	1ST	0.00017	0.0021	8.1%
BZ	ANNUAL	ALL	1ST	0.01269	0.12	0.1%
CD	ANNUAL	ALL	1ST	0.00008	0.0055	1.5%
FORM	1-HR	ALL	1ST	2.80099	150	1.9%
HG	24-HR	ALL	1ST	0.00153	0.06	2.6%
NI	24-HR	ALL	1ST	0.03663	0.6	6.1%

9-10-19 Carolina Sunrock Burlington North TAP Analysis - Second Pass Results (Emissions Scaled to AAL)

Model	File	Pollutant	Average	Group	Rank	Conc/Dep	East (X)	North (Y)	Elev	Hill	Flag	Time	Met File	Sources	Groups	Receptors
AERMOD 18081	Sunrock Burlington North_2018_AS.SUM	AS	ANNUAL	ALL	1ST	0.00199	650055.4	4012903	199.17	199.17	0	1 YEARS	DAN2018_WET.SFC	5	1	7335
AERMOD 18081	Sunrock Burlington North_2017_AS.SUM	AS	ANNUAL	ALL	1ST	0.00188	650362.6	4013375	191.87	191.87	0	1 YEARS	DAN2017_AVG.SFC	5	1	7335
AERMOD 18081	Sunrock Burlington North_2015_AS.SUM	AS	ANNUAL	ALL	1ST	0.0018	650055.4	4012903	199.17	199.17	0	1 YEARS	DAN2015_WET.SFC	5	1	7335
AERMOD 18081	Sunrock Burlington North_2016_AS.SUM	AS	ANNUAL	ALL	1ST	0.00171	650055.4	4012903	199.17	199.17	0	1 YEARS	DAN2016_AVG.SFC	5	1	7335
AERMOD 18081	Sunrock Burlington North_2014_AS.SUM	AS	ANNUAL	ALL	1ST	0.0017	650055.4	4012903	199.17	199.17	0	1 YEARS	DAN2014_AVG.SFC	5	1	7335
AERMOD 18081	Sunrock Burlington North_2017_BZ.SUM	BZ	ANNUAL	ALL	1ST	0.11403	650362.6	4013375	191.87	191.87	0	1 YEARS	DAN2017_AVG.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2014_BZ.SUM	BZ	ANNUAL	ALL	1ST	0.09984	650362.6	4013375	191.87	191.87	0	1 YEARS	DAN2014_AVG.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2016_BZ.SUM	BZ	ANNUAL	ALL	1ST	0.09875	650362.6	4013375	191.87	191.87	0	1 YEARS	DAN2016_AVG.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2018_BZ.SUM	BZ	ANNUAL	ALL	1ST	0.09873	650362.6	4013375	191.87	191.87	0	1 YEARS	DAN2018_WET.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2015_BZ.SUM	BZ	ANNUAL	ALL	1ST	0.09193	650362.6	4013375	191.87	191.87	0	1 YEARS	DAN2015_WET.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2017_CD.SUM	CD	ANNUAL	ALL	1ST	0.00523	650362.6	4013375	191.87	191.87	0	1 YEARS	DAN2017_AVG.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2018_CD.SUM	CD	ANNUAL	ALL	1ST	0.00476	650362.6	4013375	191.87	191.87	0	1 YEARS	DAN2018_WET.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2014_CD.SUM	CD	ANNUAL	ALL	1ST	0.00472	650362.6	4013375	191.87	191.87	0	1 YEARS	DAN2014_AVG.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2016_CD.SUM	CD	ANNUAL	ALL	1ST	0.00449	650362.6	4013375	191.87	191.87	0	1 YEARS	DAN2016_AVG.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2015_CD.SUM	CD	ANNUAL	ALL	1ST	0.00437	650362.6	4013375	191.87	191.87	0	1 YEARS	DAN2015_WET.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2014_FORM.SUM	FORM	1-HR	ALL	1ST	142.5149	650677.6	4013317	208.75	208.75	0	14052803	DAN2014_AVG.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2015_FORM.SUM	FORM	1-HR	ALL	1ST	138.9051	650677.6	4013317	208.75	208.75	0	15011901	DAN2015_WET.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2018_FORM.SUM	FORM	1-HR	ALL	1ST	134.4562	650420.9	4012871	206.22	206.22	0	18033019	DAN2018_WET.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2016_FORM.SUM	FORM	1-HR	ALL	1ST	134.1177	650388.9	4012841	204.24	204.24	0	16051420	DAN2016_AVG.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2017_FORM.SUM	FORM	1-HR	ALL	1ST	133.8854	650677.6	4013317	208.75	208.75	0	17012905	DAN2017_AVG.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2015_HG.SUM	HG	24-HR	ALL	1ST	0.05712	650055.4	4012903	199.17	199.17	0	15100424	DAN2015_WET.SFC	3	1	7335
AERMOD 18081	Sunrock Burlington North_2018_HG.SUM	HG	24-HR	ALL	1ST	0.05637	650086.2	4012872	201.06	201.06	0	18091424	DAN2018_WET.SFC	3	1	7335
AERMOD 18081	Sunrock Burlington North_2017_HG.SUM	HG	24-HR	ALL	1ST	0.03984	650055.4	4012903	199.17	199.17	0	17042424	DAN2017_AVG.SFC	3	1	7335
AERMOD 18081	Sunrock Burlington North_2016_HG.SUM	HG	24-HR	ALL	1ST	0.03217	650388.9	4012841	204.24	204.24	0	16012324	DAN2016_AVG.SFC	3	1	7335
AERMOD 18081	Sunrock Burlington North_2014_HG.SUM	HG	24-HR	ALL	1ST	0.02781	650388.9	4012841	204.24	204.24	0	14110224	DAN2014_AVG.SFC	3	1	7335
AERMOD 18081	Sunrock Burlington North_2018_NI.SUM	NI	24-HR	ALL	1ST	0.57037	650086.2	4012872	201.06	201.06	0	18091424	DAN2018_WET.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2015_NI.SUM	NI	24-HR	ALL	1ST	0.5676	650055.4	4012903	199.17	199.17	0	15100424	DAN2015_WET.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2017_NI.SUM	NI	24-HR	ALL	1ST	0.38426	650055.4	4012903	199.17	199.17	0	17042424	DAN2017_AVG.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2016_NI.SUM	NI	24-HR	ALL	1ST	0.32959	650388.9	4012841	204.24	204.24	0	16012324	DAN2016_AVG.SFC	4	1	7335
AERMOD 18081	Sunrock Burlington North_2014_NI.SUM	NI	24-HR	ALL	1ST	0.28359	650388.9	4012841	204.24	204.24	0	14110224	DAN2014_AVG.SFC	4	1	7335

9-10-19 Carolina Sunrock Burlington North TAP Analysis - Second Pass Results (Emissions Scaled to AAL)

Pollutant	Average	Group	Rank	Conc/Dep	AAL	%AAL
AS	ANNUAL	ALL	1ST	0.00199	0.0021	94.8%
BZ	ANNUAL	ALL	1ST	0.11403	0.12	95.0%
CD	ANNUAL	ALL	1ST	0.00523	0.0055	95.1%
FORM	1-HR	ALL	1ST	142.5149	150	95.0%
HG	24-HR	ALL	1ST	0.05712	0.06	95.2%
NI	24-HR	ALL	1ST	0.57037	0.6	95.1%

APPENDIX C. NAAQS DISPERSION MODELING

Note: To avoid redundancy, the forms and emission calculations that were transmitted as part of this report are not included in this appendix since they are included in Section 5 (DEQ source forms) and Appendix A (emission calculations) above.

AIR DISPERSION MODELING REPORT

Carolina Sunrock, LLC
Burlington, NC

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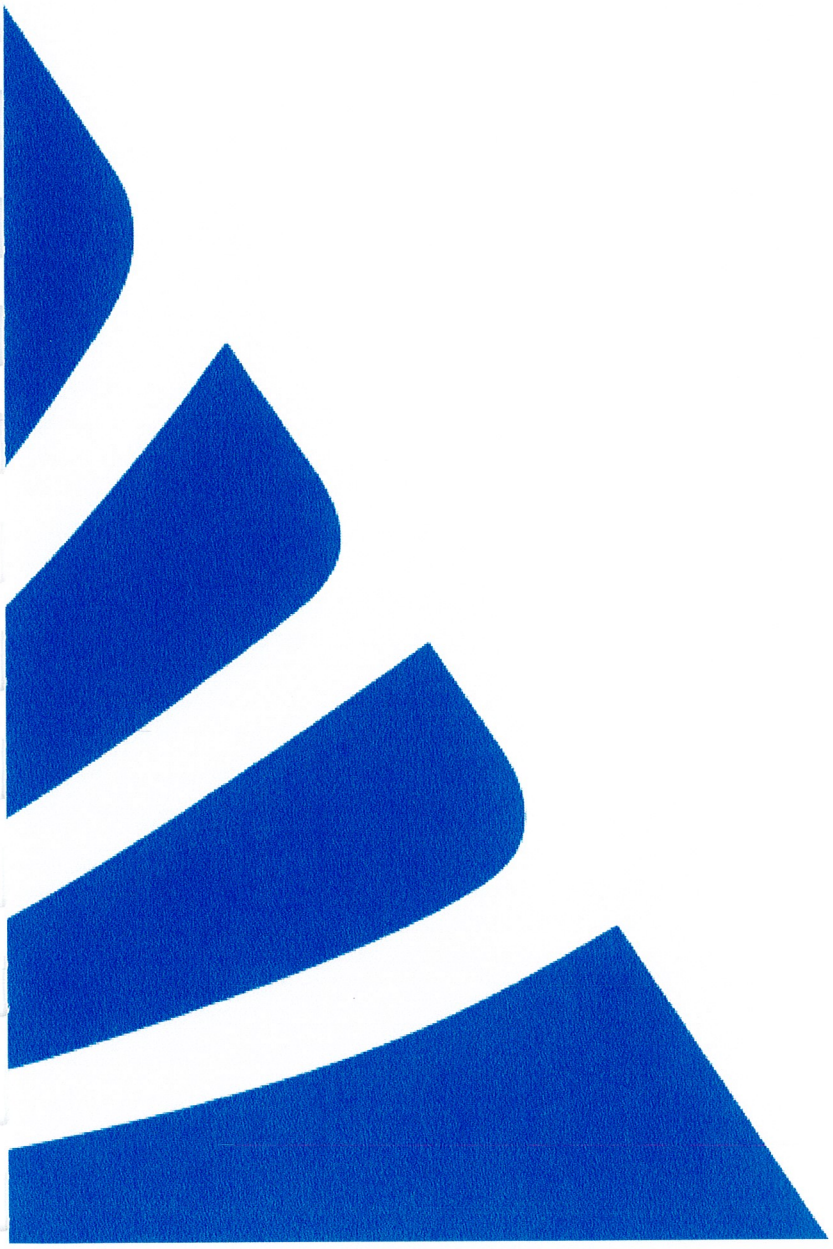
March 2021



Trinity Consultants

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1. INTRODUCTION

Carolina Sunrock submitted a complete construction permit application for its proposed hot mix asphalt (HMA) and batch concrete plant to be located in Burlington, NC. The submitted application included a facility-wide air toxics modeling demonstration. Since the time of that submittal, the North Carolina Division of Air Quality (NCDAQ) has requested that the facility complete additional air dispersion modeling analyses in order to demonstrate that the proposed facility will not violate any National/State Ambient Air Quality Standard (NAAQS/SAAQS). In response to that request, Carolina Sunrock has completed air dispersion modeling for Total Suspended Particulate (TSP), Particulate Matter with an aerodynamic diameter of 10 microns or less (PM_{10}), PM with an aerodynamic diameter of 2.5 microns or less ($PM_{2.5}$), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2).

This report presents the input data and modeling methodology utilized in the NAAQS modeling compliance demonstration that was completed for Carolina Sunrock's Burlington, NC facility (Burlington). The modeling methodology generally conforms to U.S. EPA's *Guideline on Air Quality Models* 40 CFR 51, Appendix W (Revised, January 17, 2017), herein referred to as the *Guideline,* and more specifically to North Carolina Division of Air Quality (NCDAQ) Guidance documents.[1][2][3]

[1] https://files.nc.gov/ncdeq/Air%20Quality/permits/mets/NC_PSD_Modeling_Guidance_20200701.pdf

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

[3] https://files.nc.gov/ncdeq/Air%20Quality/permits/mets/NC_DAQ_Quarry_Modeling_Guidance_31May2018.pdf

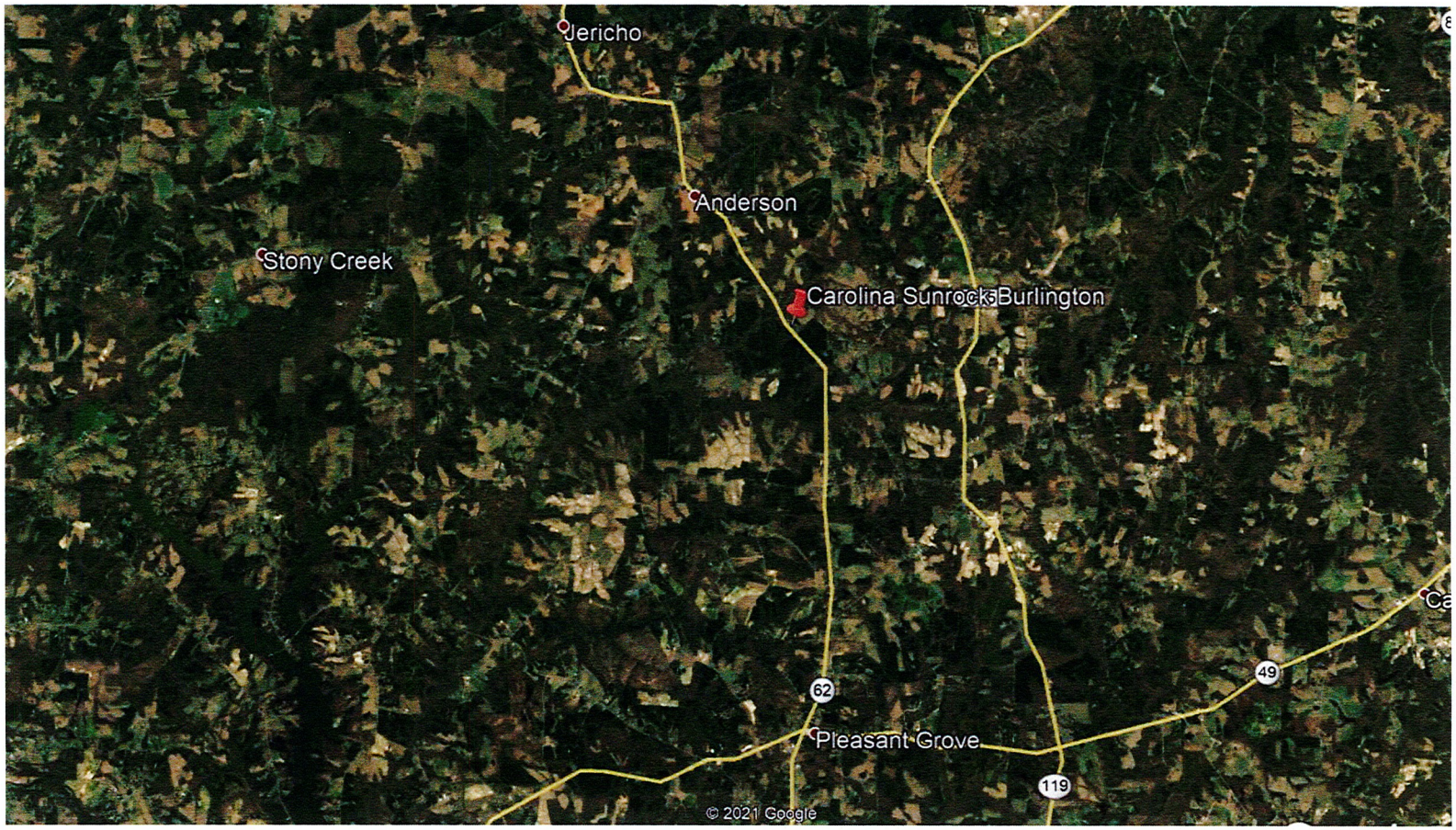
2. FACILITY LOCATION

This section provides a description of the location for the proposed facility.

Figure 2-1 provides an aerial map of the area surrounding the Carolina Sunrock Burlington property. The approximate central Universal Transverse Mercator (UTM) coordinates of the facility are 650.3 kilometers (km) east and 4,013.1 km north in Zone 17 (NAD 83).

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.

Figure 2-1. Map of Area Surrounding Carolina Sunrock Burlington North



3. DISPERSION MODEL METHODOLOGY

This section discusses the data resources and methodology that were utilized in the NAAQS/SAAQS modeling demonstration.

3.1 Model Selection

The AERMOD dispersion model (version 19091) 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 Carolina Sunrock's Burlington facility. [4] AERMOD was run using the regulatory default option, which automatically implements NCDAQ and U.S. EPA recommended model options.

3.2 Source Description

Tables 3-1, 3-2, and Table 3-3 presents a table of the modeled point, area, and volume sources, respectively, including their locations at the facility. All locations are expressed in UTM Zone 17 (NAD83) coordinates.

Table 3-1. Modeled Point Source Locations

Model ID	Description	UTM-E (m)	UTM-N (m)	Elevation (m)
CD_1	Asphalt Plant Baghouse	650,207.9	4,013,086.9	201.3
CD_2	Concrete Plant Baghouse	650,222.3	4,013,030.4	202.8
ESH_2	Liquid Asphalt Heater	650,203.8	4,013,069.5	201.6
ESH_1	Asphalt Heater	650,190.2	4,013,088.3	200.4
HMASILO4	HMA Silo #4	650,184.0	4,013,068.5	200.7
HMASILO3	HMA Silo #3	650,185.7	4,013,065.1	200.9
HMASILO1	HMA Silo #1	650,187.6	4,013,061.8	201.0
HMASILO2	HMA Silo #2	650,189.4	4,013,058.3	201.0
HMASILO5	HMA Silo #5	650,191.1	4,013,054.7	201.0
SYP1DP	Truck Loadout to Pile	650,271.7	4,013,104.3	204.6
SYP2DP	Truck Loadout to Pile	650,295.6	4,013,021.9	206.2
RMC_CNV1	Drop from Weight Batcher to Truck	650,232.9	4,013,014.1	202.7
RMC_CNV2	Drop from Feeder	650,260.1	4,013,024.9	204.8

[4] 40 CFR 51, Appendix W–*Guideline on Air Quality Models*, Appendix A.1– AMS/EPA Regulatory Model (AERMOD).

Table 3-2. Modeled Area Source Locations

Model ID	Description	UTM-E (m)	UTM-N (m)	Elevation (m)
SYP1	HMA Storage Pile	650,242.8	4,013,108.3	202.9
SYP2	Concrete Storage Pile	650,272.8	4,013,003.9	203.8
PAVEDRDS	Paved Road Areas	650,217.5	4,012,767.8	207.8
UNPVDRDS	Unpaved Areas	650,235.8	4,013,014.3	202.9

Table 3-3. Modeled Volume Source Locations

Model ID	Description	UTM-E (m)	UTM-N (m)	Elevation (m)
RM5	Aggregate Weigh Batcher	650,231.2	4,013,023.9	203.1
HMALO4	HMA Loadout #4	650,184.0	4,013,068.5	200.7
HMALO3	HMA Loadout #3	650,185.7	4,013,065.1	200.9
HMALO1	HMA Loadout #1	650,187.6	4,013,061.8	201.0
HMALO2	HMA Loadout #2	650,189.4	4,013,058.3	201.0
HMALO5	HMA Loadout #5	650,191.1	4,013,054.7	201.0
RAP_CRSH	RAP Crusher	650,236.9	4,013,079.6	203.7
DP2	Drop from Crusher	650,234.9	4,013,080.6	203.5
DP3	Transfer to Screen Conveyor	650,221.3	4,013,085.4	202.4
DP4	Drop from Screen to Drum Conveyor	650,226.6	4,013,071.4	203.1
RAP_SCN	Double Deck Screen	650,226.6	4,013,071.4	203.1
DP1	Drop from Feed Bins to Crusher Conveyor	650,246.7	4,013,072.9	204.6
DP5	Drop to Drum	650,213.7	4,013,064.8	202.3

As discussed previously, the modeling was conducted generally in accordance following DAQ procedures. The quarry modeling was specifically conducted in accordance with the "DAQ's Quarry Guidance for Refined Modeling"[5]. The only exception is with regards to roadway emissions. Since the truck traffic could occur over large areas and multiple directions in and around process areas, it made more sense to characterize roadway emissions as area sources in the model. The use of area sources for roadway emissions is generally more conservative than the default volume source approach as it assumes that emissions occur across the entire area, rather than emanating from the volume source center.

All drop points onto conveyors were characterized as volume sources based on the receiving throughput. Emissions from stockpiles were modeled as area sources. Emissions from screens and crushers were modeled as volume sources, with modeling parameters based on the size of the structure surrounding the emission unit.

Additionally, the stacks for sources ESH_1 and ESH_2 are vertical stacks but will have raincaps and thus, per NCDAQ guidance, were modeled with an exit velocity of 0.01 m/s. The HMASILO vents are characterized as point sources with ambient release characteristics, so per NCDAQ guidance, were modeled with an exit velocity of 0.01 m/s and exit temperature of 25 deg. C. The volume source parameters were calculated based on NCDAQ *Guidance* for surface-based volume sources.

[5] https://files.nc.gov/ncdeq/Air%20Quality/permits/mets/NC_DAQ_Quarry_Modeling_Guidance_31May2018.pdf

Table 3-4 shows how the release heights, initial vertical dimensions, and initial lateral dimensions for different emission units were calculated.

Table 3-4. Area and Volume Source Parameters Calculations

Emission Unit	Release Height	Initial Vertical Dimension	Initial Lateral Dimension
Conveyor Belt Drops	Drop Distance/2	Drop Distance/4.3	Conveyor Belt Width/4.3
Screens/Crushers	Structure Height/2	Structure Height/2.15	Structure Side Length/4.3
Stockpiles	Pile Height/2	Pile Height/2.15	N/A
Roads	Volume Height/2	Volume Height/2.15	Adjusted Road Width/2.15

Tables 3-5, 3-6, and 3-7 present the parameters input to the model for each of the point, area, and volume sources, respectively.

Table 3-5. Modeled Point Source Parameters

Model ID	Stack Height (m)	Exit Temp. (K)	Exit Velocity (m/s)	Stack Diameter (m)
CD_1	14.02	388.71	29.41	0.94
CD_2	12.19	293.15	24.38	0.46
ESH_2	2.74	435.93	0.01	0.30
ESH_1	4.57	435.93	0.01	0.06
HMASILO4	19.81	293.15	0.01	0.30
HMASILO3	19.81	293.15	0.01	0.30
HMASILO1	19.81	293.15	0.01	0.30
HMASILO2	19.81	293.15	0.01	0.30
HMASILO5	19.81	293.15	0.01	0.30
SYP1DP	4.27	293.15	0.01	0.30
SYP2DP	4.27	293.15	0.01	0.30
RMC_CNV1	0.91	293.15	0.01	0.91
RMC_CNV2	0.91	293.15	0.01	0.91

Table 3-6. Modeled Area Source Parameters

Model ID	Release Height (m)	Init. Vert. Dimension (m)
SYP1	2.13	1.98
SYP2	2.13	1.98
PAVEDRDS	3.60	3.40
UNPVDRDS	3.60	3.40

Table 3-7. Modeled Volume Source Parameters

Model ID	Release Height (m)	Init. Lat. Dimension (K)	Init. Vert. Dimension (m)
RM5	1.98	0.63	1.84
HMALO4	1.98	0.63	1.84
HMALO3	1.98	0.68	1.84
HMALO1	3.66	0.15	1.70
HMALO2	3.66	0.15	1.70
HMALO5	3.66	0.15	1.70
RAP_CRSH	3.66	0.15	1.70
DP2	3.66	0.15	1.70
DP3	23.62	0.25	0.36
DP4	0.30	0.25	0.14
RAP_SCN	0.30	0.25	0.14
DP1	1.37	0.25	0.64
DP5	0.30	0.25	0.14

Tables 3-8, 3-9, and 3-10 presents the emission rates that were modeled. Detailed emission calculations for each of the modeled sources are included in Appendix A of this report. The SO_2 emission rates shown in Appendix A reflect the use of that fuel and Carolina Sunrock is requesting that the permit be modified to reflect that change to ULSD for ESH_1 and ESH_2. Since the heaters are insignificant, there are no updated permit forms required however to be complete, forms are included in Appendix B.

Table 3-8. Point Source Modeled Emission Rates

	Modeled Emission Rates (g/s)					
Model ID	TSP	PM_{10}	$PM_{2.5}$ Hourly	$PM_{2.5}$ Annual	NO_x	SO_2
CD_1	1.04E+00	7.24E-01	6.84E-01	1.56E-01	1.75E+00	2.71E+00
CD_2	1.40E-01	5.39E-02	5.73E-02	5.39E-02	0.00E+00	0.00E+00
ESH_2	3.27E-03	3.28E-03	1.08E-03	1.08E-03	1.98E-02	2.11E-04
ESH_1	3.57E-03	3.53E-03	9.90E-04	9.90E-04	2.16E-02	2.30E-04
HMASILO4	3.69E-03	3.69E-03	2.65E-03	6.04E-04	0.00E+00	0.00E+00
HMASILO3	3.69E-03	3.69E-03	2.65E-03	6.04E-04	0.00E+00	0.00E+00
HMASILO1	3.69E-03	3.69E-03	2.65E-03	6.04E-04	0.00E+00	0.00E+00
HMASILO2	3.69E-03	3.69E-03	2.65E-03	6.04E-04	0.00E+00	0.00E+00
HMASILO5	3.69E-03	3.69E-03	2.65E-03	6.04E-04	0.00E+00	0.00E+00
SYP1DP	2.80E-02	1.32E-02	2.00E-03	4.58E-04	0.00E+00	0.00E+00
SYP2DP	2.35E-02	1.11E-02	1.68E-03	1.68E-03	0.00E+00	0.00E+00
RMC_CNV1	2.35E-02	1.11E-02	1.68E-03	1.68E-03	0.00E+00	0.00E+00
RMC_CNV2	2.35E-02	1.11E-02	1.68E-03	1.68E-03	0.00E+00	0.00E+00
CD_1	1.04E+00	7.24E-01	6.84E-01	1.56E-01	1.75E+00	2.71E+00
CD_2	1.40E-01	5.39E-02	5.73E-02	5.39E-02	0.00E+00	0.00E+00

Table 3-9. Area Source Modeled Emission Rates

	Modeled Emission Rates (g/s m2)			
Model ID	**TSP**	**PM_{10}**	**$PM_{2.5}$ Hourly**	**$PM_{2.5}$ Annual**
SYP1	5.98E-07	2.99E-07	4.48E-08	4.48E-08
SYP2	5.98E-07	2.99E-07	4.48E-08	4.48E-08
PAVEDRDS	4.07E-06	8.14E-07	2.00E-07	1.42E-07
UNPVDRDS	7.92E-06	6.55E-06	6.55E-07	1.55E-07

Table 3-10. Volume Source Modeled Emission Rates

	Modeled Emission Rates (g/s)			
Model ID	**TSP**	**PM_{10}**	**$PM_{2.5}$ Hourly**	**$PM_{2.5}$ Annual**
RM5	1.45E-02	1.45E-02	1.45E-02	1.45E-02
HMALO4	1.48E-02	1.48E-02	1.48E-02	1.48E-02
HMALO3	1.15E-02	1.15E-02	1.15E-02	1.15E-02
HMALO1	2.60E-02	2.60E-02	2.20E-02	6.00E-03
HMALO2	2.60E-02	2.60E-02	2.20E-02	6.00E-03
HMALO5	2.60E-02	2.60E-02	2.20E-02	6.00E-03
RAP_CRSH	2.60E-02	2.60E-02	2.20E-02	6.00E-03
DP2	2.60E-02	2.60E-02	2.20E-02	6.00E-03
DP3	1.68E-01	5.50E-02	1.60E-02	8.00E-03
DP4	1.40E-01	4.60E-02	1.30E-02	7.00E-03
RAP_SCN	1.40E-01	4.60E-02	1.30E-02	7.00E-03
DP1	2.80E-02	9.00E-03	3.00E-03	1.00E-03
DP5	2.80E-02	9.00E-03	3.00E-03	1.00E-03

3.3 Meteorological Data

The AERMOD modeling results were based on sequential hourly surface observations from Burlington, NC (BUY) and upper air data also from Greensboro, NC (GSO). While the facility is located just inside the Caswell County border, it was determined that Burlington was a closer and more representative station than the Danville, VA recommendation by NCDAQ for other sites in Caswell County.[6] The base elevation for the surface station is 188 m.[7] The 5, most recent years of meteorological data (2014-2018) were downloaded from NCDAQ's website and input to AERMOD. The ADJ_U* option has been approved by U.S. EPA to reduce AERMOD overpredictions during hours of very stable atmospheres and/or low wind speeds and was used in the modeling analyses.

3.4 Modeled Operating Scenarios

The HMA plant loadout is permitted for five (5) loadout emission points (HMALO1-5). The plant design only allows 2 of the loadout systems to be active at any one time. As such, there are several different operating source combinations (e.g., HMALO1/2, HMALO1/3, etc).

[6] https://deq.nc.gov/about/divisions/air-quality/air-quality-permits/modeling-meteorology/meteorological-data

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

The results presented in Section 4 of this report include the impacts from source group yielding the highest impact, where the source groups had 2 of the 5 loadouts.

3.5 NO_2 Modeling Approach

EPA's *Guideline on Air Quality Models (Guideline)*, in 40 CFR Part 51, Appendix W, recommends a tiered approach for modeling annual average NO_2 from point sources. The *Guideline* provides that:

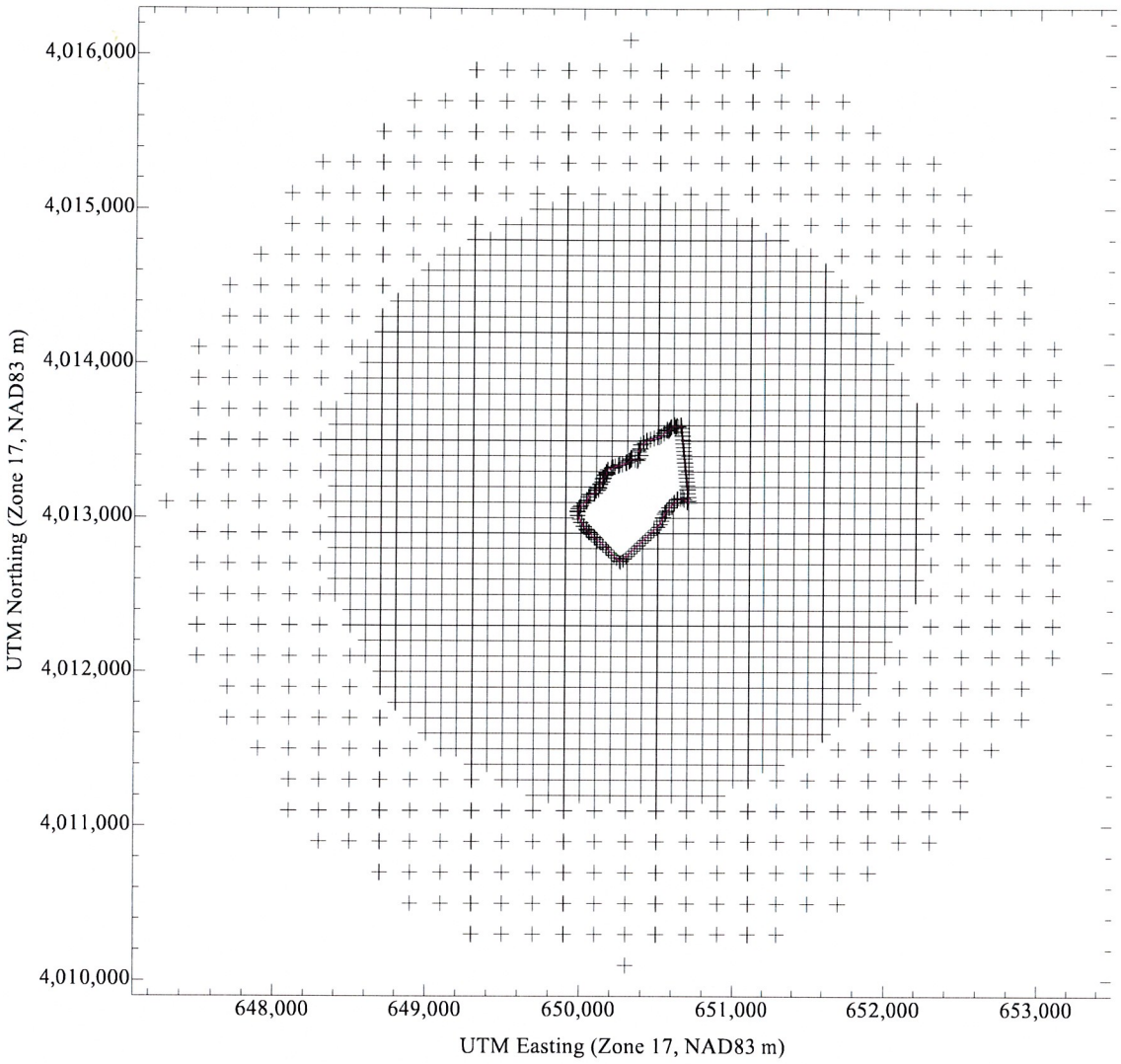
- A tiered screening approach is recommended to obtain annual average estimates of NO_2 from point sources for New Source Review analysis, including PSD... For Tier 1 ... use an appropriate Gaussian model to estimate the maximum annual average concentration and assume a total conversion of NO to NO_2. If the concentration exceeds the NAAQS and/or PSD Increments for NO_2, proceed to the 2nd level screen.
- For Tier 2 (2nd level) screening analysis, enable the ARM2 algorithm in the AERMOD model. ARM2 utilizes nationally-established relationships between NO and NO_2 concentrations in ambient monitoring data to determine appropriate conversion ratios in the modeled concentrations.
- For Tier 3 (3rd level) analyses, a detailed screening method may be selected on a case-by-case basis. For point source modeling, detailed screening techniques such as the Ozone Limiting Method may also be considered.

The 1-hour NO_2 NAAQS analyses utilized U.S. EPA regulatory default Tier 2 (ARM2) approach for NO_2-to-NOx conversion in the model.

3.6 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 2 km from the center of the facility. A second grid was added with receptors every 200 m from 2 km – 3 km to ensure that the maximum impacts were captured in the model. There are no public rights-of-way (e.g., roads) traversing the property line, so only a single property line was included in the modeling. The final impacts were reviewed to ensure that the maximum impacts were captured within the 100 m spaced grid. Figure 3-2 shows the receptors included in the modeling analysis.

Figure 3-2. 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.[8]

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

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

intervals) and were interpolated using the latest version of AERMAP (version 18081) 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 Carolina Sunrock structures and emission sources, with exception to sources within the proposed pit.

3.7 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:

$H_{GEP} = H + 1.5L$, where:

H_{GEP} = 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.[9] None of the proposed emission units at the Burlington facility will exceed GEP height.

The BPIP input and output files will be included with the electronic modeling file transfer.

3.8 Background Concentrations

In the NAAQS analysis, modeled impacts from the facility will be combined with background concentrations, which represent the air quality concentrations due to sources that are not explicitly modeled (e.g., mobile sources, small but local stationary sources, non-regulated fugitive sources, and large but distant sources). Selection of the existing monitoring station data that is "representative" of the ambient air quality in the area surrounding the facility is determined based on the following three criteria: 1) monitor location, 2) data quality, and 3) data currentness. Key considerations based on the monitor location criteria include proximity to the significant impact area of the facility, similarity of emission sources impacting the monitor to the emission sources impacting the airshed surrounding the facility, and the similarity of the land use and land cover (LULC) surrounding the monitor and facility.

[9] 40 CFR §51.100(ii)

The data quality criteria refers to the monitor being an approved (DEFINE) SLAM or similar monitor type subject to the quality assurance requirements in 40 CFR Part 58 Appendix A. data currentness refers to the fact that the most recent three complete years of quality assured data are generally preferred.

PM_{10} and $PM_{2.5}$ results include background based on the most recent, 3-year design value from the Guilford County monitor, which is the closest, most representative (while conservative) monitor to the facility. SO_2 results included background from the Person County DRR monitor, which is very conservative as a source-oriented rather than general background monitor. NO_2 results included background from the Lee County monitor, which is the nearest monitor with traffic patterns similar to the very rural facility site.[10]

[10] https://deq.nc.gov/about/divisions/air-quality/air-quality-data/nata-epa-national-air-toxics-assessment-for-north-carolina/data-archives-statistical-summaries/design-value-summaries. Lee County data provided in email from Matthew Porter (NCDAQ) on November 26, 2018.

4. NAAQS/SAAQS MODELING RESULTS

This section presents the modeling results for the NAAQS/SAAQS analyses described previously in this report.

4.1 NAAQS/SAAQS Results

Table 4-1 presents the model results for all forms particulate matter, SO_2, and NO_2. As shown, all impacts (including background concentrations where applicable) are below their respective NAAQS/SAAQS. As such, Carolina Sunrock's proposed Burlington facility will be in compliance with all relevant ambient air quality standards.

Table 4-1. NAAQS and SAAQS Modeling Results

Pollutant	Averaging Period	Modeled Concentration (ug/m^3)	Background Concentration (ug/m^3)	Total Impact (ug/m^3)	NAAQS/SAAQS (ug/m^3)
TSP	24-hr	145.2	-	145.2	150
	Annual	27.4	-	27.4	75
PM_{10}	24-hr	54.5	17	71.5	150
$PM_{2.5}$	24-hr	9.1	15	24.1	35
	Annual	1.4	7.3	8.7	12
SO_2	1-hr	39.9	83.8	123.7	196
NO_2	1-hr	129.7	15.3	145	188

The AERMOD input and output files used in these analyses will be provided upon request via electronic file transfer.

APPENDIX D. LOCAL ZONING CONSISTENCY DETERMINATION

SUNROCK®
CAROLINA SUNROCK LLC

Scott Martino
Environmental Compliance Manager
200 Horizon Drive, Suite 100
Raleigh, NC 27615

By Email and Certified Mail

March 23, 2021

Mr. Bryan Miller
County Manager
Caswell County
144 Main Street
Yanceyville, NC 27379

RE: Zoning Consistency Determinations for Carolina Sunrock Projects in Caswell County

Dear Mr. Miller:

On behalf of Carolina Sunrock LLC ("Sunrock"), we are writing to inform you that Sunrock is applying for new air quality permits for its projects which will be located in Caswell County in accordance with 15A North Carolina Administrative Code Section 2Q.0304(b)(1). As you know, Sunrock plans to operate a hot-mix asphalt plant and concrete plant on property located at 12971 North Carolina 62, Burlington, NC and a drum mix asphalt plant, truck mix ready concrete plant and a quarry on property located at 1238 Wrenn Road, Prospect Hill, NC.

The applications for the air quality permits are enclosed with this letter, and outline Sunrock's proposed activities in detail. These applications are in all respects the same as those the County reviewed in 2019, with some additional air dispersion modeling, which was added at the request of the North Carolina Division of Air Quality ("NCDAQ").

In accordance with N.C. G. S. § 143-215.108(f), we hereby request that the County issue Zoning Consistency Determinations for these projects which can be submitted to NCDAQ along with the new air quality permit applications. Forms for responding to this request are enclosed, along with proposed responses that we have prepared based upon the County's response dated September 5, 2019 and the subsequent legal opinions obtained by the County relating to these projects. In order to demonstrate proof of transmittal, please sign, title, stamp and date the enclosed forms and mail them to my attention at the above-referenced address at your earliest convenience.

Thank you very much for your prompt attention to this matter. If you have any questions, or if there is any other information that you would like for us to provide to you, please let us know.

Sincerely,
Carolina Sunrock LLC

Scott Martino,
Environmental Compliance Manager

Enclosures

cc: Bryan Ferrell, Esq., County Attorney (w/enclosures)

smartino@thesunrockgroup.com
Phone: 919.747.6336
Fax: 919.747.6305

Zoning Consistency Determination

Facility Name	Carolina Sunrock LLC – Burlington North
Facility Street Address	12971 North Carolina 62
Facility City	Burlington, NC 27217
Description of Process	Hot Mix Asphalt Plant & Ready Mix Concrete Plant
SIC Code/NAICS	2951/324121, 3273/327320
Facility Contact	Scott Martino
Phone Number	919.747.6336
Mailing Address	200 Horizon Drive
Mailing City, State Zip	Raleigh, NC 27615

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 and subdivision ordinances for this facility at this time

☑ The proposed operation IS consistent with applicable zoning and subdivision ordinances

☐ The proposed operation IS NOT consistent with applicable zoning and subdivision 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: For the reasons set forth in the memorandum dated July 27, 2020, from Thomas Terrell, Esq. to the Caswell County Board of Commissioners (copy attached) the projects in question have been determined to have common law vested rights to proceed in Caswell County.

Agency	Caswell County Local Government
Name of Designated Official	Bryan S. Miller
Title of Designated Official	County Manager
Signature	Bryan S Miller
Date	3/30/2021

SUNROCK®
CAROLINA SUNROCK LLC

Scott Martino
Environmental Compliance Manager
200 Horizon Drive, Suite 100
Raleigh, NC 27615

April 20, 2021

Mr. Ray Stewart, P.E.
Air Quality Regional Supervisor
Winston-Salem Regional Office
450 West Hanes Mill Road, Suite 300
Winston-Salem, North Carolina 27105

Re: Fulfillment of 15A NCAC 02Q.0113 (Notification in Areas without Zoning)
Carolina Sunrock LLC – Burlington North
Burlington, Caswell County, North Carolina

Dear Mr. Stewart:

This letter is intended to notify your office of Carolina Sunrock, LLC completion of the proper public notifications as governed by 15A NCAC 02Q.0113 (Notifications in Areas without Zoning) for the above referenced facility. On April 7, 2021 a public notice was published in The Caswell Messenger, which services the area of the facility. In addition, a sign was posted as set forth by the governing regulations on April 1, 2021.

Attached to this document are the Affidavit of Publication and Photo Graph Log depicting sign placement, and applicable scales per the guidance document. It is our understanding that this documentation fulfills all applicable guidelines and the processing of our air permit application shall commence. Please contact me if additional information is required or if this does not meet your requirements.

Sincerely
Carolina Sunrock LLC

Scott Martino,
Manager Environmental Compliance

Enclosures
Affidavit of Publication
Photograph Log

smartino@thesunrockgroup.com
Phone: 919.747.6336
Fax: 919.747.6305

PUBLIC NOTICE

Carolina Sunrock LLC

200 Horizon Drive | Raleigh NC, 27615

NCDEQ Air Permit Application for the construction and operation of a Quarry, Hot Mix Asphalt, and Ready Mix Concrete facility located at:

Prospect Hill Quarry and Distribution Center

1238 Wrenn Road, Prospect Hill
Caswell County, NC, 27314

PUBLIC NOTICE

Carolina Sunrock LLC

200 Horizon Drive | Raleigh NC, 27615

NCDEQ Air Permit Application for the construction and operation of a Hot Mix Asphalt, and Ready Mix Concrete facility located at:

Burlington North and Distribution Center

12971 North Carolina 62, Burlington
Caswell County, NC, 27217

TH CAROLINA
WELL COUNTY

AFFIDAVIT OF PUBLICATION

Before the undersigned, a Notary Public of said County and State, duly commissioned, qualified, and authorized by law to administer oaths, personally appeared **Debra Ferrell** who being first duly sworn, deposes and says: that she is an authorized employee of The Caswell Messenger, engaged in the publication of a newspaper known as The Caswell Messenger published, issued, and entered as second class mail in the City of Yanceyville in said County and State; that she is authorized to make this affidavit and sworn statement; that the notice or other legal advertisement, a true copy of which is attached hereto, was published in The Caswell Messenger on the following date, ***April 7, 2021,*** that the said newspaper in which such notice, paper, document, or legal advertisement was published was, at the time of each and every such publication, a newspaper meeting all of the requirements and qualifications of Section 8-597 of the General Statutes of North Carolina and was qualified newspaper within the meaning of Section 1-597 of the General Statutes of North Carolina.

This is the 15th day of April, 2021

Debra Ferrell, editor

(Signature of person making affidavit)

Sworn to and subscribed before me, this 15th day of April 2021

Anita B. Smith

Notary Public

ANITA B. SMITH
Notary Public, North Carolina
Caswell County
My Commission Expires
9/29/22

SUNROCK®

CAROLINA SUNROCK LLC

Burlington North Facility

View of approximate sign location, located less than 10' off of the road right-of-way

View of posted sign looking from center line of Highway 62.

View of posted sign looking from center line of Highway 62.

View looking north along centerline of Highway 62 of sign

View looking South along centerline of Highway 62 of sign