Air Quality Construction Permit Application

CAROLINA SUNROCK LLC •
PROSPECT HILL, NORTH CAROLINA

SUNROCK®

Check # 033618
$400.00

Prepared By:

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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 new hot mix asphalt and truck mix concrete batch plant at 57 Wrenn Road in Prospect Hill, Caswell County, North Carolina.

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 (3) have been included as required by Rule 2Q .0305(b), and the copies have been signed as required by Rule 2Q .0304(j).

The new facility will be a synthetic minor facility for particulate matter (PM) emissions and an area source of hazardous air pollutants (HAPs). Therefore, the permit application fee for a new synthetic minor facility ($400) is enclosed as required under 2Q .0304(k) and 2Q .0305(a)(1)(A). Furthermore, as required by 2Q .0304(b)(1), 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 emission calculations for individual emission units,
- Appendix B contains the modeling files and protocol, and
- Appendix C 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 new hot mix asphalt (HMA) and truck mix concrete batch plant in Prospect Hill, 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 new 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 asphalt plant (80 MMBtu/hr maximum heat input capacity) – controlled by a 45,000 cfm 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

Carolina Sunrock is also proposing a reclaimed asphalt pavement (RAP) crushing system consisting of:

- One crusher (65 tph)
- One conveyor
- One screen

The RAP crushing system will also periodically use a mobile crusher (also rated at 65 tph) which may temporarily reside at the Prospect Hill 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 (185 tons maximum capacity)
- Fly ash silo (135 tons maximum capacity)
- Truck loadout point
- Cement/flyash weight batcher (5 tons maximum capacity)
- Aggregate weigh batcher (5 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 6500 cfm bagfilter.

2.2.3. Insignificant Activities

Carolina Sunrock is proposing the following insignificant activities which are exempt from permitting:

- IES-1 - Liquid Asphalt Tank (30,000 gallon capacity);
- IES-2 - Liquid Asphalt Tank (30,000 gallon capacity);
- IES-3 – No. 2 Fuel Oil Fuel Tank (20,000 gallon capacity);
- IES-4 - Natural gas/No. 2 fuel oil-fired Asphalt Cement Heater; and
- IES-5 - Natural gas/No. 2 fuel oil-fired Liquid Asphalt Tank Heater

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 for particulate matter (PM, PM_{10}, $PM_{2.5}$) and carbon monoxide (CO) exceeds 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.

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, conveyor, 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 (crusher only) is 12 percent opacity. For the RAP conveyor and screen, 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.

3.5. 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

Since the process weight rate 250 tons/hour, the allowable emission rate is 55.4 lb/hr. Controlled PM emissions are 1.28 lb/hr, well under the allowable emission rate.

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 emission sources, 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.

3.5.7. New Source Performance Standards (15A NCAC 2D .0524)

For Propane/Natural Gas/No. 2 fuel oil/recycled No. 2 fuel oil/No. 4 fuel oil/recycled No.4 fuel oil fired batch type hot mix asphalt plant (250 tons/hour maximum capacity, 80 MMBtu/hr maximum heat input) (ID No. ES-1), the facility shall comply with all applicable provisions, including the notification, testing, reporting, recordkeeping, and monitoring requirements contained in 15A

NCAC 2D .0524 "New Source Performance Standards" (NSPS) as promulgated in 40 CFR 60, Subpart I, including Subpart A "General Provisions."

For the nonmetallic mineral processing equipment (RAP Crushing System), the facility shall comply with all applicable provisions, including the notification, testing, reporting, recordkeeping, and monitoring requirements contained in 15A NCAC 20 .0524 "New Source Performance Standards" (NSPS) as promulgated in 40 CFR 60, Subpart OOO including Subpart A General Provisions.

See Section 3.4 for further details.

3.5.8. 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 ofthe 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.

3.5.9. 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.

3.5.10. 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 shall be less than 100 tons per consecutive 12-month period for the following pollutants:

- PM
- CO
- SO_2

Potential SO_2 emissions are just under 100 tpy at 99.24 tpy, however, Carolina Sunrock is also requesting an SO_2 limitation and will monitor SO_2 emissions by tracking sulfur content of fuel.

3.5.11. 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.

Carolina Sunrock has triggered modeling for the following pollutants since total facility wide emissions exceed the respective TPERs: arsenic, benzene, formaldehyde, mercury, and nickel. Therefore, Carolina Sunrock is submitting an air dispersion modeling analysis (See Section 4) and requests TAP limits be added to the permit according to Table 4-3 below.

3.5.12. 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).

☆ See corrections received on 4/12/17

4. AIR DISPERSION MODELING ANALYSIS

This section presents the input data and modeling methodology utilized in the TAP modeling compliance demonstration. The modeling methodology conforms to the Guidelines for Evaluating the Air Quality Impacts of Toxic Pollutants in North Carolina (February 2014) and more recent changes posted on NCDAQ's Air Quality Analysis Branch (AQAB) website. In lieu of a modeling protocol, a protocol checklist is provided in Appendix B.

As previously discussed, potential emissions of five (5) compounds regulated under 15A NCAC 2Q .0700 (NC Air Toxics) exceed their TPER and this air dispersion modeling evaluation has been conducted to demonstrate compliance with all applicable AAL.

4.1. FACILITY LOCATION

Figure 4-1 provides a topographical map of the area surrounding the Carolina Sunrock Prospect Hill property. The approximate central Universal Transverse Mercator (UTM) coordinates of the facility are 664.3 kilometers (km) east and 4,013.6 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 4-1. Map of Area Surrounding Carolina Sunrock

4.2. MODEL SELECTION

The AERMOD dispersion model (version 15181) 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 Prospect Hill facility.[2] AERMOD was run using the regulatory default option, which automatically implements NCDAQ and U.S. EPA recommended model options.

4.3. SOURCE DESCRIPTION

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

Table 4-1. Modeled Source Locations

Model ID	Description	UTM-E (m)	UTM-N (m)	Elevation (m)
CD1	Asphalt Plant Baghouse	664,296.2	4,013,715.6	215.7
CD2	Concrete Plant Baghouse	664,364.9	4,013,723.0	214.2
IES4	Asphalt Heater	664,313.7	4,013,717.7	215.8
IES5	Liquid Asphalt Heater	664,298.7	4,013,704.8	215.8

Table 4-2 presents the stack parameters input to the model for each of the sources. The stacks for sources IES4 and IES5 will have raincaps and thus, per NCDAQ guidance, were modeled with an exit velocity of 0.01 m/s.

Table 4-2. Modeled Source Parameters

Model ID	Stack Height (m)	Exit Temp. (K)	Exit Velocity (m/s)	Stack Diameter (m)
CD1	9.22	388.71	29.41	0.96
CD2	10.67	298.15	24.38	0.46
IES4	2.74	435.93	0.01	0.30
IES5	4.57	435.93	0.01	0.05

[2] 40 CFR 51, Appendix W–*Guideline on Air Quality Models*, Appendix A.1– AMS/EPA Regulatory Model (AERMOD).

Table 4-3 presents the emission rates modeled for each of the triggered TAPs. These rates represent values that are four times the calculated potential rates in order to provide the facility with operational flexibility.

Table 4-3. Modeled Emission Rates

	Modeled Emission Rates (g/s) Based on Calculated Potentials * 4				
Model ID	**ARSENIC**	**BENZENE**	**FORM**	**MERCURY**	**NICKEL**
CD1	7.06E-05	4.99E-02	4.02E-01	3.28E-04	7.94E-03
CD2	3.32E-05	0.00E+00	0.00E+00	0.00E+00	9.69E-05
IES4	2.42E-06	1.24E-06	1.43E-04	1.81E-06	1.81E-06
IES5	2.22E-06	1.13E-06	1.31E-04	1.66E-06	1.66E-06

The above modeled emission rates, in g/s, would correspond to the following averaging period-specific limits shown in Table 4-4, which Carolina Sunrock is requesting be included in the permit.

Table 4-4. Requested Permit Limits

Model ID	ARSENIC (lb/yr)	BENZENE (lb/yr)	FORM (lb/hr)	MERCURY (lb/day)	NICKEL (lb/day)
CD1	4.91E+00	3.47E+03	3.19E+00	6.24E-02	1.51E+00
CD2	2.31E+00	-	-	-	1.85E-02
IES4	1.68E-01	8.61E-02	1.13E-03	3.46E-04	3.46E-04
IES5	1.54E-01	7.89E-02	1.04E-03	3.17E-04	3.17E-04

4.4. 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). These stations are recommended by NCDAQ for modeling facilities located in Caswell County. The base elevation for the surface station is 188 m.[3]

Since the modeled impacts based on the optimized emission rates were expected to exceed 50% of the AAL, five (5) years of data were modeled. The 5, most recent years of meteorological data (2010-2014) were downloaded from NCDAQ's website and input to AERMOD.

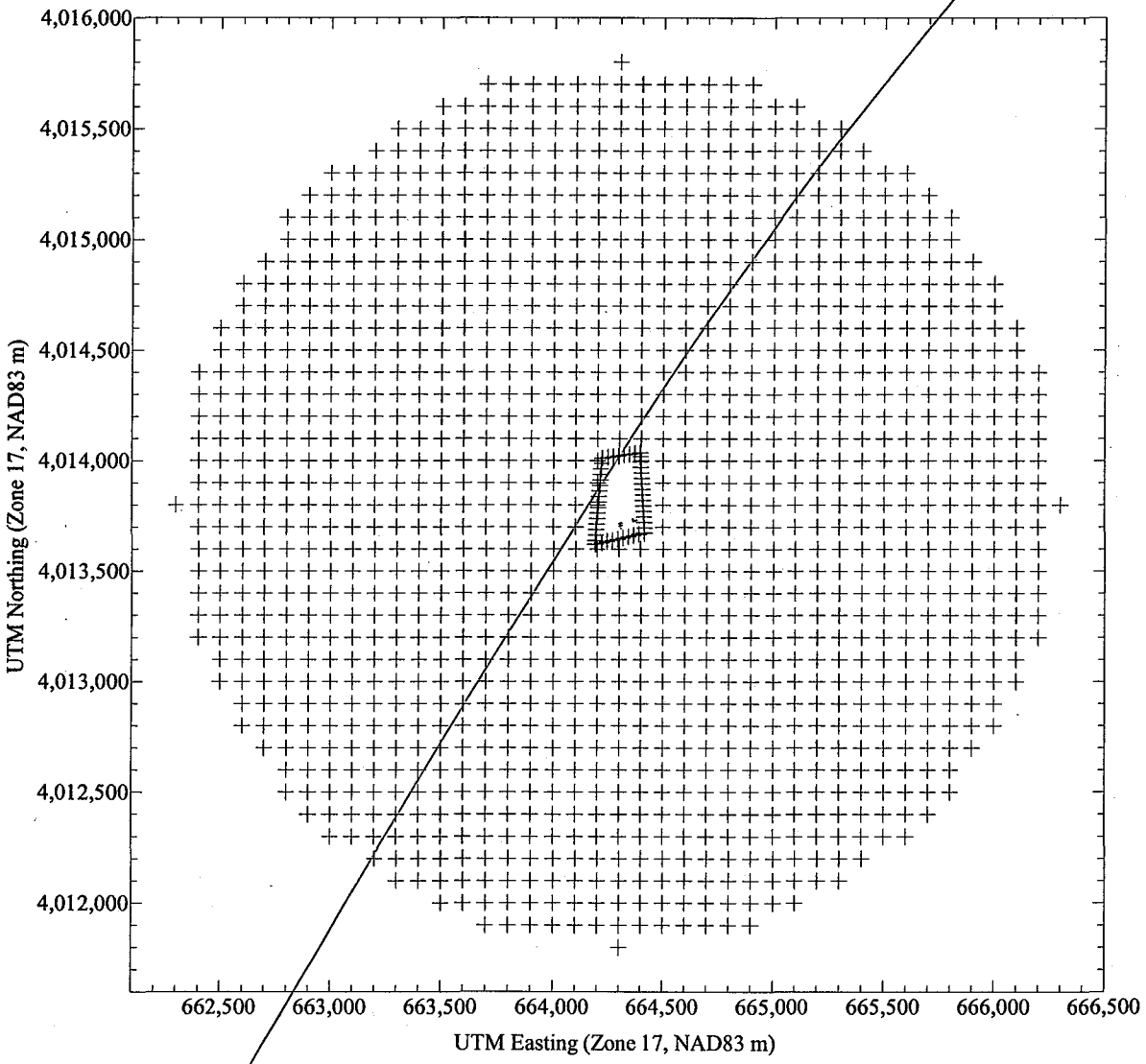
4.5. MODELED RECEPTORS

The receptors included in the modeling analysis consisted of property line receptors, spaced 25 meters (m) apart, and Cartesian receptor points spaced every 100 m, extending out 2 km from the

[3] http://www.ncair.org/permits/mets/ProfileBaseElevations.pdf

center of the facility. There are no public right-of-ways (e.g. roads) traversing the property line, so only a single property line was included in the modeling. The impacts were reviewed to ensure that the maximum impacts were captured within the 100 m spaced grid. Figure 4-2 shows the receptors included in the modeling analysis.

Figure 4-2. Modeled Receptor Grid



The AERMOD model is capable of handling both simple and complex terrain. Through the use of the AERMOD terrain preprocessor (AERMAP), AERMOD incorporates not only the receptor heights, but also an effective height (hill height scale) that represents the significant terrain features surrounding a given receptor that could lead to plume recirculation and other terrain interaction.[4]

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

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

array elevations are at a resolution of 1 arcsecond (approximately 30 m intervals) and were interpolated using the latest version of AERMAP (version 11103) 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.

4.6. 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:

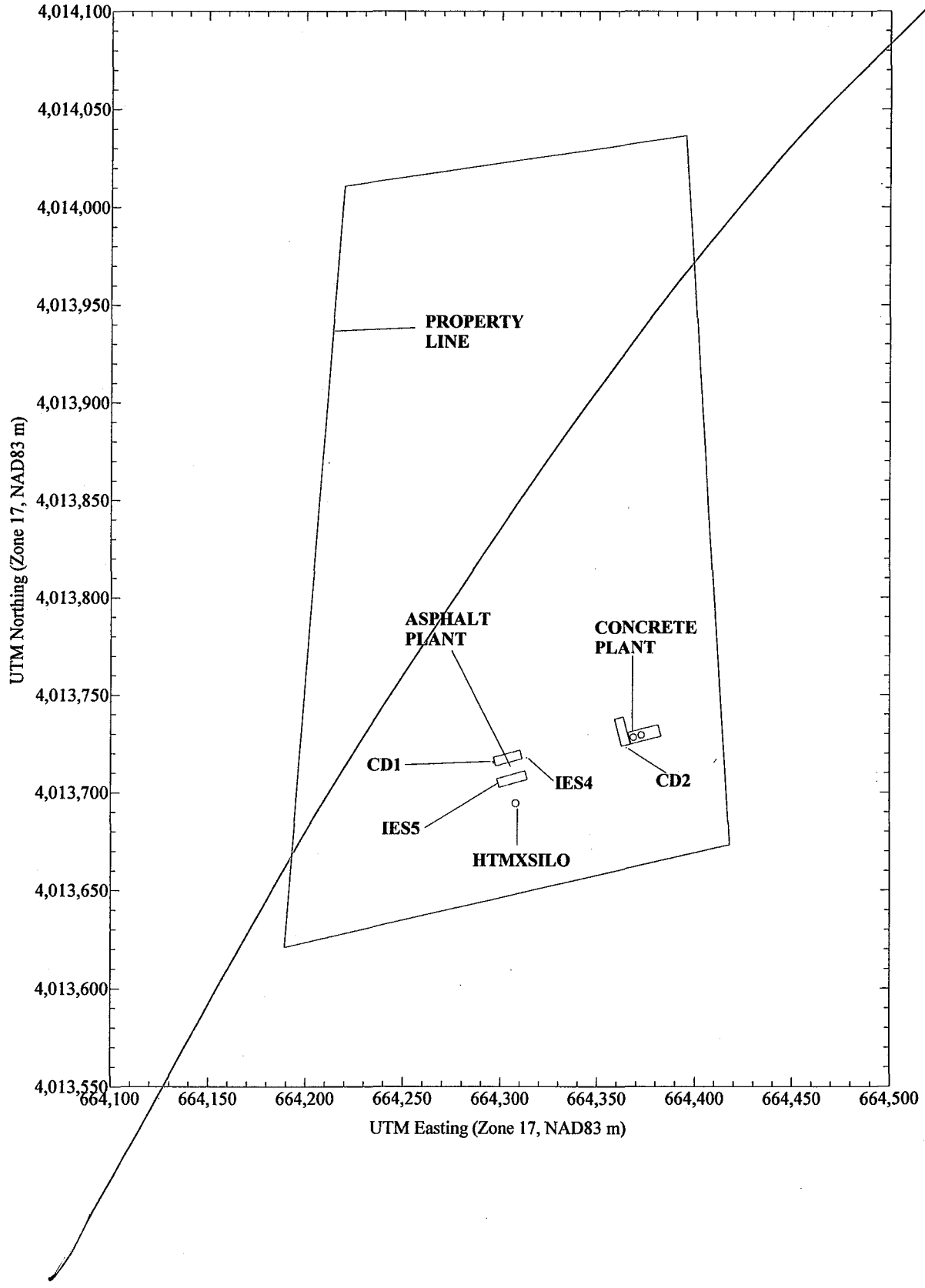
H_{GEP} = minimum GEP stack height,
H = structure height, and
L = lesser dimension of the structure (height or projected width).

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.[5] None of the proposed emission units at the Prospect Hill facility will exceed GEP height.

Figure 4-3 presents a site layout for the facility that shows the source and building arrangement as modeled. The electronic BPIP input and output files are included on the CD-ROM in Appendix B.

[5] 40 CFR §51.100(ii)

Figure 4-3. Carolina Sunrock Prospect Hill Modeled Site Layout



4.7. TAP MODELING RESULTS

Table 4-3 presents the model results for each of the triggered TAP. As shown, all impacts are below their respective AAL. The electronic modeling files used in the TAP analysis are contained on the CD-ROM in Appendix B.

Table 4-3. TAP Modeling Results

Pollutant	Avg. Period	UTM-E (m)	UTM-N (m)	Date/Time or Year	Max. Modeled Impact ($\mu g/m^3$)	AAL ($\mu g/m^3$)	% of AAL (%)
Arsenic	Annual	664,413.2	4,013,745.7	2011	1.56E-03	2.10E-03	74.29%
Benzene	Annual	664,269.2	4,013,639.3	2015	6.92E-02	0.12	57.68%
Formaldehyde	1-Hour	664,293.6	4,013,644.8	14120701	37.94	150	25.30%
Mercury	24-Hour	664,293.6	4,013,644.8	15021024	1.47E-02	0.6	2.45%
Nickel	24-Hour	664,293.6	4,013,644.8	15021024	3.18E-01	6	5.30%

FORM A1

FACILITY (General Information)

REVISED 05/25/12 | NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate | A1

NOTE- APPLICATION WILL NOT BE PROCESSED WITHOUT THE FOLLOWING:

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

GENERAL INFORMATION

Legal Corporate/Owner Name:	CAROLINA SUNROCK LLC
Site Name:	Prospect Hill Facility
Site Address (911 Address) Line 1:	4266 Wrenn Road
Site Address Line 2:	
City:	Prospect Hill
State:	NC
Zip Code:	27314
County:	Caswell

CONTACT INFORMATION

Permit/Technical Contact:				***Facility/Inspection Contact:***			
Name/Title:	Scott Martino - Compliance Manager			Name/Title:	Scott Martino - Compliance Manager		
Mailing Address Line 1:	200 Horizon Drive, Ste 100			Mailing Address Line 1:	200 Horizon Drive, Ste 100		
Mailing Address Line 2:				Mailing Address Line 2:			
City:	Raleigh	State: NC	Zip Code: 27615	City:	Raleigh	State: NC	Zip Code: 27615
Phone No. (area code)	984-202-4761	Fax No. (area code)	919-747-6305	Phone No. (area code)	984-202-4761	Fax No. (area code)	919-747-6305
Email Address:	smartino@thesunrockgroup.com			Email Address:	smartino@thesunrockgroup.com		

Responsible Official/Authorized Contact:				***Invoice Contact:***			
Name/Title:	Greg Bowler / CFO			Name/Title:	Scott Martino - Compliance Manager		
Mailing Address Line 1:	200 Horizon Drive, Ste 100			Mailing Address Line 1:	200 Horizon Drive, Ste 100		
Mailing Address Line 2:				Mailing Address Line 2:			
City:	Raleigh	State: NC	Zip Code: 27615	City:	Raleigh	State: NC	Zip Code: 27615
Phone No. (area code)	919-747-6400	Fax No. (area code)	919-747-6305	Phone No. (area code)	984-202-4761	Fax No. (area code)	919-747-6305
Email Address:	Gbowler@thesunrockgroup.com			Email Address:	smartino@thesunrockgroup.com		

APPLICATION IS BEING MADE FOR

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

FACILITY CLASSIFICATION AFTER APPLICATION (Check Only One)

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

FACILITY (Plant Site) INFORMATION

Describe nature of (plant site) operation(s): **Facility ID No. :** 1700015

This is to be a Drum mix hot asphalt plant and a truck mix ready Mix Concrete Plant.

Primary SIC/NAICS Code:	324121		Current/Previous Air Permit No.	N/A	Expiration Date:
Facility Coordinates:	Latitude:	36° 15' 18.36"	Longitude:	79° 10' 13.56"	

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:	One Copley Parkway		Mailing Address Line 2:	Suite 205	
City:	Morrisville	State: NC	Zip Code:	27560	County: Wake
Phone No. (area code)	919-462-9693	Fax No. (area code) 919-462-9694	Email Address:	aandrews@trinityconsultants.com	

SIGNATURE OF RESPONSIBLE OFFICIAL/AUTHORIZED CONTACT

Name (typed):	Greg M. Bowler	Title:	CFO
X Signature(Blue Ink):		Date:	

Attach Additional Sheets As Necessary

FORMs A2, A3

EMISSION SOURCE LISTING FOR THIS APPLICATION - A2

112r APPLICABILITY INFORMATION - A3

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

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

EMISSION SOURCE ID NO.	EMISSION SOURCE DESCRIPTION	CONTROL DEVICE ID NO.	CONTROL DEVICE DESCRIPTION
Equipment To Be ADDED By This Application (New, Previously Unpermitted, or Replacement)			
Drum Mix Asphalt Plant (250 tons per hour capacity) consisting of:			
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
HMA-Silo1	Hot mix asphalt storage silo (150 tons maximum capacity)	N/A	N/A
HMA-Silo2	Hot mix asphalt storage silo (150 tons maximum capacity)	N/A	N/A
HMA-Silo3	Hot mix asphalt storage silo (200 tons maximum capacity)	N/A	N/A
HMA-Silo4	Hot mix asphalt storage silo (200 tons maximum capacity)	N/A	N/A
HMA-Silo5	Hot mix asphalt storage silo (200 tons maximum capacity)	N/A	N/A
HMA-LO1	asphalt loadout	N/A	N/A
HMA-LO2	truck loadout operation		
RAP Crushing System consisting of:		N/A	N/A
RAP-CRSH	One crusher (65 tph)	N/A	N/A
RAP-CNV	One conveyor	N/A	N/A
RAP-SCN	One screen	N/A	N/A
Truck Mix Concrete Batch Plant (120 cubic yards per hour) consisting of:			
RM-1	Cement silo (185 tons maximum capacity)	RMC-CD2	Bagfilter
RM-2	Fly ash silo (135 tons maximum capacity)	RMC-CD2	Bagfilter
RM-3	Truck loadout point	RMC-CD2	Bagfilter
RM-4	Cement/flyash weigh batcher (5 tons maximum capacity)	RMC-CD2	Bagfilter
RM-5	Aggregate weigh batcher (5 tons maximum capacity)	N/A	N/A
Existing Permitted Equipment To Be MODIFIED By This Application			
Equipment To Be DELETED By This Application			

112(r) APPLICABILITY INFORMATION — A 3

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

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

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

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

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

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

Yes ☐ No ☐ If yes, please specify: _____

Attach Additional Sheets As Necessary

FORM D4

EXEMPT AND INSIGNIFICANT ACTIVITIES SUMMARY

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

	DESCRIPTION OF EMISSION SOURCE	SIZE OR PRODUCTION RATE	BASIS FOR EXEMPTION OR INSIGNIFICANT ACTIVITY
1.	30,000 gal liquid asphalt tank IES-1	30,000 gal	15A NCAC 2Q .0102(g)(4)
2.	30,000 gal liquid asphalt tank IES-2	20,000 gal	15A NCAC 2Q .0102(g)(4)
3.	20,000 gal No. 2 fuel oil tank IES-3	20,000 gal	15A NCAC 2Q .0102(g)(4)
4.	Natural Gas/No. 2 Fuel Oil-fired Asphalt Cement Heater (Heatec HCS-70 Heater) IES-4	1.2 MMBtu/hr	15A NCAC 2Q .0102(h)(1)(A)
5.	Natural Gas/No. 2 Fuel Oil-fired Liquid Asphalt Tank Heater (Heatec Direct Heater) IES-5	1.1 MMBtu/hr	15A NCAC 2Q .0102(h)(1)(A)
6.			
7.			
8.			
9.			
10.			

Attach Additional Sheets As Necessary

FORM D1

FACILITY-WIDE EMISSIONS SUMMARY

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

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

	EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)	OTENTIAL EMISSION BEFORE CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)
AIR POLLUTANT EMITTED	tons/yr	tons/yr	tons/yr
PARTICULATE MATTER (PM)	**See 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 - FACILITY-WIDE

		EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)	OTENTIAL EMISSION BEFORE CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)
HAZARDOUS AIR POLLUTANT EMITTED	CAS NO.	tons/yr	tons/yr	tons/yr
See Appendix A				

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 D

TECHNICAL ANALYSIS TO SUPPORT PERMIT APPLICATION

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

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

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

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

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

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

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

I, 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 Andrews**

DATE: 3/10/17

COMPANY: **Trinity Consultants of NC PC**

ADDRESS: **One Copley Parkway Ste 205, Morrisville, NC**

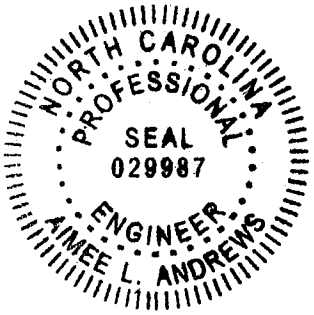
TELEPHONE: **(919) 462-9693**

SIGNATURE: Aimee Andrews

PAGES CERTIFIED **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

FORM B

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

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

EMISSION SOURCE DESCRIPTION: **250 TPH HMA Double barrel 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: **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):

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

START CONSTRUCTION DATE:	OPERATION DATE:	DATE MANUFACTURED:
MANUFACTURER / MODEL NO.: **Astec**	EXPECTED OP. SCHEDULE: **10** HR/DAY **6** DAY/WK **50**	
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?): **I**	NESHAP (SUBPART?):	MACT (SUBPART?):
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB **15**	MAR-MAY **30**	JUN-AUG **30** SEP-NOV **2**
EXPECTED ANNUAL HOURS OF OPEF **1000**	VISIBLE STACK EMISSIONS UNDER NORMAL OPERATION: **<20** % OPAC	

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	**See 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 AND CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
See Appendix A							

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS

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

ETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH S

Attach Additional Sheets As Necessary

FORM B9

EMISSION SOURCE (OTHER)

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

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

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

1. DRYING OF AGGREGATE (DRYING DRUM)
2. MIXING OF AGGREGATE AND RAP WITH LIQUID ASPHALT (MIXING DRUM)
3. STORAGE OF FINAL PRODUCT (Silos)

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/HR)	LIMITATION(UNIT/HR)
Aggregate (virgin and RAP)	**tons**	**250**	**250**
Liquid AC	**tons**	**12**	**12**

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: **NG/#2/ REC #2/ REC #4**	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR): **80**
MAX. CAPACITY HOURLY FUEL USE:	REQUESTED CAPACITY ANNUAL FUEL USE:

COMMENTS:

Attach Additional Sheets as Necessary

FORM B1

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

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — **B1a**

EMISSION SOURCE DESCRIPTION: **HMA Drum Plant Dryer Heater (Hauck, 80 MMBTU/hr burner)**	EMISSION SOURCE ID NO: **HMA-1**
	CONTROL DEVICE ID NO(S): **HMA-CD1**
OPERATING SCENARIO: 1 OF 1	EMISSION POINT (STACK) ID **EP-1**

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

HEATING MECHANISM: ☐ INDIRECT ■ DIRECT

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

METHOD OF TUBE CLEANING: CLEANING SCHEDULE:

COAL-FIRED BURNER

TYPE OF BOILER IF OTHER DESCRIBE:

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

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

METHOD OF TUBE CLEANING: CLEANING SCHEDULE:

OIL/GAS-FIRED BURNER

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

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

METHOD OF TUBE CLEANING: CLEANING SCHEDULE:

OTHER FUEL-FIRED BURNER

TYPE OF FUEL: _____ PERCENT MOISTURE: _____

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

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

METHOD OF TUBE CLEANING: CLEANING SCHEDULE:

FUEL USAGE (INCLUDE STARTUP/BACKUP FUELS)

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

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

COMMENTS:

FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

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

EMISSION SOURCE DESCRIPTION:	EMISSION SOURCE ID NO: HMA-Silo2
HMA Drum Plant - Hot Mix Asphalt Silo 1	CONTROL DEVICE ID NO(S): ~~HMA-CD1~~ N/A
OPERATING SCENARIO: 1 OF 1	EMISSION POINT(STACK) ID NO(S): ~~EP-1~~

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

1. **DRYING OF AGGREGATE (DRYING DRUM)**
2. **Mixing of aggregate and rap with liquid asphalt (mixing drum)**
3. **Storage of final product (silos)**

MATERIAL STORED:	**Hot Mix Asphalt**			DENSITY OF MATERIAL (LB/FT3):			
CAPACITY	CUBIC FEET:			TONS:	**150**		
DIMENSIONS (FEET)	HEIGHT:	DIAMETER:	***(OR)***	LENGTH:	WIDTH 10	HEIGHT:	65
ANNUAL PRODUCT THROUGHPUT (TONS)	ACTUAL:			MAXIMUM DESIGN CAPACITY:			

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

NO. FILL TUBES:

MAXIMUM ACFM:

MATERIAL IS FILLED TO:

BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO? **GRAVITY**

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

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

COMMENTS:

OIL FILLED SEAL AT TOP OF SILO.

Attach Additional Sheets As Necessary

FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

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

EMISSION SOURCE DESCRIPTION:	EMISSION SOURCE ID NO: **HMA-Silo2**
HMA Drum Plant - Hot Mix Asphalt Silo 2	CONTROL DEVICE ID NO(S): ~~HMA-CD1~~ NA
OPERATING SCENARIO: 1 OF 1	EMISSION POINT(STACK) ID NO(S): ~~EP-1~~

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

1. **DRYING OF AGGREGATE (DRYING DRUM)**
2. **Mixing of aggregate and rap with liquid asphalt (mixing drum)**
3. **Storage of final product (silos)**

MATERIAL STORED:	**Hot Mix Asphalt**			DENSITY OF MATERIAL (LB/FT3):			
CAPACITY	CUBIC FEET:			TONS: **150**			
DIMENSIONS (FEET)	HEIGHT:	DIAMETER:	***(OR)***	LENGTH:	WIDTH **10**	HEIGHT: **65**	
ANNUAL PRODUCT THROUGHPUT (TONS)	ACTUAL:			MAXIMUM DESIGN CAPACITY:			

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

NO. FILL TUBES:

MAXIMUM ACFM:

MATERIAL IS FILLED TO:

BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO? **GRAVITY**

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

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

COMMENTS:

OIL FILLED SEAL AT TOP OF SILO.

Attach Additional Sheets As Necessary

FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

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

EMISSION SOURCE DESCRIPTION: **HMA Drum Plant - Hot Mix Asphalt Silo 3**	EMISSION SOURCE ID NO: **HMA-Silo3**
	CONTROL DEVICE ID NO(S): **HMA-CD1** N/A
OPERATING SCENARIO: 1 OF 1	EMISSION POINT(STACK) ID NO(S): **EP-1**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

1. **DRYING OF AGGREGATE (DRYING DRUM)**
2. **Mixing of aggregate and rap with liquid asphalt (mixing drum)**
3. **Storage of final product (silos)**

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

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

NO. FILL TUBES:

MAXIMUM ACFM:

MATERIAL IS FILLED TO:

BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO? **GRAVITY**

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

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

COMMENTS:

OIL FILLED SEAL AT TOP OF SILO.

Attach Additional Sheets As Necessary

FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

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

EMISSION SOURCE DESCRIPTION:	EMISSION SOURCE ID NO: **HMA-Silo4**
HMA Drum Plant - Hot Mix Asphalt Silo 4	CONTROL DEVICE ID NO(S): ~~HMA-CD1~~ NA
OPERATING SCENARIO: 1 OF 1	EMISSION POINT(STACK) ID NO(S): ~~EP-1~~

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

1. **DRYING OF AGGREGATE (DRYING DRUM)**
2. **Mixing of aggregate and rap with liquid asphalt (mixing drum)**
3. **Storage of final product (silos)**

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

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

NO. FILL TUBES:

MAXIMUM ACFM:

MATERIAL IS FILLED TO:

BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO? **GRAVITY**

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

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

COMMENTS:

OIL FILLED SEAL AT TOP OF SILO.

Attach Additional Sheets As Necessary

FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — **B6b**

EMISSION SOURCE DESCRIPTION:	EMISSION SOURCE ID NO: **HMA-Silo5**
HMA Drum Plant - Hot Mix Asphalt Silo 5	CONTROL DEVICE ID NO(S): ~~HMA-CD1~~ NA
OPERATING SCENARIO: 1 OF 1	EMISSION POINT(STACK) ID NO(S): ~~EP-1~~

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

1. **DRYING OF AGGREGATE (DRYING DRUM)**
2. **Mixing of aggregate and rap with liquid asphalt (mixing drum)**
3. **Storage of final product (silos)**

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

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

NO. FILL TUBES:

MAXIMUM ACFM:

MATERIAL IS FILLED TO:

BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO? **GRAVITY**

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

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

COMMENTS:

OIL FILLED SEAL AT TOP OF SILO.

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 12/01/0 **NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate** **B**

EMISSION SOURCE DESCRIPTION: **RAP Crushing System**	EMISSION SOURCE ID N **RAP-CRSH RAP-CNV RAP-SCN**
	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):

RAP Crushing System consisting of:

One crusher (65 tph)
One conveyor
One screen

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

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

START CONSTRUCTION DATE:	OPERATION DATE:	DATE MANUFACTURED:
MANUFACTURER / MODEL NO.: **TELSMITH HIS 2421**	EXPECTED OP. SCHEDULE: ___ HR/DAY ____ DAY/WK ___ WK/YR	
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):**OOO**	NESHAP (SUBPART?):_____	MACT (SUBPART?):_____
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB	MAR-MAY	JUN-AUG SEP-NOV
EXPECTED ANNUAL HOURS OF OPERATION:	VISIBLE STACK EMISSIONS UNDER NORMAL OPERATION: **<20** % OPACITY	

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	**See 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 AND CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS

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

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.

'LETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SC

Attach Additional Sheets As Necessary

FORM B9

EMISSION SOURCE (OTHER)

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

EMISSION SOURCE DESCRIPTION:	EMISSION SOURCE ID NO: **RAP-CRSH RAP-CNV RAP-SCN**
RAP Crushing System	CONTROL DEVICE ID NO(S) **N/A**
OPERATING SCENARIO: ____1____ OF ___1___	EMISSION POINT (STACK) ID NO(S):

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

RAP Crushing System consisting of:
One crusher (65 tph)
One conveyor
One screen

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 EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

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

EMISSION SOURCE DESCRIPTION:	EMISSION SOURCE ID NO: RM-1 through RM-5
Truck Mix Concrete Batch Plant (120 cubic yards per hou	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):

Truck Mix Concrete Batch Plant (120 cubic yards per hour) consisting of:

- **Cement silo (185 tons maximum capacity)**
- **Fly ash silo (135 tons maximum capacity)**
- **Truck loadout point**
- **Cement/flyash weigh batcher (5 tons maximum capacity)**
- **Aggregate weigh batcher (5 tons maximum capacity)**

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

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

START CONSTRUCTION DATE:	OPERATION DATE:	DATE MANUFACTURED:
MANUFACTURER / MODEL NO.:	EXPECTED OP. SCHEDULE: ___ HR/DAY ____ DAY/WK ___ WK/YR	
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):_____	NESHAP (SUBPART?):_____	MACT (SUBPART?):_____
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB	MAR-MAY	JUN-AUG SEP-NOV
EXPECTED ANNUAL HOURS OF OPERATION:	VISIBLE STACK EMISSIONS UNDER NORMAL OPERATION: _<20__ % OPACITY	

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

	SOURCE O	EXPECTED ACTUAL		POTENTIAL EMSSIONS			
	EMISSION	(AFTER CONTROLS / LIMITS)		(BEFORE CONTROLS / LIMITS)		(AFTER CONTROLS / LIMITS)	
AIR POLLUTANT EMITTED	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM)	**See 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

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

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS

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

PLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SO

Attach Additional Sheets As Necessary

FORM B9

EMISSION SOURCE (OTHER)

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

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

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

Truck Mix Concrete Batch Plant (120 cubic yards per hour) consisting of:
- **Cement silo (185 tons maximum capacity)**
- **Fly ash silo (135 tons maximum capacity)**
- **Truck loadout point**
- **Cement/flyash weigh batcher (5 tons maximum capacity)**

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UN	CAPACITY (UNIT/HR)	LIMITATION(UNIT/HR)
Cement	**lbs**	**448**	
Supplement	**lbs**	**148**	
Coarse Aggregate	**lbs**	**1980**	
Sand	**lbs**	**1440**	
Water	**lbs**	**140**	

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNI	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 C1

CONTROL DEVICE (FABRIC FILTER)

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — **C1a**

CONTROL DEVICE ID NO: **HMA-CD1**	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): **See Form A2&A3**
EMISSION POINT (STACK) ID NO(S): **EP-1**	POSITION IN SERIES OF CONTROLS NO. **1** OF **1** UNITS
MANUFACTURER: **Astec**	MODEL NO: **RBH45:DB**
DATE MANUFACTURED: **1995**	PROPOSED OPERATION DATE: **8/1/2016**
OPERATING SCENARIO	PROPOSED START CONSTRUCTION DATE: **06/01/2016**
	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 the HMA Plant.

POLLUTANT(S) COLLECTED:	PM	PM10		
BEFORE CONTROL EMISSION RATE (LB/HR):	See Appendix A			
CAPTURE EFFICIENCY:	~100 %	~100 %	%	%
CONTROL DEVICE EFFICIENCY:	~93 %	~90 %	%	%
CORRESPONDING OVERALL EFFICIENCY:	93 %	90 %	%	%
EFFICIENCY DETERMINATION CODE:	1	1		
TOTAL EMISSION RATE (LB/HR):	See Appendix A			

PRESSURE DROP (IN. H_2O): MIN: MAX: GAUGE? ■ YES ☐ NO WARNING ALARM? ☐ YES ■ ☐ NO

BULK PARTICLE DENSITY (LB/FT^3):	INLET TEMPERATURE (°F): MIN MAX
POLLUTANT LOADING RATE: ☐ LB/HR ☐ GR/FT^3	OUTLET TEMPERATURE (°F): MIN MAX
INLET AIR FLOW RATE (ACFM): **45,000 cfm**	FILTER MAX OPERATING TEMP. (°F):

NO. OF COMPARTMENTS: **1**	NO. OF BAGS PER COMPARTMENT: **640**	LENGTH OF BAG (IN.): **120.5 inches**
DIAMETER OF BAG (IN.): **4 5/8 inch**	DRAFT: ■ INDUCED/NEG. ☐ FORCED/POS.	FILTER SURFACE AREA (FT^2): **7778**
AIR TO CLOTH RATIO: **5.78:1**	FILTER MATERIAL: **Nomex**	☐ WOVEN ■ FELTED

DESCRIBE CLEANING PROCEDURES:

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

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	

DESCRIBE INCOMING AIR STREAM:

Hot air from drying and mixing drums in HMA plant

METHOD FOR DETERMINING WHEN TO CLEAN:

■ AUTOMATIC ☐ TIMED ☐ MANUAL

METHOD FOR DETERMINING WHEN TO REPLACE THE BAGS:

☐ ALARM ■ INTERNAL INSPECTION ■ VISIBLE EMISSION ☐ OTHER

SPECIAL CONDITIONS:

☐ MOISTURE BLINDING ☐ CHEMICAL RESISTIVITY ☐ OTHER

EXPLAIN:

DESCRIBE MAINTENANCE PROCEDURES: **Monthly inspections unless more frequent indicated. A record will be maintained on the age of each bag and of each bag replaced due to detected problem or per manufacturer's recommended schedule.**

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

Attach Additional Sheets As Necessary

FORM C1

CONTROL DEVICE (FABRIC FILTER)

REVISED 12/01/01 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — C1c

CONTROL DEVICE ID NO: **RMC-CD2**	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): **See Form A2&A3**
EMISSION POINT (STACK) ID NO(S): **EP-2**	POSITION IN SERIES OF CONTROLS NO. 1 OF 1 UNITS
MANUFACTURER: **C&W Manufacturing**	MODEL NO: **RA-140**
DATE MANUFACTURED: **2005**	PROPOSED OPERATION DATE: **8/1/2016**
OPERATING SCENARIO:	PROPOSED START CONSTRUCTION DATE: **06/01/2016**
	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.

POLLUTANT(S) COLLECTED:	**PM**	**PM10**		
BEFORE CONTROL EMISSION RATE (LB/HR):				
CAPTURE EFFICIENCY:	%	%	%	%
CONTROL DEVICE EFFICIENCY:	%	%	%	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL EMISSION RATE (LB/HR):				

PRESSURE DROP (IN. H_2O): MIN: MAX: GAUGE? ■ YES ☐ NO WARNING ALARM? ☐ YES ■ ☐ NO

BULK PARTICLE DENSITY (LB/FT^3):	INLET TEMPERATURE (°F): MIN MAX
POLLUTANT LOADING RATE: ☐ LB/HR ☐ GR/FT^3	OUTLET TEMPERATURE (°F): MIN MAX
INLET AIR FLOW RATE (ACFM): **6500 cfm**	FILTER MAX OPERATING TEMP. (°F):

NO. OF COMPARTMENTS: **2**	NO. OF BAGS PER COMPARTMENT: **36**	LENGTH OF BAG (IN.): **114 inches**
DIAMETER OF BAG (IN.):	DRAFT: ■ INDUCED/NEG. ☐ FORCED/POS.	FILTER SURFACE AREA (FT^2): **1433**
AIR TO CLOTH RATIO: **4.54:1**	FILTER MATERIAL: **felt**	■ WOVEN ☐ FELTED

DESCRIBE CLEANING PROCEDURES:

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

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	

DESCRIBE INCOMING AIR STREAM:

weighing and truck loading of aggregate, fly ash and cement

METHOD FOR DETERMINING WHEN TO CLEAN:

■ AUTOMATIC ☐ TIMED ☐ MANUAL

METHOD FOR DETERMINING WHEN TO REPLACE THE BAGS:

☐ ALARM ■ INTERNAL INSPECTION ■ VISIBLE EMISSION ☐ OTHER

SPECIAL CONDITIONS:

☐ MOISTURE BLINDING ☐ CHEMICAL RESISTIVITY ☐ OTHER

EXPLAIN:

DESCRIBE MAINTENANCE PROCEDURES: **Monthly inspections unless more frequent indicated. A record will be maintained on the age of each bag and of each bag replaced due to detected problem or per manufacturer's recommended schedule.**

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

Attach Additional Sheets As Necessary

EMISSION CALCULATIONS
Emissions Summary

Carolina Sunrock
Prospect Hill

Source Name	Pollutant	HAP/TAP	Uncontrolled Potential Emissions				Controlled Potential Emissions			
			(lb/hr)	(lbs/day)	(lbs/yr)	(tons/yr)	(lb/hr)	(lbs/day)	(lbs/yr)	(tons/yr)
Hot Mix Asphalt Plant	PM		1.51E+01	3.64E+02	1.33E+05	6.64E+01	1.28E+00	3.06E+01	1.12E+04	5.59E+00
	PM-10		7.76E+00	1.86E+02	6.79E+04	3.40E+01	8.33E-01	2.00E+01	7.29E+03	3.65E+00
	PM-2.5		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	SO2		2.21E+01	5.30E+02	1.94E+05	9.68E+01	3.56E+00	8.53E+01	3.12E+04	1.56E+01
	NOx		1.41E+01	3.38E+02	1.23E+05	6.17E+01	1.90E+00	4.56E+01	1.66E+04	8.31E+00
	CO		3.32E+01	7.97E+02	2.91E+05	1.45E+02	3.86E+00	9.27E+01	3.39E+04	1.69E+01
	VOC		1.20E+01	2.89E+02	1.05E+05	5.27E+01	1.38E+00	3.31E+01	1.21E+04	6.04E+00
	Acetaldehyde	H/T	3.25E-01	7.80E+00	2.85E+03	1.42E+00	3.25E-01	7.80E+00	3.25E+02	1.63E-01
	Acrolein	H/T	6.50E-03	1.56E-01	5.69E+01	2.85E-02	6.50E-03	1.56E-01	6.50E+00	3.25E-03
	Antimony unlisted compounds	H	4.50E-05	1.08E-03	3.94E-01	1.97E-04	4.50E-05	1.08E-03	4.50E-02	2.25E-05
	Arsenic unlisted cmpds (comp. of ASC)	H/T	1.40E-04	3.36E-03	1.23E+00	6.13E-04	1.40E-04	3.36E-03	1.40E-01	7.00E-05
	Benzene	H/T	9.90E-02	2.38E+00	8.67E+02	4.34E-01	9.90E-02	2.38E+00	9.90E+01	4.95E-02
	Benzo(a)pyrene	T	4.41E-06	1.06E-04	3.86E-02	1.93E-05	4.41E-06	1.06E-04	4.41E-03	2.21E-06
	Beryllium metal (unreacted)	H/T	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Cadmium metal (elemental unreacted)	H/T	1.03E-04	2.46E-03	8.98E-01	4.49E-04	1.03E-04	2.46E-03	1.03E-01	5.13E-05
	Carbon disulfide	H/T	6.23E-04	1.49E-02	5.45E+00	2.73E-03	6.23E-04	1.49E-02	6.23E-01	3.11E-04
	Chromium unlisted cmpds (add w/chrom acid to get CRC)	H	1.26E-03	3.03E-02	1.11E+01	5.53E-03	1.26E-03	3.03E-02	1.26E+00	6.31E-04
	Chromic acid (VI) (component of solCR6 and CRC)	H/T	1.13E-04	2.70E-03	9.86E-01	4.93E-04	1.13E-04	2.70E-03	1.13E-01	5.63E-05
	Cobalt unlisted compounds	H	6.50E-06	1.56E-04	5.69E-02	2.85E-05	6.50E-06	1.56E-04	6.50E-03	3.25E-06
	Cumene	H	1.14E-03	2.74E-02	1.00E+01	5.01E-03	1.14E-03	2.74E-02	1.14E+00	5.72E-04
	Ethyl benzene	H	6.41E-02	1.54E+00	5.61E+02	2.81E-01	6.41E-02	1.54E+00	6.41E+01	3.20E-02
	Ethyl chloride (chloroethane)	H	2.18E-06	5.24E-05	1.91E-02	9.56E-06	2.18E-06	5.24E-05	2.18E-03	1.09E-06
	Formaldehyde	H/T	7.97E-01	1.91E+01	6.98E+03	3.49E+00	7.97E-01	1.91E+01	7.97E+02	3.98E-01
	Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8	T	3.25E-10	7.80E-09	2.85E-06	1.42E-09	3.25E-10	7.80E-09	3.25E-07	1.63E-10
	Hexane, n-	H/T	2.39E-01	5.74E+00	2.10E+03	1.05E+00	2.39E-01	5.74E+00	2.39E+02	1.20E-01
	Hydrogen Chloride (hydrochloric acid)	H/T	5.25E-02	1.26E+00	4.60E+02	2.30E-01	5.25E-02	1.26E+00	5.25E+01	2.63E-02
	Hydrogen Sulfide	T	1.37E-02	3.28E-01	1.20E+02	5.99E-02	1.37E-02	3.28E-01	1.37E+01	6.84E-03
	Lead unlisted compounds	H	3.75E-03	9.00E-02	3.29E+01	1.64E-02	3.75E-03	9.00E-02	3.75E+00	1.88E-03
	Manganese unlisted compounds	T	1.93E-03	4.62E-02	1.69E+01	8.43E-03	1.93E-03	4.62E-02	1.93E+00	9.63E-04
	Mercury, vapor	H/T	6.50E-04	1.56E-02	5.69E+00	2.85E-03	6.50E-04	1.56E-02	6.50E-01	3.25E-04
	Methyl bromide	H	2.49E-04	5.98E-03	2.18E+00	1.09E-03	2.49E-04	5.98E-03	2.49E-01	1.25E-04
	Methyl chloride	H	1.56E-04	3.74E-03	1.37E+00	6.83E-04	1.56E-04	3.74E-03	1.56E-01	7.80E-05
	Methyl chloroform	H/T	1.20E-02	2.88E-01	1.05E+02	5.26E-02	1.20E-02	2.88E-01	1.20E+01	6.00E-03
	Methyl ethyl ketone	H/T	6.70E-03	1.61E-01	5.87E+01	2.93E-02	6.70E-03	1.61E-01	6.70E+00	3.35E-03
	Methylene chloride	H/T	8.23E-06	1.97E-04	7.21E-02	3.60E-05	8.23E-06	1.97E-04	8.23E-03	4.11E-06
	Napthalene	H	1.65E-01	3.95E+00	1.44E+03	7.21E-01	1.65E-01	3.95E+00	1.65E+02	8.24E-02
	Nickel metal	H/T	1.58E-02	3.78E-01	1.38E+02	6.90E-02	1.58E-02	3.78E-01	1.58E+01	7.88E-03
	Perchloroethylene (tetrachlorocthylene)	H/T	8.01E-05	1.92E-03	7.01E-01	3.51E-04	8.01E-05	1.92E-03	8.01E-02	4.00E-05
	Phenol	H/T	1.01E-03	2.41E-02	8.81E+00	4.41E-03	1.01E-03	2.41E-02	1.01E+00	5.03E-04
	Phosphorus Metal, Yellow or White	H	7.00E-03	1.68E-01	6.13E+01	3.07E-02	7.00E-03	1.68E-01	7.00E+00	3.50E-03
	Polycyclic Organic Matter	H	2.20E-01	5.28E+00	1.93E+03	9.64E-01	2.20E-01	5.28E+00	2.20E+02	1.10E-01
	Propionaldehyde	H	3.25E-02	7.80E-01	2.85E+02	1.42E-01	3.25E-02	7.80E-01	3.25E+01	1.63E-02
	Quinone	H	4.00E-02	9.60E-01	3.50E+02	1.75E-01	4.00E-02	9.60E-01	4.00E+01	2.00E-02
	Selenium compounds	H	8.75E-05	2.10E-03	7.67E-01	3.83E-04	8.75E-05	2.10E-03	8.75E-02	4.38E-05
	Styrene	H/T	2.40E-04	5.77E-03	2.11E+00	1.05E-03	2.40E-04	5.77E-03	2.40E-01	1.20E-04
	Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	H/T	5.25E-11	1.26E-09	4.60E-07	2.30E-10	5.25E-11	1.26E-09	5.25E-08	2.63E-11
	Toluene	H/T	7.29E-01	1.75E+01	6.39E+03	3.19E+00	7.29E-01	1.75E+01	7.29E+02	3.65E-01
	Trichloroethylene	H/T	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Trichlorofluoromethane (CFC 111)	T	1.35E-05	3.24E-04	1.18E-01	5.92E-05	1.35E-05	3.24E-04	1.35E-02	6.76E-06
	Trimethylpentane, 2,2,4-	H	1.00E-02	2.41E-01	8.78E+01	4.39E-02	1.00E-02	2.41E-01	1.00E+01	5.01E-03
	Xylene	H/T	6.04E-02	1.45E+00	5.29E+02	2.64E-01	6.04E-02	1.45E+00	6.04E+01	3.02E-02
Concrete Batch Plant	PM		1.04E+02	2.49E+03	9.08E+05	4.54E+02	5.10E+00	1.22E+02	4.46E+04	2.23E+01
	PM-10		3.93E+01	9.44E+02	3.44E+05	1.72E+02	2.44E+00	5.85E+01	2.13E+04	1.07E+01
	PM-2.5		3.93E+01	9.44E+02	3.44E+05	1.72E+02	2.44E+00	5.85E+01	2.13E+04	1.07E+01
	Arsenic unlisted cmpds (comp. of ASC)	H/T	2.49E-03	5.97E-02	2.18E+01	1.09E-02	6.59E-05	1.58E-03	5.77E-01	2.88E-04
	Beryllium metal (unreacted)	H/T	1.00E-05	2.40E-04	8.77E-02	4.38E-05	4.53E-06	1.09E-04	3.97E-02	1.99E-05
	Cadmium metal (elemental unreacted)	H/T	7.69E-06	1.85E-04	6.74E-02	3.37E-05	5.00E-07	1.20E-05	4.38E-03	2.19E-06
	Chromic acid (VI) (component of solCR6 and CRC)	H	4.25E-04	1.02E-02	3.73E+00	1.86E-03	1.58E-04	3.80E-03	1.39E+00	6.93E-04
	Lead unlisted compounds	H	1.32E-03	3.17E-02	1.16E+01	5.78E-03	5.96E-05	1.43E-03	5.22E-01	2.61E-04
	Manganese unlisted compounds	H/T	7.67E-03	1.84E-01	6.72E+01	3.36E-02	7.49E-04	1.80E-02	6.56E+00	3.28E-03
	Nickel metal	H/T	9.19E-04	2.21E-02	8.05E+00	4.02E-03	1.92E-04	4.62E-03	1.68E+00	8.42E-04
	Phosphorus Metal, Yellow or White	H	1.72E-03	4.13E-02	1.51E+01	7.54E-03	4.71E-04	1.13E-02	4.13E+00	2.06E-03
	Selenium compounds	H	9.43E-05	2.26E-03	8.26E-01	4.13E-04	4.68E-06	1.12E-04	4.10E-02	2.05E-05
Asphalt Cement Heater^	2-Methylnaphthalene		2.81E-08	6.74E-07	2.46E-04	1.23E-07	2.81E-08	6.74E-07	2.46E-04	1.23E-07
	3-Methylchloranthrene		2.11E-09	5.05E-08	1.84E-05	9.22E-09	2.11E-09	5.05E-08	1.84E-05	9.22E-09
	7,12-Dimethylbenz(a)anathracene		1.87E-08	4.49E-07	1.64E-04	8.20E-08	1.87E-08	4.49E-07	1.64E-04	8.20E-08
	Acenaphthene	H	1.81E-07	4.34E-06	1.58E-03	7.92E-07	1.81E-07	4.34E-06	1.58E-03	7.92E-07
	Acenaphtylene	H	2.17E-09	5.20E-08	1.90E-05	9.50E-09	2.17E-09	5.20E-08	1.90E-05	9.50E-09
	Acetaldehyde	H/T	1.78E-08	4.27E-07	1.56E-04	7.79E-08	1.78E-08	4.27E-07	1.56E-04	7.79E-08
	Acrolein	H/T	2.11E-08	5.05E-07	1.84E-04	9.22E-08	2.11E-08	5.05E-07	1.84E-04	9.22E-08
	Ammonia	T	3.74E-03	8.98E-02	3.28E+01	1.64E-02	3.74E-03	8.98E-02	3.28E+01	1.64E-02
	Anthracene	H	1.05E-08	2.51E-07	9.16E-05	4.58E-08	1.05E-08	2.51E-07	9.16E-05	4.58E-08
	Benz(a)anthracene	H	3.44E-08	8.25E-07	3.01E-04	1.51E-07	3.44E-08	8.25E-07	3.01E-04	1.51E-07
	Benzene	H/T	2.46E-06	5.89E-05	2.15E-02	1.08E-05	2.46E-06	5.89E-05	2.15E-02	1.08E-05
	Benzo(a)pyrene	H/T	1.40E-09	3.37E-08	1.23E-05	6.15E-09	1.40E-09	3.37E-08	1.23E-05	6.15E-09
	Benzo(b)fluoranthene	H	1.27E-08	3.04E-07	1.11E-04	5.56E-08	1.27E-08	3.04E-07	1.11E-04	5.56E-08
	Benzo(g,h,i)perylene	H	1.94E-08	4.65E-07	1.70E-04	8.48E-08	1.94E-08	4.65E-07	1.70E-04	8.48E-08
	Benzo(k)fluoranthene	H	2.11E-09	5.05E-08	1.84E-05	9.22E-09	2.11E-09	5.05E-08	1.84E-05	9.22E-09
	Butane		2.46E-03	5.89E-02	2.15E+01	1.08E-02	2.46E-03	5.89E-02	2.15E+01	1.08E-02
	Chrysene	H	2.04E-08	4.90E-07	1.79E-04	8.94E-08	2.04E-08	4.90E-07	1.79E-04	8.94E-08
	Dibenzo(a,h)anthracene	H	1.43E-08	3.44E-07	1.25E-04	6.27E-08	1.43E-08	3.44E-07	1.25E-04	6.27E-08

Source Name	Pollutant	HAP/TAP	Uncontrolled Potential Emissions				Controlled Potential Emissions			
			(lb/hr)	(lbs/day)	(lbs/yr)	(tons/yr)	(lb/hr)	(lbs/day)	(lbs/yr)	(tons/yr)
	Dichlorobenzene	H/T	1.40E-06	3.37E-05	1.23E-02	6.15E-06	1.40E-06	3.37E-05	1.23E-02	6.15E-06
	Ethane		3.63E-03	8.70E-02	3.18E+01	1.59E-02	3.63E-03	8.70E-02	3.18E+01	1.59E-02
	Ethylbenzene	H	5.45E-07	1.31E-05	4.78E-03	2.39E-06	5.45E-07	1.31E-05	4.78E-03	2.39E-06
	Fluoranthene	H	4.15E-08	9.96E-07	3.63E-04	1.82E-07	4.15E-08	9.96E-07	3.63E-04	1.82E-07
	Fluorene	H	3.83E-08	9.20E-07	3.36E-04	1.68E-07	3.83E-08	9.20E-07	3.36E-04	1.68E-07
	Formaldehyde	H/T	2.83E-04	6.79E-03	2.48E+00	1.24E-03	2.83E-04	6.79E-03	2.48E+00	1.24E-03
	Hexane	H/T	2.11E-03	5.05E-02	1.84E+01	9.22E-03	2.11E-03	5.05E-02	1.84E+01	9.22E-03
	Indeno(1,2,3-cd)pyrene	H	1.83E-08	4.40E-07	1.61E-04	8.03E-08	1.83E-08	4.40E-07	1.61E-04	8.03E-08
	Naphthalene	H	9.69E-06	2.32E-04	8.48E-02	4.24E-05	9.69E-06	2.32E-04	8.48E-02	4.24E-05
	OCDD		2.66E-11	6.38E-10	2.33E-07	1.16E-10	2.66E-11	6.38E-10	2.33E-07	1.16E-10
	Pentane		3.04E-03	7.30E-02	2.66E+01	1.33E-02	3.04E-03	7.30E-02	2.66E+01	1.33E-02
	Phenanathrene	H	9.00E-08	2.16E-06	7.88E-04	3.94E-07	9.00E-08	2.16E-06	7.88E-04	3.94E-07
	Propane		1.87E-03	4.49E-02	1.64E+01	8.20E-03	1.87E-03	4.49E-02	1.64E+01	8.20E-03
	Pyrene	H	3.64E-08	8.74E-07	3.19E-04	1.60E-07	3.64E-08	8.74E-07	3.19E-04	1.60E-07
	Toluene	H/T	5.31E-05	1.28E-03	4.66E-01	2.33E-04	5.31E-05	1.28E-03	4.66E-01	2.33E-04
	1,1,1-Trichloroethane		2.02E-06	4.85E-05	1.77E-02	8.86E-06	2.02E-06	4.85E-05	1.77E-02	8.86E-06
	Xylene	H/T	9.34E-07	2.24E-05	8.18E-03	4.09E-06	9.34E-07	2.24E-05	8.18E-03	4.09E-06
	Arsenic	H/T	4.80E-06	1.15E-04	4.20E-02	2.10E-05	4.80E-06	1.15E-04	4.20E-02	2.10E-05
	Barium		5.15E-06	1.24E-04	4.51E-02	2.25E-05	5.15E-06	1.24E-04	4.51E-02	2.25E-05
	Beryllium	H/T	3.60E-06	8.64E-05	3.15E-02	1.58E-05	3.60E-06	8.64E-05	3.15E-02	1.58E-05
	Cadmium	H/T	3.60E-06	8.64E-05	3.15E-02	1.58E-05	3.60E-06	8.64E-05	3.15E-02	1.58E-05
	Chromium (as chromic acid)	H/T	3.60E-06	8.64E-05	3.15E-02	1.58E-05	3.60E-06	8.64E-05	3.15E-02	1.58E-05
	Cobalt		9.82E-08	2.36E-06	8.61E-04	4.30E-07	9.82E-08	2.36E-06	8.61E-04	4.30E-07
	Copper		7.20E-06	1.73E-04	6.31E-02	3.15E-05	7.20E-06	1.73E-04	6.31E-02	3.15E-05
	Lead	H	1.08E-05	2.59E-04	9.46E-02	4.73E-05	1.08E-05	2.59E-04	9.46E-02	4.73E-05
	Manganese	H/T	7.20E-06	1.73E-04	6.31E-02	3.15E-05	7.20E-06	1.73E-04	6.31E-02	3.15E-05
	Mercury	H/T	3.60E-06	8.64E-05	3.15E-02	1.58E-05	3.60E-06	8.64E-05	3.15E-02	1.58E-05
	Molybdenum		1.29E-06	3.09E-05	1.13E-02	5.64E-06	1.29E-06	3.09E-05	1.13E-02	5.64E-06
	Nickel	H/T	3.60E-06	8.64E-05	3.15E-02	1.58E-05	3.60E-06	8.64E-05	3.15E-02	1.58E-05
	Selenium	H	1.80E-05	4.32E-04	1.58E-01	7.88E-05	1.80E-05	4.32E-04	1.58E-01	7.88E-05
	Vanadium		2.69E-06	6.46E-05	2.36E-02	1.18E-05	2.69E-06	6.46E-05	2.36E-02	1.18E-05
	Zinc		3.39E-05	8.14E-04	2.97E-01	1.49E-04	3.39E-05	8.14E-04	2.97E-01	1.49E-04
Liquid Asphalt Tank Heater**	PM		1.57E-02	3.77E-01	1.38E+02	6.88E-02	1.57E-02	3.77E-01	1.38E+02	6.88E-02
	PM-10		9.75E-03	2.34E-01	8.54E+01	4.27E-02	9.75E-03	2.34E-01	8.54E+01	4.27E-02
	SO2		5.58E-01	1.34E+01	4.89E+03	2.44E+00	5.58E-01	1.34E+01	4.89E+03	2.44E+00
	NOx		1.57E-01	3.77E+00	1.38E+03	6.88E-01	1.57E-01	3.77E+00	1.38E+03	6.88E-01
	VOCs		5.90E-03	1.42E-01	5.17E+01	2.58E-02	5.90E-03	1.42E-01	5.17E+01	2.58E-02
	CO		9.01E-02	2.16E+00	7.89E+02	3.94E-01	9.01E-02	2.16E+00	7.89E+02	3.94E-01
	2-Methylnaphthalene		2.57E-08	6.18E-07	2.25E-04	1.13E-07	2.57E-08	6.18E-07	2.25E-04	1.13E-07
	3-Methylchloranthrene		1.93E-09	4.63E-08	1.69E-05	8.45E-09	1.93E-09	4.63E-08	1.69E-05	8.45E-09
	7,12-Dimethylbenz(a)anathracene		1.72E-08	4.12E-07	1.50E-04	7.51E-08	1.72E-08	4.12E-07	1.50E-04	7.51E-08
	Acenaphthene	H	1.66E-07	3.98E-06	1.45E-03	7.26E-07	1.66E-07	3.98E-06	1.45E-03	7.26E-07
	Acenaphtylene	H	1.99E-09	4.77E-08	1.74E-05	8.71E-09	1.99E-09	4.77E-08	1.74E-05	8.71E-09
	Acetaldehyde	H/T	1.63E-08	3.91E-07	1.43E-04	7.14E-08	1.63E-08	3.91E-07	1.43E-04	7.14E-08
	Acrolein	H/T	1.93E-08	4.63E-07	1.69E-04	8.45E-08	1.93E-08	4.63E-07	1.69E-04	8.45E-08
	Ammonia	T	3.43E-03	8.23E-02	3.01E+01	1.50E-02	3.43E-03	8.23E-02	3.01E+01	1.50E-02
	Anthracene	H	9.59E-09	2.30E-07	8.40E-05	4.20E-08	9.59E-09	2.30E-07	8.40E-05	4.20E-08
	Benz(a)anthracene	H	3.15E-08	7.56E-07	2.76E-04	1.38E-07	3.15E-08	7.56E-07	2.76E-04	1.38E-07
	Benzene	H/T	2.25E-06	5.40E-05	1.97E-02	9.86E-06	2.25E-06	5.40E-05	1.97E-02	9.86E-06
	Benzo(a)pyrene	H/T	1.29E-09	3.09E-08	1.13E-05	5.64E-09	1.29E-09	3.09E-08	1.13E-05	5.64E-09
	Benzo(b)fluoranthene	H	1.16E-08	2.79E-07	1.02E-04	5.09E-08	1.16E-08	2.79E-07	1.02E-04	5.09E-08
	Benzo(g,h,i)perylene	H	1.78E-08	4.26E-07	1.56E-04	7.78E-08	1.78E-08	4.26E-07	1.56E-04	7.78E-08
	Benzo(k)fluoranthene	H	1.93E-09	4.63E-08	1.69E-05	8.45E-09	1.93E-09	4.63E-08	1.69E-05	8.45E-09
	Butane		2.25E-03	5.40E-02	1.97E+01	9.86E-03	2.25E-03	5.40E-02	1.97E+01	9.86E-03
	Chrysene	H	1.87E-08	4.49E-07	1.64E-04	8.19E-08	1.87E-08	4.49E-07	1.64E-04	8.19E-08
	Dibenzo(a,h)anthracene	H	1.31E-08	3.15E-07	1.15E-04	5.75E-08	1.31E-08	3.15E-07	1.15E-04	5.75E-08
	Dichlorobenzene	H/T	1.29E-06	3.09E-05	1.13E-02	5.64E-06	1.29E-06	3.09E-05	1.13E-02	5.64E-06
	Ethane		3.32E-03	7.98E-02	2.91E+01	1.46E-02	3.32E-03	7.98E-02	2.91E+01	1.46E-02
	Ethylbenzene	H	5.00E-07	1.20E-05	4.38E-03	2.19E-06	5.00E-07	1.20E-05	4.38E-03	2.19E-06
	Fluoranthene	H	3.80E-08	9.13E-07	3.33E-04	1.67E-07	3.80E-08	9.13E-07	3.33E-04	1.67E-07
	Fluorene	H	3.51E-08	8.43E-07	3.08E-04	1.54E-07	3.51E-08	8.43E-07	3.08E-04	1.54E-07
	Formaldehyde	H/T	2.59E-04	6.22E-03	2.27E+00	1.14E-03	2.59E-04	6.22E-03	2.27E+00	1.14E-03
	Hexane	H/T	1.93E-03	4.63E-02	1.69E+01	8.45E-03	1.93E-03	4.63E-02	1.69E+01	8.45E-03
	Indeno(1,2,3-cd)pyrene	H	1.68E-08	4.04E-07	1.47E-04	7.36E-08	1.68E-08	4.04E-07	1.47E-04	7.36E-08
	Naphthalene	H	8.88E-06	2.13E-04	7.78E-02	3.89E-05	8.88E-06	2.13E-04	7.78E-02	3.89E-05
	OCDD		2.44E-11	5.85E-10	2.13E-07	1.07E-10	2.44E-11	5.85E-10	2.13E-07	1.07E-10
	Pentane		2.79E-03	6.69E-02	2.44E+01	1.22E-02	2.79E-03	6.69E-02	2.44E+01	1.22E-02
	Phenanathrene	H	8.25E-08	1.98E-06	7.23E-04	3.61E-07	8.25E-08	1.98E-06	7.23E-04	3.61E-07
	Propane		1.72E-03	4.12E-02	1.50E+01	7.51E-03	1.72E-03	4.12E-02	1.50E+01	7.51E-03
	Pyrene	H	3.34E-08	8.01E-07	2.93E-04	1.46E-07	3.34E-08	8.01E-07	2.93E-04	1.46E-07
	Toluene	H/T	4.87E-05	1.17E-03	4.27E-01	2.13E-04	4.87E-05	1.17E-03	4.27E-01	2.13E-04
	1,1,1-Trichloroethane		1.85E-06	4.45E-05	1.62E-02	8.12E-06	1.85E-06	4.45E-05	1.62E-02	8.12E-06
	Xylene	H/T	8.56E-07	2.06E-05	7.50E-03	3.75E-06	8.56E-07	2.06E-05	7.50E-03	3.75E-06
	Arsenic	H/T	4.40E-06	1.06E-04	3.85E-02	1.93E-05	4.40E-06	1.06E-04	3.85E-02	1.93E-05
	Barium		4.72E-06	1.13E-04	4.13E-02	2.07E-05	4.72E-06	1.13E-04	4.13E-02	2.07E-05
	Beryllium	H/T	3.30E-06	7.92E-05	2.89E-02	1.45E-05	3.30E-06	7.92E-05	2.89E-02	1.45E-05
	Cadmium	H/T	3.30E-06	7.92E-05	2.89E-02	1.45E-05	3.30E-06	7.92E-05	2.89E-02	1.45E-05
	Chromium (as chromic acid)	H/T	3.30E-06	7.92E-05	2.89E-02	1.45E-05	3.30E-06	7.92E-05	2.89E-02	1.45E-05
	Cobalt		9.01E-08	2.16E-06	7.89E-04	3.94E-07	9.01E-08	2.16E-06	7.89E-04	3.94E-07

Source Name	Pollutant	HAP/TAP	Uncontrolled Potential Emissions				Controlled Potential Emissions			
			(lb/hr)	(lbs/day)	(lbs/yr)	(tons/yr)	(lb/hr)	(lbs/day)	(lbs/yr)	(tons/yr)
	Copper		6.60E-06	1.58E-04	5.78E-02	2.89E-05	6.60E-06	1.58E-04	5.78E-02	2.89E-05
	Lead	H	9.90E-06	2.38E-04	8.67E-02	4.34E-05	9.90E-06	2.38E-04	8.67E-02	4.34E-05
	Manganese	H/T	6.60E-06	1.58E-04	5.78E-02	2.89E-05	6.60E-06	1.58E-04	5.78E-02	2.89E-05
	Mercury	H/T	3.30E-06	7.92E-05	2.89E-02	1.45E-05	3.30E-06	7.92E-05	2.89E-02	1.45E-05
	Molybdenum		1.18E-06	2.83E-05	1.03E-02	5.17E-06	1.18E-06	2.83E-05	1.03E-02	5.17E-06
	Nickel	H/T	3.30E-06	7.92E-05	2.89E-02	1.45E-05	3.30E-06	7.92E-05	2.89E-02	1.45E-05
	Selenium	H	1.65E-05	3.96E-04	1.45E-01	7.23E-05	1.65E-05	3.96E-04	1.45E-01	7.23E-05
	Vanadium		2.47E-06	5.92E-05	2.16E-02	1.08E-05	2.47E-06	5.92E-05	2.16E-02	1.08E-05
	Zinc		3.11E-05	7.46E-04	2.72E-01	1.36E-04	3.11E-05	7.46E-04	2.72E-01	1.36E-04
Total	PM		1.19E+02	2.85E+03	1.04E+06	520.64	6.39E+00	1.53E+02	5.59E+04	27.97
	PM-10		4.71E+01	1.13E+03	4.12E+05	206.24	3.28E+00	7.87E+01	2.87E+04	14.36
	PM-2.5		3.93E+01	9.44E+02	3.44E+05	172.23	2.44E+00	5.85E+01	2.13E+04	10.67
	SO2		2.27E+01	5.44E+02	1.98E+05	99.24	4.11E+00	9.87E+01	3.60E+04	18.02
	NOx		1.42E+01	3.42E+02	1.25E+05	62.35	2.06E+00	4.93E+01	1.80E+04	9.00
	CO		3.33E+01	7.99E+02	2.92E+05	145.87	3.95E+00	9.49E+01	3.46E+04	17.32
	VOC		1.20E+01	2.89E+02	1.05E+05	52.69	1.38E+00	3.31E+01	1.21E+04	6.04
	Acetaldehyde	H/T	3.25E-01	7.80E+00	2.85E+03	1.42E+00	3.25E-01	7.80E+00	3.25E+02	1.63E-01
	Acrolein	H/T	6.50E-03	1.56E-01	5.69E+01	2.85E-02	6.50E-03	1.56E-01	6.50E+00	3.25E-03
	Antimony unlisted compounds	H	4.50E-05	1.08E-03	3.94E-01	1.97E-04	4.50E-05	1.08E-03	4.50E-02	2.25E-05
	Arsenic unlisted cmpds (comp. of ASC)	H/T	2.63E-03	6.30E-02	2.30E+01	1.15E-02	2.06E-04	4.94E-03	7.17E-01	3.58E-04
	Benzene	H/T	9.90E-02	2.38E+00	8.67E+02	4.34E-01	9.90E-02	2.38E+00	9.91E+01	4.95E-02
	Benzo(a)pyrene	T	4.41E-06	1.06E-04	3.86E-02	1.93E-05	4.41E-06	1.06E-04	4.41E-03	2.21E-06
	Beryllium metal (unreacted)	H/T	1.00E-05	2.40E-04	8.77E-02	4.38E-05	4.53E-06	1.09E-04	3.97E-02	1.99E-05
	Cadmium metal (elemental unreacted)	H/T	1.10E-04	2.64E-03	9.65E-01	4.83E-04	1.03E-04	2.47E-03	1.07E-01	5.34E-05
	Carbon disulfide	H/T	6.23E-04	1.49E-02	5.45E+00	2.73E-03	6.23E-04	1.49E-02	6.23E-01	3.11E-04
	Chromium unlisted cmpds (add w/chrom acid to get CRC)	H	1.26E-03	3.03E-02	1.11E+01	5.53E-03	1.26E-03	3.03E-02	1.26E+00	6.31E-04
	Chromic acid (VI) (component of solCR6 and CRC)	H/T	5.38E-04	1.29E-02	4.71E+00	2.36E-03	2.71E-04	6.50E-03	1.50E+00	7.49E-04
	Cobalt unlisted compounds	H	6.50E-06	1.56E-04	5.69E-02	2.85E-05	6.50E-06	1.56E-04	6.50E-03	3.25E-06
	Cumene	H	1.14E-03	2.74E-02	1.00E+01	5.01E-03	1.14E-03	2.74E-02	1.14E+00	5.72E-04
	Ethyl benzene	H	6.41E-02	1.54E+00	5.61E+02	2.81E-01	6.41E-02	1.54E+00	6.41E+01	3.20E-02
	Ethyl chloride (chloroethane)	H	2.18E-06	5.24E-05	1.91E-02	9.56E-06	2.18E-06	5.24E-05	2.18E-03	1.09E-06
	Formaldehyde	H/T	7.97E-01	1.91E+01	6.99E+03	3.49E+00	7.97E-01	1.91E+01	8.02E+02	4.01E-01
	Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8	T	3.25E-10	7.80E-09	2.85E-06	1.42E-09	3.25E-10	7.80E-09	3.25E-07	1.63E-10
	Hexane, n-	H/T	2.39E-01	5.74E+00	2.10E+03	1.05E+00	2.39E-01	5.74E+00	2.39E+02	1.20E-01
	Hydrogen Chloride (hydrochloric acid)	H/T	5.25E-02	1.26E+00	4.60E+02	2.30E-01	5.25E-02	1.26E+00	5.25E+01	2.63E-02
	Hydrogen Sulfide	T	1.37E-02	3.28E-01	1.20E+02	5.99E-02	1.37E-02	3.28E-01	1.37E+01	6.84E-03
	Lead unlisted compounds	H	5.07E-03	1.22E-01	4.44E+01	2.22E-02	3.81E-03	9.14E-02	4.27E+00	2.14E-03
	Manganese unlisted compounds	T	9.60E-03	2.30E-01	8.41E+01	4.20E-02	2.67E-03	6.42E-02	8.49E+00	4.24E-03
	Mercury, vapor	H/T	6.50E-04	1.56E-02	5.69E+00	2.85E-03	6.50E-04	1.56E-02	6.50E-01	3.25E-04
	Methyl bromide	H	2.49E-04	5.98E-03	2.18E+00	1.09E-03	2.49E-04	5.98E-03	2.49E-01	1.25E-04
	Methyl chloride	H	1.56E-04	3.74E-03	1.37E+00	6.83E-04	1.56E-04	3.74E-03	1.56E-01	7.80E-05
	Methyl chloroform	H/T	1.20E-02	2.88E-01	1.05E+02	5.26E-02	1.20E-02	2.88E-01	1.20E+01	6.00E-03
	Methyl ethyl ketone	H/T	6.70E-03	1.61E-01	5.87E+01	2.93E-02	6.70E-03	1.61E-01	6.70E+00	3.35E-03
	Methylene chloride	H/T	8.23E-06	1.97E-04	7.21E-02	3.60E-05	8.23E-06	1.97E-04	8.23E-03	4.11E-06
	Napthalene	H	1.65E-01	3.95E+00	1.44E+03	7.21E-01	1.65E-01	3.95E+00	1.65E+02	8.24E-02
	Nickel metal	H/T	1.67E-02	4.00E-01	1.46E+02	7.30E-02	1.59E-02	3.83E-01	1.74E+01	8.72E-03
	Perchloroethylene (tetrachloroethylene)	H/T	8.01E-05	1.92E-03	7.01E-01	3.51E-04	8.01E-05	1.92E-03	8.01E-02	4.00E-05
	Phenol	H/T	1.01E-03	2.41E-02	8.81E+00	4.41E-03	1.01E-03	2.41E-02	1.01E+00	5.03E-04
	Phosphorus Metal, Yellow or White	H	8.72E-03	2.09E-01	7.64E+01	3.82E-02	7.47E-03	1.79E-01	1.11E+01	5.56E-03
	Polycyclic Organic Matter	H	2.20E-01	5.28E+00	1.93E+03	9.64E-01	2.20E-01	5.28E+00	2.20E+02	1.10E-01
	Propionaldehyde	H	3.25E-02	7.80E-01	2.85E+02	1.42E-01	3.25E-02	7.80E-01	3.25E+01	1.63E-02
	Quinone	H	4.00E-02	9.60E-01	3.50E+02	1.75E-01	4.00E-02	9.60E-01	4.00E+01	2.00E-02
	Selenium compounds	H	1.82E-04	4.36E-03	1.59E+00	7.96E-04	9.22E-05	2.21E-03	1.29E-01	6.43E-05
	Styrene	H/T	2.40E-04	5.77E-03	2.11E+00	1.05E-03	2.40E-04	5.77E-03	2.40E-01	1.20E-04
	Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	H/T	5.25E-11	1.26E-09	4.60E-07	2.30E-10	5.25E-11	1.26E-09	5.25E-08	2.63E-11
	Toluene	H/T	7.29E-01	1.75E+01	6.39E+03	3.19E+00	7.29E-01	1.75E+01	7.30E+02	3.65E-01
	Trichloroethylene	H/T	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Trichlorofluoromethane (CFC 111)	T	1.35E-05	3.24E-04	1.18E-01	5.92E-05	1.35E-05	3.24E-04	1.35E-02	6.76E-06
	Trimethylpentane, 2,2,4-	H	1.00E-02	2.41E-01	8.78E+01	4.39E-02	1.00E-02	2.41E-01	1.00E+01	5.01E-03
	Xylene	H/T	6.04E-02	1.45E+00	5.29E+02	2.64E-01	6.04E-02	1.45E+00	6.04E+01	3.02E-02
	Highest Single HAP		7.97E-01	1.91E+01	6.99E+03	3.49E+00	7.97E-01	1.91E+01	8.02E+02	4.01E-01
	Total HAP		2.91E+00	6.98E+01	2.55E+04	1.27E+01	2.90E+00	6.95E+01	2.91E+03	1.46E+00

*** Criteria pollutant emissions from the asphalt cement heater are included in the Hot Mix Asphalt Plant Emissions since the NCDEQ Emission Calculation Spreadsheet for Hot Mix Asphalt plants was used (which incorporates criteria pollutant emissions for an asphalt cement heater).**

**** Criteria and HAP/TAP pollutant emissions for the liquid asphalt tank heater are not included in the NCDEQ Emission Calculation Spreadsheet for Hot Mix Asphalt plants, therefore, these emissions are c separately.**

Source Name	Pollutant	Total Controlled Potential Emissions (lb/hr)	(lbs/day)	(lbs/yr)	TPER Threshold* lb/hr	lb/day	lb/yr	Above TPER Threshold lb/hr	lb/day	lb/yr
Hot Mix Asphalt	Acetaldehyde	3.25E-01	7.80E+00	3.25E+02						
	Acrolein	6.50E-03	1.56E-01	6.50E+00						
	Arsenic unlisted cmpds (comp. of ASC)	1.40E-04	3.36E-03	1.40E-01						
	Benzene	9.90E-02	2.38E+00	9.90E+01						
	Benzo(a)pyrene	4.41E-06	1.06E-04	4.41E-03						
	Beryllium metal (unreacted)	0.00E+00	0.00E+00	0.00E+00						
	Cadmium metal (elemental unreacted)	1.03E-04	2.46E-03	1.03E-01						
	Carbon disulfide	6.23E-04	1.49E-02	6.23E-01						
	Soluble Chromate compounds as Chrome (VI)	1.13E-04	2.70E-03	1.13E-01						
	Formaldehyde	7.97E-01	1.91E+01	7.97E+02						
	Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8	3.25E-10	7.80E-09	3.25E-07						
	Hexane, n-	2.39E-01	5.74E+00	2.39E+02						
	Hydrogen Chloride (hydrochloric acid)	5.25E-02	1.26E+00	5.25E+01						
	Hydrogen Sulfide	1.37E-02	3.28E-01	1.37E+01						
	Manganese unlisted compounds	1.93E-03	4.62E-02	1.93E+00						
	Mercury, vapor	6.50E-04	1.56E-02	6.50E-01						
	Methyl chloroform	1.20E-02	2.88E-01	1.20E+01						
	Methyl ethyl ketone	6.70E-03	1.61E-01	6.70E+00						
	Methylene chloride	8.23E-06	1.97E-04	8.23E-03						
	Nickel metal	1.58E-02	3.78E-01	1.58E+01						
	Perchloroethylene (tetrachloroethylene)	8.01E-05	1.92E-03	8.01E-02						
	Phenol	1.01E-03	2.41E-02	1.01E+00						
	Styrene	2.40E-04	5.77E-03	2.40E-01						
	Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	5.25E-11	1.26E-09	5.25E-08						
	Toluene	7.29E-01	1.75E+01	7.29E+02						
	Trichloroethylene	0.00E+00	0.00E+00	0.00E+00						
	Trichlorofluoromethane (CFC 111)	1.35E-05	3.24E-04	1.35E-02						
	Xylene	6.04E-02	1.45E+00	6.04E+01						
Concrete Batch Plant	Arsenic unlisted cmpds (comp. of ASC)	6.59E-05	1.58E-03	5.77E-01						
	Beryllium metal (unreacted)	4.53E-06	1.09E-04	3.97E-02						
	Cadmium metal (elemental unreacted)	5.00E-07	1.20E-05	4.38E-03						
	Soluble Chromate compounds as Chrome (VI)	1.58E-04	3.80E-03	1.39E+00						
	Lead unlisted compounds	5.96E-05	1.43E-03	5.22E-01						
	Manganese unlisted compounds	7.49E-04	1.80E-02	6.56E+00						
	Nickel metal	1.92E-04	4.62E-03	1.68E+00						
Asphalt Cement Heater IES-4	Acetaldehyde	1.78E-08	4.27E-07	1.56E-04						
	Acrolein	2.11E-08	5.05E-07	1.84E-04						
	Ammonia	3.74E-03	8.98E-02	3.28E+01						
	Benzene	2.46E-06	5.89E-05	2.15E-02						
	Benzo(a)pyrene	1.40E-09	3.37E-08	1.23E-05						
	Dichlorobenzene	1.40E-06	3.37E-05	1.23E-02						
	Formaldehyde	2.83E-04	6.79E-03	2.48E+00						
	Hexane, n-	2.11E-03	5.05E-02	1.84E+01						
	Toluene	5.31E-05	1.28E-03	4.66E-01						
	Xylene	9.34E-07	2.24E-05	8.18E-03						
	Arsenic unlisted cmpds (comp. of ASC)	4.80E-06	1.15E-04	4.20E-02						
	Beryllium metal (unreacted)	3.60E-06	8.64E-05	3.15E-02						
	Cadmium metal (elemental unreacted)	3.60E-06	8.64E-05	3.15E-02						
	Soluble Chromate compounds as Chrome (VI)	3.60E-06	8.64E-05	3.15E-02						
	Manganese unlisted compounds	7.20E-06	1.73E-04	6.31E-02						
	Mercury, vapor	3.60E-06	8.64E-05	3.15E-02						
	Nickel metal	3.60E-06	8.64E-05	3.15E-02						
Liquid Asphalt Tank Heater IES-5	Acetaldehyde	1.63E-08	3.91E-07	1.43E-04						
	Acrolein	1.93E-08	4.63E-07	1.69E-04						
	Ammonia	3.43E-03	8.23E-02	3.01E+01						
	Benzene	2.25E-06	5.40E-05	1.97E-02						
	Benzo(a)pyrene	1.29E-09	3.09E-08	1.13E-05						
	Dichlorobenzene	1.29E-06	3.09E-05	1.13E-02						
	Formaldehyde	2.59E-04	6.22E-03	2.27E+00						
	Hexane, n-	1.93E-03	4.63E-02	1.69E+01						
	Toluene	4.87E-05	1.17E-03	4.27E-01						
	Xylene	8.56E-07	2.06E-05	7.50E-03						
	Arsenic unlisted cmpds (comp. of ASC)	4.40E-06	1.06E-04	3.85E-02						
	Beryllium metal (unreacted)	3.30E-06	7.92E-05	2.89E-02						
	Cadmium metal (elemental unreacted)	3.30E-06	7.92E-05	2.89E-02						
	Soluble Chromate compounds as Chrome (VI)	3.30E-06	7.92E-05	2.89E-02						
	Manganese unlisted compounds	6.60E-06	1.58E-04	5.78E-02						
	Mercury, vapor	3.30E-06	7.92E-05	2.89E-02						
	Nickel metal	3.30E-06	7.92E-05	2.89E-02						
Facility-wide	Acetaldehyde	3.25E-01	7.80E+00	3.25E+02	28.43			No		
	Acrolein	6.50E-03	1.56E-01	6.50E+00	0.08			No		
	Ammonia	7.17E-03	1.72E-01	6.28E+01	2.84			No		
	Benzo(a)pyrene	2.69E-09	6.46E-08	2.36E-05			3.044			No
	Dichlorobenzene	2.69E-06	6.46E-05	2.36E-02	69.5			No		
	Formaldehyde	7.97E-01	1.91E+01	8.02E+02	0.16			Yes		
	Hexane, n-	2.43E-01	5.84E+00	2.75E+02		46.3			No	
	Phenol	1.01E-03	2.41E-02	1.01E+00	1.00			No		
	Styrene	2.40E-04	5.77E-03	2.40E-01	11.16			No		
	Trichlorofluoromethane (CFC 111)	1.35E-05	3.24E-04	1.35E-02	589.66			No		
	Methyl chloroform	1.20E-02	2.88E-01	1.20E+01	257.98	505.4		No	No	
	Methyl ethyl ketone	6.70E-03	1.61E-01	6.70E+00		155.8			No	
	Toluene	7.29E-01	1.75E+01	7.30E+02	58.97	197.96		No	No	
	Xylene	6.04E-02	1.45E+00	6.04E+01	68.44	113.7		No	No	
	Methylene chloride	8.23E-06	1.97E-04	8.23E-03	1.79		2213.752	No		No
**	Soluble Chromate compounds as Chrome (VI)	2.78E-04	6.66E-03	1.56E+00		2.6E-02			No	
	Hexane, n-	2.43E-01	5.84E+00	2.75E+02		46.3			No	
	Manganese unlisted compounds	2.69E-03	6.45E-02	8.61E+00		1.3			No	
	Mercury, vapor	6.57E-04	1.58E-02	7.10E-01		2.5E-02			No	
	Nickel metal	1.59E-02	3.83E-01	1.75E+01		0.3			Yes	
	Carbon disulfide	6.23E-04	1.49E-02	6.23E-01		7.8			No	
	Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	5.25E-11	1.26E-09	5.25E-08			2.767E-04			No
	Arsenic unlisted cmpds (comp. of ASC)	2.15E-04	5.16E-03	7.97E-01			0.194			Yes
	Benzene	9.90E-02	2.38E+00	9.91E+01			11.069			Yes
	Benzo(a)pyrene	4.41E-06	1.06E-04	4.41E-03			3.044			No
	Hydrogen Sulfide	1.37E-02	3.28E-01	1.37E+01		5.1			No	
	Beryllium metal (unreacted)	1.14E-05	2.74E-04	1.00E-01			0.378			No
	Cadmium metal (elemental unreacted)	1.10E-04	2.64E-03	1.67E-01			0.507			No
	Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8	3.25E-10	7.80E-09	3.25E-07			0.007			No
	Hydrogen Chloride (hydrochloric acid)	5.25E-02	1.26E+00	5.25E+01	0.74			No		
	Perchloroethylene (tetrachloroethylene)	8.01E-05	1.92E-03	8.01E-02			17525.534			No
	Trichloroethylene	0.00E+00	0.00E+00	0.00E+00			5442.140			No

* Per 15A NCAC 2Q .0711(a) (vertically oriented emission release points)
** Chromic acid (VI) (component of solCR6 and CRC) from Concrete Batch and HMA emissions are counted towards the 'Soluble chromate compounds as Chrome (VI)' total

EMISSION CALCULATIONS — **Carolina Sunrock**

Sources: **Asphalt Cement Heater IES-4** — **Prospect Hill Plant**

Description 1.2 MMBtu/hr heater for asphalt cement
Heatec HCS-70 Heater

Factors

Maximum Hours per Day =	24 hrs/day	
Maximum Days of Production per Year =	365 days/yr	
Heating Value for NG =	1026 Btu/scf	Based on EPA's GHG MRR Rule (40 CFR Part 98)
Heating Value for No. 2 Fuel Oil =	140 MMBtu/10^3 gal	
Sulfur Content in No. 2 Fuel Oil =	0.5 %	

Source Description	Maximum Heat Input Rating	Units	Maximum Gas Usage for Natural Gas (MMscf/hr)	Maximum Fuel Oil Usage for Natural Gas (10^3 gal/hr)
Direct Heater	1.2	MMBtu/hr	1.17E-03	8.57E-03

NG Emissions (lb/yr) = Emission Factor (lb/MMscf) * Potential Fuel Usage (MMscf/yr)
NG Emissions (tpy) = Emissions (lb/yr) / (2000 lb/ton)

No. 2 Fuel Emissions (lb/yr) = Emission Factor (lb/MMBtu) * Potential Fuel Usage (10^3gal/yr) * Heating Value for No. 2 Fuel Oil (140 MMBtu/10^3gal)
No. 2 Fuel Oil Emissions (tpy) = Emissions (lb/yr) / (2000 lb/ton)

Pollutant	Uncontrolled Emission Factor from NG Combustion (lb/mmscf)[1]	Emissions from NG (lb/hr)	(lb/day)	(lb/yr)	(tpy)	Uncontrolled Emission Factor from No. 2 Fuel Oil Combustion (lb/10^3 gal)[2]	Emissions from No. 2 fuel oil (lb/hr)	(lb/day)	(lb/yr)	(tpy)	Max Total Emissions from NG & No. 2 fuel oil firing (lb/yr)	Max Total Emissions from NG & No. 2 fuel oil firing (tpy)
PM	7.6	8.89E-03	2.13E-01	7.79E+01	3.89E-02	2	1.71E-02	4.11E-01	1.50E+02	7.51E-02	1.50E+02	7.51E-02
PM-10	7.6	8.89E-03	2.13E-01	7.79E+01	3.89E-02	1.241	1.06E-02	2.55E-01	9.32E+01	4.66E-02	9.32E+01	4.66E-02
SO_2	0.6000	7.02E-04	1.68E-02	6.15E+00	3.07E-03	71	6.09E-01	1.46E+01	5.33E+03	2.67E+00	5.33E+03	2.67E+00
NOx	100	1.17E-01	2.81E+00	1.02E+03	5.12E-01	20	1.71E-01	4.11E+00	1.50E+03	7.51E-01	1.50E+03	7.51E-01
VOCs	5.500	6.43E-03	1.54E-01	5.64E+01	2.82E-02	0.556	4.77E-03	1.14E-01	4.17E+01	2.09E-02	5.64E+01	2.82E-02
CO	84	9.82E-02	2.36E+00	8.61E+02	4.30E-01	5	4.29E-02	1.03E+00	3.75E+02	1.88E-01	8.61E+02	4.30E-01
2-Methylnaphthalene	2.40E-05	2.81E-08	6.74E-07	2.46E-04	1.23E-07		0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.46E-04	1.23E-07
3-Methylchloranthrene	1.80E-06	2.11E-09	5.05E-08	1.84E-05	9.22E-09		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.84E-05	9.22E-09
7,12-Dimethylbenz(a)anathracene	1.60E-05	1.87E-08	4.49E-07	1.64E-04	8.20E-08		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.64E-04	8.20E-08
Acenaphthene	1.80E-06	2.11E-09	5.05E-08	1.84E-05	9.22E-09	2.11E-05	1.81E-07	4.34E-06	1.58E-03	7.92E-07	1.58E-03	7.92E-07
Acenaphtylene	1.80E-06	2.11E-09	5.05E-08	1.84E-05	9.22E-09	2.53E-07	2.17E-09	5.20E-08	1.90E-05	9.50E-09	1.90E-05	9.50E-09
Acetaldehyde	1.52E-05	1.78E-08	4.27E-07	1.56E-04	7.79E-08		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.56E-04	7.79E-08
Acrolein	1.80E-05	2.11E-08	5.05E-07	1.84E-04	9.22E-08		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.84E-04	9.22E-08
Ammonia	3.20E+00	3.74E-03	8.98E-02	3.28E+01	1.64E-02		0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.28E+01	1.64E-02
Anthracene	2.40E-06	2.81E-09	6.74E-08	2.46E-05	1.23E-08	1.22E-06	1.05E-08	2.51E-07	9.16E-05	4.58E-08	9.16E-05	4.58E-08
Benz(a)anthracene	1.80E-06	2.11E-09	5.05E-08	1.84E-05	9.22E-09	4.01E-06	3.44E-08	8.25E-07	3.01E-04	1.51E-07	3.01E-04	1.51E-07
Benzene	2.10E-03	2.46E-06	5.89E-05	2.15E-02	1.08E-05	2.14E-04	1.83E-06	4.40E-05	1.61E-02	8.03E-06	2.15E-02	1.08E-05
Benzo(a)pyrene	1.20E-06	1.40E-09	3.37E-08	1.23E-05	6.15E-09		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.23E-05	6.15E-09
Benzo(b)fluoranthene	1.80E-06	2.11E-09	5.05E-08	1.84E-05	9.22E-09	1.48E-06	1.27E-08	3.04E-07	1.11E-04	5.56E-08	1.11E-04	5.56E-08
Benzo(g,h,i)perylene	1.20E-06	1.40E-09	3.37E-08	1.23E-05	6.15E-09	2.26E-06	1.94E-08	4.65E-07	1.70E-04	8.48E-08	1.70E-04	8.48E-08
Benzo(k)fluoranthene	1.80E-06	2.11E-09	5.05E-08	1.84E-05	9.22E-09		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.84E-05	9.22E-09
Butane	2.1	2.46E-03	5.89E-02	2.15E+01	1.08E-02		0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.15E+01	1.08E-02
Chrysene	1.80E-06	2.11E-09	5.05E-08	1.84E-05	9.22E-09	2.38E-06	2.04E-08	4.90E-07	1.79E-04	8.94E-08	1.79E-04	8.94E-08
Dibenzo(a,h)anthracene	1.20E-06	1.40E-09	3.37E-08	1.23E-05	6.15E-09	1.67E-06	1.43E-08	3.44E-07	1.25E-04	6.27E-08	1.25E-04	6.27E-08
Dichlorobenzene	1.20E-03	1.40E-06	3.37E-05	1.23E-02	6.15E-06		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.23E-02	6.15E-06
Ethane	3.1	3.63E-03	8.70E-02	3.18E+01	1.59E-02		0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.18E+01	1.59E-02
Ethylbenzene		0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.36E-05	5.45E-07	1.31E-05	4.78E-03	2.39E-06	4.78E-03	2.39E-06
Fluoranthene	3.00E-06	3.51E-09	8.42E-08	3.07E-05	1.54E-08	4.84E-06	4.15E-08	9.96E-07	3.63E-04	1.82E-07	3.63E-04	1.82E-07
Fluorene	2.80E-06	3.27E-09	7.86E-08	2.87E-05	1.43E-08	4.47E-06	3.83E-08	9.20E-07	3.36E-04	1.68E-07	3.36E-04	1.68E-07
Formaldehyde	7.50E-02	8.77E-05	2.11E-03	7.68E-01	3.84E-04	3.30E-02	2.83E-04	6.79E-03	2.48E+00	1.24E-03	2.48E+00	1.24E-03
Hexane	1.8	2.11E-03	5.05E-02	1.84E+01	9.22E-03		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.84E+01	9.22E-03
Indeno(1,2,3-cd)pyrene	1.80E-06	2.11E-09	5.05E-08	1.84E-05	9.22E-09	2.14E-06	1.83E-08	4.40E-07	1.61E-04	8.03E-08	1.61E-04	8.03E-08
Naphthalene	6.10E-04	7.13E-07	1.71E-05	6.25E-03	3.12E-06	1.13E-03	9.69E-06	2.32E-04	8.48E-02	4.24E-05	8.48E-02	4.24E-05
OCDD		0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.10E-09	2.66E-11	6.38E-10	2.33E-07	1.16E-10	2.33E-07	1.16E-10
Pentane	2.6	3.04E-03	7.30E-02	2.66E+01	1.33E-02		0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.66E+01	1.33E-02
Phenanathrene	1.70E-05	1.99E-08	4.77E-07	1.74E-04	8.71E-08	1.05E-05	9.00E-08	2.16E-06	7.88E-04	3.94E-07	7.88E-04	3.94E-07
Propane	1.6	1.87E-03	4.49E-02	1.64E+01	8.20E-03		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.64E+01	8.20E-03
Pyrene	5.00E-06	5.85E-09	1.40E-07	5.12E-05	2.56E-08	4.25E-06	3.64E-08	8.74E-07	3.19E-04	1.60E-07	3.19E-04	1.60E-07
Toluene	3.40E-02	3.98E-05	9.54E-04	3.48E-01	1.74E-04	6.20E-03	5.31E-05	1.28E-03	4.66E-01	2.33E-04	4.66E-01	2.33E-04
1,1,1-Trichloroethene		0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.36E-04	2.02E-06	4.85E-05	1.77E-02	8.86E-06	1.77E-02	8.86E-06
Xylene		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.09E-04	9.34E-07	2.24E-05	8.18E-03	4.09E-06	8.18E-03	4.09E-06
Arsenic	2.00E-04	2.34E-07	5.61E-06	2.05E-03	1.02E-06	5.60E-04	4.80E-06	1.15E-04	4.20E-02	2.10E-05	4.20E-02	2.10E-05
Barium	4.40E-03	5.15E-06	1.24E-04	4.51E-02	2.25E-05		0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.51E-02	2.25E-05
Beryllium	1.20E-05	1.40E-08	3.37E-07	1.23E-04	6.15E-08	4.20E-04	3.60E-06	8.64E-05	3.15E-02	1.58E-05	3.15E-02	1.58E-05
Cadmium	1.10E-03	1.29E-06	3.09E-05	1.13E-02	5.64E-06	4.20E-04	3.60E-06	8.64E-05	3.15E-02	1.58E-05	3.15E-02	1.58E-05
Chromium (as chromic acid)	1.40E-03	1.64E-06	3.93E-05	1.43E-02	7.17E-06	4.20E-04	3.60E-06	8.64E-05	3.15E-02	1.58E-05	3.15E-02	1.58E-05
Cobalt	8.40E-05	9.82E-08	2.36E-06	8.61E-04	4.30E-07		0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.61E-04	4.30E-07
Copper	8.50E-04	9.94E-07	2.39E-05	8.71E-03	4.35E-06	8.40E-04	7.20E-06	1.73E-04	6.31E-02	3.15E-05	6.31E-02	3.15E-05
Lead	5.00E-04	5.85E-07	1.40E-05	5.12E-03	2.56E-06	1.26E-03	1.08E-05	2.59E-04	9.46E-02	4.73E-05	9.46E-02	4.73E-05
Manganese	3.80E-04	4.44E-07	1.07E-05	3.89E-03	1.95E-06	8.40E-04	7.20E-06	1.73E-04	6.31E-02	3.15E-05	6.31E-02	3.15E-05
Mercury	2.60E-04	3.04E-07	7.30E-06	2.66E-03	1.33E-06	4.20E-04	3.60E-06	8.64E-05	3.15E-02	1.58E-05	3.15E-02	1.58E-05
Molybdenum	1.10E-03	1.29E-06	3.09E-05	1.13E-02	5.64E-06		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.13E-02	5.64E-06
Nickel	2.10E-03	2.46E-06	5.89E-05	2.15E-02	1.08E-05	4.20E-04	3.60E-06	8.64E-05	3.15E-02	1.58E-05	3.15E-02	1.58E-05
Selenium	2.40E-05	2.81E-08	6.74E-07	2.46E-04	1.23E-07	2.10E-03	1.80E-05	4.32E-04	1.58E-01	7.88E-05	1.58E-01	7.88E-05
Vanadium	2.30E-03	2.69E-06	6.46E-05	2.36E-02	1.18E-05		0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.36E-02	1.18E-05
Zinc	2.90E-02	3.39E-05	8.14E-04	2.97E-01	1.49E-04	5.60E-04	4.80E-06	1.15E-04	4.20E-02	2.10E-05	2.97E-01	1.49E-04

[1] - AP-42, Compilation of Air Pollutant Emission Factors Vol. 1 - Stationary Sources USEPA, 5th ed. Section 1.4, 7/98 - with following exceptions:
Acetaldehyde, ammonia, acrolein are from WebFIRE database.
[2] - AP-42; Compilation of Air Pollutant Emission Factors Vol. 1 - Stationary Sources USEPA, 5th ed. Section 1.3, 9/98

EMISSION CALCULATIONS **Carolina Sunrock**

Sources: **Heater for Liquid Asphalt Tank IES-5** **Prospect Hill Plant**

Description 1.1 MMBtu/hr heater for liquid asphalt tank
Heatec Direct Heater

Factors

Maximum Hours per Day = 24 hrs/day
Maximum Days of Production per Year = 365 days/yr
Heating Value for NG = 1026 Btu/scf Based on EPA's GHG MRR Rule (40 CFR Part 98)
Heating Value for No. 2 Fuel Oil = 140 MMBtu/10^3 gal
Sulfur Content in No. 2 Fuel Oil = 0.5 %

Source Description	Maximum Heat Input Rating	Units	Maximum Gas Usage for Natural Gas (MMscf/hr)	Maximum Fuel Oil Usage for Natural Gas (10^3 gal/hr)
Direct Heater	1.1	MMBtu/hr	1.07E-03	7.86E-03

NG Emissions (lb/yr) = Emission Factor (lb/MMscf) * Potential Fuel Usage (MMscf/yr)
NG Emissions (tpy) = Emissions (lb/yr) / (2000 lb/ton)

No. 2 Fuel Emissions (lb/yr) = Emission Factor (lb/MMBtu) * Potential Fuel Usage (10^3 gal/yr) * Heating Value for No. 2 Fuel Oil (140 MMBtu/10^3gal)
No. 2 Fuel Oil Emissions (tpy) = Emissions (lb/yr) / (2000 lb/ton)

Pollutant	Uncontrolled Emission Factor from NG Combustion (lb/mmscf)[1]	Emissions from NG (lb/hr)	(lb/day)	(lb/yr)	(tpy)	Uncontrolled Emission Factor from No. 2 Fuel Oil Combustion (lb/10^3 gal)[2]	Emissions from No. 2 fuel oil (lb/hr)	(lb/day)	(lb/yr)	(tpy)	Max Total Emissions from NG & No. 2 fuel oil firing (lb/yr)	Max Total Emissions from NG & No. 2 fuel oil firing (tpy)
PM	7.6	8.15E-03	1.96E-01	7.14E+01	3.57E-02	2	1.57E-02	3.77E-01	1.38E+02	6.88E-02	1.38E+02	6.88E-02
PM-10	7.6	8.15E-03	1.96E-01	7.14E+01	3.57E-02	1.241	9.75E-03	2.34E-01	8.54E+01	4.27E-02	8.54E+01	4.27E-02
SO_2	0.6000	6.43E-04	1.54E-02	5.64E+00	2.82E-03	71	5.58E-01	1.34E+01	4.89E+03	2.44E+00	4.89E+03	2.44E+00
NOx	100	1.07E-01	2.57E+00	9.39E+02	4.70E-01	20	1.57E-01	3.77E+00	1.38E+03	6.88E-01	1.38E+03	6.88E-01
VOCs	5.500	5.90E-03	1.42E-01	5.17E+01	2.58E-02	0.556	4.37E-03	1.05E-01	3.83E+01	1.91E-02	5.17E+01	2.58E-02
CO	84	9.01E-02	2.16E+00	7.89E+02	3.94E-01	5	3.93E-02	9.43E-01	3.44E+02	1.72E-01	7.89E+02	3.94E-01
2-Methylnaphthalene	2.40E-05	2.57E-08	6.18E-07	2.25E-04	1.13E-07		0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.25E-04	1.13E-07
3-Methylchloranthrene	1.80E-06	1.93E-09	4.63E-08	1.69E-05	8.45E-09		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.69E-05	8.45E-09
7,12-Dimethylbenz(a)anathracene	1.60E-05	1.72E-08	4.12E-07	1.50E-04	7.51E-08		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.50E-04	7.51E-08
Acenaphthene	1.80E-06	1.93E-09	4.63E-08	1.69E-05	8.45E-09	2.11E-05	1.66E-07	3.98E-06	1.45E-03	7.26E-07	1.45E-03	7.26E-07
Acenaphtylene	1.80E-06	1.93E-09	4.63E-08	1.69E-05	8.45E-09	2.53E-07	1.99E-09	4.77E-08	1.74E-05	8.71E-09	1.74E-05	8.71E-09
Acetaldehyde	1.52E-05	1.63E-08	3.91E-07	1.43E-04	7.14E-08		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.43E-04	7.14E-08
Acrolein	1.80E-05	1.93E-08	4.63E-07	1.69E-04	8.45E-08		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.69E-04	8.45E-08
Ammonia	3.20E+00	3.43E-03	8.23E-02	3.01E+01	1.50E-02		0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.01E+01	1.50E-02
Anthracene	2.40E-06	2.57E-09	6.18E-08	2.25E-05	1.13E-08	1.22E-06	9.59E-09	2.30E-07	8.40E-05	4.20E-08	8.40E-05	4.20E-08
Benz(a)anthracene	1.80E-06	1.93E-09	4.63E-08	1.69E-05	8.45E-09	4.01E-06	3.15E-08	7.56E-07	2.76E-04	1.38E-07	2.76E-04	1.38E-07
Benzene	2.10E-03	2.25E-06	5.40E-05	1.97E-02	9.86E-06	2.14E-04	1.68E-06	4.04E-05	1.47E-02	7.36E-06	1.97E-02	9.86E-06
Benzo(a)pyrene	1.20E-06	1.29E-09	3.09E-08	1.13E-05	5.64E-09		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.13E-05	5.64E-09
Benzo(b)fluoranthene	1.80E-06	1.93E-09	4.63E-08	1.69E-05	8.45E-09	1.48E-06	1.16E-08	2.79E-07	1.02E-04	5.09E-08	1.02E-04	5.09E-08
Benzo(g,h,i)perylene	1.20E-06	1.29E-09	3.09E-08	1.13E-05	5.64E-09	2.26E-06	1.78E-08	4.26E-07	1.56E-04	7.78E-08	1.56E-04	7.78E-08
Benzo(k)fluoranthene	1.80E-06	1.93E-09	4.63E-08	1.69E-05	8.45E-09		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.69E-05	8.45E-09
Butane	2.1	2.25E-03	5.40E-02	1.97E+01	9.86E-03		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.97E+01	9.86E-03
Chrysene	1.80E-06	1.93E-09	4.63E-08	1.69E-05	8.45E-09	2.38E-06	1.87E-08	4.49E-07	1.64E-04	8.19E-08	1.64E-04	8.19E-08
Dibenzo(a,h)anthracene	1.20E-06	1.29E-09	3.09E-08	1.13E-05	5.64E-09	1.67E-06	1.31E-08	3.15E-07	1.15E-04	5.75E-08	1.15E-04	5.75E-08
Dichlorobenzene	1.20E-03	1.29E-06	3.09E-05	1.13E-02	5.64E-06		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.13E-02	5.64E-06
Ethane	3.1	3.32E-03	7.98E-02	2.91E+01	1.46E-02		0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.91E+01	1.46E-02
Ethylbenzene		0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.36E-05	5.00E-07	1.20E-05	4.38E-03	2.19E-06	4.38E-03	2.19E-06
Fluoranthene	3.00E-06	3.22E-09	7.72E-08	2.82E-05	1.41E-08	4.84E-06	3.80E-08	9.13E-07	3.33E-04	1.67E-07	3.33E-04	1.67E-07
Fluorene	2.80E-06	3.00E-09	7.20E-08	2.63E-05	1.31E-08	4.47E-06	3.51E-08	8.43E-07	3.08E-04	1.54E-07	3.08E-04	1.54E-07
Formaldehyde	7.50E-02	8.04E-05	1.93E-03	7.04E-01	3.52E-04	3.30E-02	2.59E-04	6.22E-03	2.27E+00	1.14E-03	2.27E+00	1.14E-03
Hexane	1.8	1.93E-03	4.63E-02	1.69E+01	8.45E-03		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.69E+01	8.45E-03
Indeno(1,2,3-cd)pyrene	1.80E-06	1.93E-09	4.63E-08	1.69E-05	8.45E-09	2.14E-06	1.68E-08	4.04E-07	1.47E-04	7.36E-08	1.47E-04	7.36E-08
Naphthalene	6.10E-04	6.54E-07	1.57E-05	5.73E-03	2.86E-06	1.13E-03	8.88E-06	2.13E-04	7.78E-02	3.89E-05	7.78E-02	3.89E-05
OCDD		0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.10E-09	2.44E-11	5.85E-10	2.13E-07	1.07E-10	2.13E-07	1.07E-10
Pentane	2.6	2.79E-03	6.69E-02	2.44E+01	1.22E-02		0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.44E+01	1.22E-02
Phenanthrene	1.70E-05	1.82E-08	4.37E-07	1.60E-04	7.98E-08	1.05E-05	8.25E-08	1.98E-06	7.23E-04	3.61E-07	7.23E-04	3.61E-07
Propane	1.6	1.72E-03	4.12E-02	1.50E+01	7.51E-03		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.50E+01	7.51E-03
Pyrene	5.00E-06	5.36E-09	1.29E-07	4.70E-05	2.35E-08	4.25E-06	3.34E-08	8.01E-07	2.93E-04	1.46E-07	2.93E-04	1.46E-07
Toluene	3.40E-02	3.65E-05	8.75E-04	3.19E-01	1.60E-04	6.20E-03	4.87E-05	1.17E-03	4.27E-01	2.13E-04	4.27E-01	2.13E-04
1,1,1-Trichloroethane		0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.36E-04	1.85E-06	4.45E-05	1.62E-02	8.12E-06	1.62E-02	8.12E-06
Xylene		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.09E-04	8.56E-07	2.06E-05	7.50E-03	3.75E-06	7.50E-03	3.75E-06
Arsenic	2.00E-04	2.14E-07	5.15E-06	1.88E-03	9.39E-07	5.60E-04	4.40E-06	1.06E-04	3.85E-02	1.93E-05	3.85E-02	1.93E-05
Barium	4.40E-03	4.72E-06	1.13E-04	4.13E-02	2.07E-05		0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.13E-02	2.07E-05
Beryllium	1.20E-05	1.29E-08	3.09E-07	1.13E-04	5.64E-08	4.20E-04	3.30E-06	7.92E-05	2.89E-02	1.45E-05	2.89E-02	1.45E-05
Cadmium	1.10E-03	1.18E-06	2.83E-05	1.03E-02	5.17E-06	4.20E-04	3.30E-06	7.92E-05	2.89E-02	1.45E-05	2.89E-02	1.45E-05
Chromium (as chromic acid)	1.40E-03	1.50E-06	3.60E-05	1.31E-02	6.57E-06	4.20E-04	3.30E-06	7.92E-05	2.89E-02	1.45E-05	2.89E-02	1.45E-05
Cobalt	8.40E-05	9.01E-08	2.16E-06	7.89E-04	3.94E-07		0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.89E-04	3.94E-07
Copper	8.50E-04	9.11E-07	2.19E-05	7.98E-03	3.99E-06	8.40E-04	6.60E-06	1.58E-04	5.78E-02	2.89E-05	5.78E-02	2.89E-05
Lead	5.00E-04	5.36E-07	1.29E-05	4.70E-03	2.35E-06	1.26E-03	9.90E-06	2.38E-04	8.67E-02	4.34E-05	8.67E-02	4.34E-05
Manganese	3.80E-04	4.07E-07	9.78E-06	3.57E-03	1.78E-06	8.40E-04	6.60E-06	1.58E-04	5.78E-02	2.89E-05	5.78E-02	2.89E-05
Mercury	2.60E-04	2.79E-07	6.69E-06	2.44E-03	1.22E-06	4.20E-04	3.30E-06	7.92E-05	2.89E-02	1.45E-05	2.89E-02	1.45E-05
Molybdenum	1.10E-03	1.18E-06	2.83E-05	1.03E-02	5.17E-06		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.03E-02	5.17E-06
Nickel	2.10E-03	2.25E-06	5.40E-05	1.97E-02	9.86E-06	4.20E-04	3.30E-06	7.92E-05	2.89E-02	1.45E-05	2.89E-02	1.45E-05
Selenium	2.40E-05	2.57E-08	6.18E-07	2.25E-04	1.13E-07	2.10E-03	1.65E-05	3.96E-04	1.45E-01	7.23E-05	1.45E-01	7.23E-05
Vanadium	2.30E-03	2.47E-06	5.92E-05	2.16E-02	1.08E-05		0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.16E-02	1.08E-05
Zinc	2.90E-02	3.11E-05	7.46E-04	2.72E-01	1.36E-04	5.60E-04	4.40E-06	1.06E-04	3.85E-02	1.93E-05	2.72E-01	1.36E-04

[1] - AP-42, Compilation of Air Pollutant Emission Factors Vol. 1 - Stationary Sources USEPA, 5th ed. Section 1.4, 7/98 - with following exceptions:
Acetaldehyde, ammonia, acrolein are from WebFIRE database.
[2] - AP-42, Compilation of Air Pollutant Emission Factors Vol. 1 - Stationary Sources USEPA, 5th ed. Section 1.3, 9/98

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

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.:	N/A
Permit No.:	N/A
Facility City:	Prospect Hill
Facility County:	Caswell
Spreadsheet Prepared by:	TLSample

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:	1

Asphalt Cement Heater

AC heater heat input:	2.3	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:	1,488,581	tons per year
Requested Annual Production Limit:	250,000	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	4.1
Total PM10	6.5	0.023	1625	5.75	29.0	25.2	2.9
SO2	0.0837	0.0837	20.93	20.93	91.69	91.69	10.47
CO	0.1300	0.130	32.5	32.5	142.4	142.4	16.3
NOx	0.0550	0.055	13.75	13.75	60.2	60.2	6.9
VOC	0.0320	0.032	8	8	35.0	35.0	4.0
HAPs, TOTAL		0.010		2.5	11.0	11.0	1.3

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	0.1
CO	2.53E-03	6.32E-01	2.8	2.8	0.3
VOC	1.61E-02	4.02E+00	17.6	17.6	2.0
HAPs, TOTAL	2.74E-04	6.85E-02	0.3	0.3	0.0

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	0.0334	2.17E+00	9.5	9.5	1.1
Total PM10	0.0122	7.93E-01	3.5	3.5	0.4

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	5.42E-02	0.2	0.2	0.2
Total PM10	0.0235714	5.42E-02	0.2	0.2	0.2
SO2	0.5071429	1.17E+00	5.1	5.1	5.1
CO	0.0357143	8.21E-02	0.4	0.4	0.4
NOx	0.1428571	3.29E-01	1.4	1.4	1.4
VOC	0.0024286	5.59E-03	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	1.05E+01	66.4	47.1	5.6
Total PM10	6.60E+00	34.0	30.1	3.6
SO2	2.21E+01	96.8	96.8	15.6
CO	3.32E+01	145.5	145.5	16.9
NOx	1.41E+01	61.7	61.7	8.3
VOC	1.20E+01	52.7	52.7	6.0
HAPs, TOTAL	2.57E+00	11.3	11.3	1.3

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

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.:	N/A
		PERMIT NUMBER:	N/A
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:	Prospect Hill
		FACILITY COUNTY:	Caswell

Annual Production Limit:	**250,000** ton/year	**Daily Production Limit:**	**0** ton/day
SPREADSHEET PREPARED BY:	TLSample		

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)	10.48	5.59		66.35		5.59
PARTICULATE MATTER<10 MICRONS (PM_{10})	6.60	3.65		33.97		3.65
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)						
SULFUR DIOXIDE (SO2)	22.10	15.58		96.80		15.58
NITROGEN OXIDES (NOx)	14.08	8.31		61.66		8.31
CARBON MONOXIDE (CO)	33.21	16.93		145.48		16.93
VOLATILE ORGANIC COMPOUNDS (VOC)	12.03	6.04		52.69		6.04
TOTAL HAP	2.57	1.28		11.25		1.28
LARGEST HAP (formaldehyde)	0.80	0.40		3.49		0.40

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	3.25E+02	3.25E-01	2847.00	3.25E-01	3.25E+02	1.3E-03
Acrolein (TH)	107028	6.50E-03	6.50E+00	6.50E-03	56.94	6.50E-03	6.50E+00	2.6E-05
Antimony unlisted compounds (H)	SBC-other	4.50E-05	4.50E-02	4.50E-05	0.39	4.50E-05	4.50E-02	1.8E-07
Arsenic unlisted cmpds (comp. of ASC) (TH)	ASC-other	1.40E-04	1.40E-01	1.40E-04	1.23	1.40E-04	1.40E-01	5.6E-07
Benzene (TH)	71432	9.90E-02	9.90E+01	9.90E-02	867.38	9.90E-02	9.90E+01	4.0E-04
Benzo(a)pyrene (T)	50328	4.41E-06	4.41E-03	4.41E-06	0.04	4.41E-06	4.41E-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	1.03E-01	1.03E-04	0.90	1.03E-04	1.03E-01	4.1E-07
Carbon disulfide (TH)	75150	6.23E-04	6.23E-01	6.23E-04	5.45	6.23E-04	6.23E-01	2.5E-06
Chromium unlisted cmpds (add w/chrom acid to get CRC) (H)	CRC-other	1.26E-03	1.26E+00	1.26E-03	11.06	1.26E-03	1.26E+00	5.1E-06
Chromic acid (VI) (component of solCR6 and CRC) (TH)	7738945	1.13E-04	1.13E-01	1.13E-04	0.99	1.13E-04	1.13E-01	4.5E-07
Cobalt unlisted compounds (H)	COC-other	6.50E-06	6.50E-03	6.50E-06	0.06	6.50E-06	6.50E-03	2.6E-08
Cumene (H)	98828	1.14E-03	1.14E+00	1.14E-03	10.02	1.14E-03	1.14E+00	4.6E-06
Ethyl benzene (H)	100414	6.41E-02	6.41E+01	6.41E-02	561.24	6.41E-02	6.41E+01	2.6E-04
Ethyl chloride (chloroethane) (H)	75003	2.18E-06	2.18E-03	2.18E-06	0.02	2.18E-06	2.18E-03	8.7E-09
Formaldehyde (TH)	50000	7.97E-01	7.97E+02	7.97E-01	6981.17	7.97E-01	7.97E+02	3.2E-03
Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8 (T)	57653857	3.25E-10	3.25E-07	3.25E-10	0.00	3.25E-10	3.25E-07	1.3E-12
Hexane, n- (TH)	110543	2.39E-01	2.39E+02	2.39E-01	2095.50	2.39E-01	2.39E+02	9.6E-04
Hydrogen Chloride (hydrochloric acid) (TH)	7647010	5.25E-02	5.25E+01	5.25E-02	459.90	5.25E-02	5.25E+01	2.1E-04
Hydrogen Sulfide (T)	7783064	1.37E-02	1.37E+01	1.37E-02	119.84	1.37E-02	1.37E+01	5.5E-05
Lead unlisted compounds (H)	PBC-other	3.75E-03	3.75E+00	3.75E-03	32.85	3.75E-03	3.75E+00	1.5E-05
Manganese unlisted compounds (T)	MNC-other	1.93E-03	1.93E+00	1.93E-03	16.86	1.93E-03	1.93E+00	7.7E-06
Mercury, vapor (TH)	7439976	6.50E-04	6.50E-01	6.50E-04	5.69	6.50E-04	6.50E-01	2.6E-06
Methyl bromide (H)	74839	2.49E-04	2.49E-01	2.49E-04	2.18	2.49E-04	2.49E-01	1.0E-06
Methyl chloride (H)	74873	1.56E-04	1.56E-01	1.56E-04	1.37	1.56E-04	1.56E-01	6.2E-07
Methyl chloroform (TH)	71556	1.20E-02	1.20E+01	1.20E-02	105.12	1.20E-02	1.20E+01	4.8E-05
Methyl ethyl ketone (TH)	78933	6.70E-03	6.70E+00	6.70E-03	58.67	6.70E-03	6.70E+00	2.7E-05
Methylene chloride (TH)	75092	8.23E-06	8.23E-03	8.23E-06	0.07	8.23E-06	8.23E-03	3.3E-08
Napthalene (H)	91203	1.65E-01	1.65E+02	1.65E-01	1442.95	1.65E-01	1.65E+02	6.6E-04
Nickel metal (TH)	7440020	1.58E-02	1.58E+01	1.58E-02	137.97	1.58E-02	1.58E+01	6.3E-05
Perchloroethylene (tetrachloroethylene) (TH)	127184	8.01E-05	8.01E-02	8.01E-05	0.70	8.01E-05	8.01E-02	3.2E-07
Phenol (TH)	108952	1.01E-03	1.01E+00	1.01E-03	8.81	1.01E-03	1.01E+00	4.0E-06
Phosphorus Metal, Yellow or White (H)	7723140	7.00E-03	7.00E+00	7.00E-03	61.32	7.00E-03	7.00E+00	2.8E-05
Polycyclic Organic Matter (H)	POM	2.20E-01	2.20E+02	2.20E-01	1927.20	2.20E-01	2.20E+02	8.8E-04
Propionaldehyde (H)	123386	3.25E-02	3.25E+01	3.25E-02	284.70	3.25E-02	3.25E+01	1.3E-04
Quinone (H)	106514	4.00E-02	4.00E+01	4.00E-02	350.40	4.00E-02	4.00E+01	1.6E-04
Selenium compounds (H)	SEC	8.75E-05	8.75E-02	8.75E-05	0.77	8.75E-05	8.75E-02	3.5E-07
Styrene (TH)	100425	2.40E-04	2.40E-01	2.40E-04	2.11	2.40E-04	2.40E-01	9.6E-07
Tetrachlorodibenzo-p-dioxin, 2,3,7,8- (TH)	1746016	5.25E-11	5.25E-08	5.25E-11	0.00	5.25E-11	5.25E-08	2.1E-13
Toluene (TH)	108883	7.29E-01	7.29E+02	7.29E-01	6386.67	7.29E-01	7.29E+02	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	1.35E-02	1.35E-05	0.12	1.35E-05	1.35E-02	5.4E-08
Trimethylpentane, 2,2,4- (H)	540841	1.00E-02	1.00E+01	1.00E-02	87.85	1.00E-02	1.00E+01	4.0E-05
Xylene (TH)	1330207	6.04E-02	6.04E+01	6.04E-02	528.72	6.04E-02	6.04E+01	2.4E-04
Xylene, o- (H)	95476	2.57E-03	2.57E+00	2.57E-03	22.50	2.57E-03	2.57E+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 250000 tons and a daily production limit of 0 tons.						**EMISSION FACTOR** (lb/ton asphalt produced, with Fabric filter controls)
TOXIC AIR POLLUTANT	CAS Num.	lb/hr	lb/day	lb/yr	Modeling Required?	
Acetaldehyde (TH)	75070	3.25E-01	0.00E+00	3.25E+02	NO. Based on facility-wide potential.	1.30E-03
Acrolein (TH)	107028	6.50E-03	0.00E+00	6.50E+00	NO. Based on facility-wide potential.	2.60E-05
Arsenic unlisted cmpds (comp. of ASC) (TH)	ASC-other	1.40E-04	0.00E+00	1.40E-01	YES. Modeling required	5.60E-07
Benzene (TH)	71432	9.90E-02	0.00E+00	9.90E+01	YES. Modeling required	3.96E-04
Benzo(a)pyrene (T)	50328	4.41E-06	0.00E+00	4.41E-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	1.03E-01	NO. Because of operating restriction	4.10E-07
Carbon disulfide (TH)	75150	6.23E-04	0.00E+00	6.23E-01	NO. Based on facility-wide potential.	2.49E-06
Soluble Chromate compounds as Chrome (VI) (TH)	SOLCR6	1.13E-04	0.00E+00	1.13E-01	NO. Based on facility-wide potential.	4.50E-07
Formaldehyde (TH)	50000	7.97E-01	0.00E+00	7.97E+02	YES. Modeling required	3.19E-03
Hexane, n- (TH)	110543	2.39E-01	0.00E+00	2.39E+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	3.25E-07	NO. Based on facility-wide potential.	1.30E-12
Hydrogen Sulfide (T)	7783064	1.37E-02	0.00E+00	1.37E+01	NO. Based on facility-wide potential.	5.47E-05
Manganese unlisted compounds (T)	MNC-other	1.93E-03	0.00E+00	1.93E+00	NO. Based on facility-wide potential.	7.70E-06
Mercury, vapor (TH)	7439976	6.50E-04	0.00E+00	6.50E-01	NO. Because of operating restriction	2.60E-06
Methylene chloride (TH)	75092	8.23E-06	0.00E+00	8.23E-03	NO. Based on facility-wide potential.	3.29E-08
Methyl chloroform (TH)	71556	1.20E-02	0.00E+00	1.20E+01	NO. Based on facility-wide potential.	4.80E-05
Methyl ethyl ketone (TH)	78933	6.70E-03	0.00E+00	6.70E+00	NO. Based on facility-wide potential.	2.68E-05
Nickel metal (TH)	7440020	1.58E-02	0.00E+00	1.58E+01	NO. Because of operating restriction	6.30E-05
Perchloroethylene (tetrachloroethylene) (TH)	127184	8.01E-05	0.00E+00	8.01E-02	NO. Based on facility-wide potential.	3.20E-07
Phenol (TH)	108952	1.01E-03	0.00E+00	1.01E+00	NO. Based on facility-wide potential.	4.02E-06
Styrene (TH)	100425	2.40E-04	0.00E+00	2.40E-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	5.25E-08	NO. Based on facility-wide potential.	2.10E-13
Toluene (TH)	108883	7.29E-01	0.00E+00	7.29E+02	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	1.35E-02	NO. Based on facility-wide potential.	5.41E-08
Xylene (TH)	1330207	6.04E-02	0.00E+00	6.04E+01	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.

								dryer		Silo Filling		Loadout		total handling		total							
Pollutant	CAS No.	emissions from dryer	emissions from handling	TPER	Units	TPER	Units	Controlled Emission Factor (lb/ton)	Controlled Emission Rate (lb/hour)	Emission factor (lb/ton)	Emission Rate (lb/hr)	Emission factor (lb/ton)	Emission Rate (lb/hr)	Emission Factor (lb/ton)	Emission Rate (lb/hour)	Controlled Emission Factor (lb/ton)	Controlled Emission Rate (lb/hour)	Controlled Emission Rate (lb/day)	Controlled Emission Rate (lb/year)	Controlled wt.Limitations Emission Rate (lb/day)	Controlled wt.Limitations Emission Rate (lb/year)	Controlled ER greater than TPER ?	Controlled wt.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	3.25E+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	6.50E+00	No		NOTE 1
Formaldehyde (TH)	50000	yes	yes	0.94	lb/hr			3.19E-03	7.76E-01	8.41E-06	2.10E-02	3.96E-06	8.15E-04	8.77E-05	2.19E-02	3.18E-03	7.97E-01	1.91E+01	6.98E+03	0.00E+00	7.97E+02	Yes		NOTE 3
Phenol (TH)	108952	no	yes	0.24	lb/hr					0.00E+00	0.00E+00	4.92E-06	1.01E-03	4.92E-06	1.01E-03	4.92E-06	1.01E-03	2.41E-02	8.81E+00	0.00E+00	1.01E+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	2.40E-01	No		NOTE 1
Trichlorofluoromethane (CFC 111) (T)	75694	no	yes	140	lb/hr					0.00E+00	0.00E+00	5.41E-06	1.35E-05	5.41E-06	1.35E-05	5.41E-06	1.35E-05	3.24E-04	1.18E-01	0.00E+00	1.35E-02	No		NOTE 1
Methyl chloroform (TH)	71556	yes	yes	64	lb/hr	250	lb/day	4.60E-05	1.20E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.60E-05	1.20E-02	2.88E-01	1.05E+02	0.00E+00	1.20E+01	No	No	NOTE 1
Methyl ethyl ketone (TH)	78933	yes	yes	22.4	lb/hr	78	lb/day	2.60E-05	6.80E-03	4.75E-06	1.19E-03	2.04E-06	5.09E-04	6.78E-06	1.70E-03	2.58E-05	6.70E-03	1.61E-01	5.87E+01	0.00E+00	6.70E+00	No	No	NOTE 1
Toluene (TH)	108883	yes	yes	14.4	lb/hr	96	lb/day	2.80E-03	7.23E-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	6.38E+03	0.00E+00	7.29E+02	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	6.04E+01	No	No	NOTE 1
Methylene chloride (TH)	75092	no	yes	0.39	lb/hr	1600	lb/year			3.29E-06	8.23E-06	0.00E+00	0.00E+00	3.29E-06	8.23E-06	3.29E-06	8.23E-06	1.97E-04	7.21E-02	0.00E+00	8.23E-03	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	1.13E-01	No		NOTE 1
Hexane, n- (TH)	110543	yes	yes	23	lb/day			9.35E-04	2.35E-01	1.22E-05	3.05E-03	9.24E-06	1.56E-03	1.64E-05	4.61E-03	9.57E-04	2.39E-01	5.74E+00	2.10E+03	0.00E+00	2.39E+02	No	No	NOTE 1
Manganese unlisted compounds (T)	MNC-other	yes	no	0.53	lb/day			7.70E-06	1.93E-03							7.70E-06	1.93E-03	4.62E-02	1.69E+01	0.00E+00	1.93E+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	6.50E-01	Yes	No	NOTE 2
Nickel metal (TH)	7440020	yes	no	0.13	lb/day			6.30E-06	1.58E-02							6.30E-06	1.58E-02	3.78E-01	1.38E+02	0.00E+00	1.58E+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	6.23E-01	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	5.25E-08	No	No	NOTE 1
Arsenic unlisted cmpds (comp. of ASC) (TH)	ASC-other	yes	no	0.016	lb/yr			9.60E-07	1.40E-04							9.60E-07	1.40E-04	3.36E-03	1.23E+00	0.00E+00	1.40E-01	Yes	Yes	NOTE 3
Benzene (TH)	71432	yes	yes	8.1	lb/yr			3.90E-04	9.75E-02	3.91E-08	9.75E-06	2.16E-06	5.41E-04	8.06E-06	1.81E-03	3.98E-04	9.90E-02	2.38E+00	8.67E+02	0.00E+00	8.90E+01	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	7.81E-09	1.95E-06	7.84E-09	1.96E-06	1.76E-08	4.41E-06	1.06E-04	3.86E-02	0.00E+00	4.41E-03	No	No	NOTE 1
Hydrogen Sulfide (T)	7783064	yes	yes	1.7	lb/day			5.15E-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	1.37E+01	No	No	NOTE 1
Beryllium metal (unreacted) (TH)	7440417	yes	no	0.26	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	1.03E-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	3.25E-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	5.25E+01	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	8.01E-02	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
Naphalene (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	1.65E+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	7.00E+00			
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	2.20E+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	3.25E+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	4.00E+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	8.75E-02			
Trimethylpentane, 2,2,4- (H)	540841	yes	yes					4.00E-05	1.00E-02	3.75E-06	9.44E-06	7.49E-06	1.87E-05	1.13E-07	2.82E-05	4.01E-05	1.00E-02	2.41E-01	8.78E+01	0.00E+00	1.00E+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	4.50E-02			
Chromium unlisted cmpds (add wichrom 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	1.26E+00			
Cobalt unlisted compounds (H)	COC-other	yes	no					2.60E-06	6.50E-06							2.60E-06	6.50E-06	1.56E-04	5.69E-02	0.00E+00	6.50E-03			
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	6.41E+01			
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	3.75E+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	2.49E-01			
Cumene (H)	98828	no	yes							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	1.14E+00			
Ethyl chloride (chloroethane) (H)	75003	no	yes							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	2.18E-03			
Methyl chloride (H)	74873	no	yes							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	1.56E-01			
Xylene, o- (H)	95476	no	yes							8.90E-06	1.74E-03	3.33E-06	8.32E-04	1.03E-05	2.57E-03	1.03E-05	2.57E-03	6.16E-02	2.25E+01	0.00E+00	2.57E+00			
HAPs, TOTAL								1.00E-02	2.50E+00	1.87E-04	4.66E-02	6.66E-05	2.17E-02	2.74E-04	9.85E-02	1.03E-02	2.57E+00	6.16E+01	2.25E+04	0.00E+00	2.57E+03			

Asphalt cement heater

heat input	2.3	MMBtu/hr
sulfur content	0.50	%S

Assumptions:

Fired with distillate oil (No.2 or diesel)
Emission factors taken from AP-42 section 1.3 Fuel Oil Combustion
Heating value 140 MMBtu/ 1000 gallons

Pollutant	factors (lb/1000 gallon)		factors lb/MMBtu
SO2	142 S	where S = % sulfur	0.5071
NOx	20		0.1429
CO	5		0.0357
VOC (NMTOC)	0.34		0.0024
filterable PM	2		0.0143
condensible PM	1.3		0.0093
total PM	3.3		0.0236
total PM10	3.3		0.0236

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	0.003	0.0011	0.195	0.0715	0.85	0.31
	total		**2.17**	**0.79**	**9.51**	**3.47**

combined EF	0.0334	0.0122

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:	250,000	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.

Emission factors current as of

KEY: Metals in Red
Organics in Grey
All blue cells on this sheet are linked to other cells. Correct original cell
All black cells are original cells

				BATCH	BATCH	BATCH	DRUM	DRUM	DRUM	DRUM	DRUM	DRUM	DRUM	DRUM
				Dryer, hot screens and mixer (with fabric filter)	Natural gas or No.2 fuel oil-fired dryer, hot screens and mixer with fabric filter	Waste oil-,drain oil- or No.6 fuel oil-fired dryer, hot screens and mixer with fabric filter	Natural gas-fired dryer with fabric filter	No.2 fuel oil-fired dryer with fabric filter	Waste oil-fired dryer with fabric filter	Fuel oil or waste oil-fired dryer with fabric filter	Fuel oil or waste oil-fired dryer uncontrolled	Fluid oil-fired dryer uncontrolled	Natural gas or propane-fired dryer with fabric filter	No.2 fuel oil, waste oil, drain oil No.6 fuel oil -fired dryer with fabric filter
				SCC 3-05-002-45, -46, -47	SCC 3-05-002-45, -46	SCC 3-05-002-47	SCC 3-05-002-56, -56, -57	SCC 3-05-002-58, -59, -60	SCC 3-05-002-61, -62, -63	SCC 3-05-002-56, -58, -61, -62, -63	SCC 3-05-002-58, -59, -62, -63	SCC 3-05-002-54, -59, -60	SCC 3-05-002-55, -56, -57	SCC 3-05-002-56, -59, -60, -61, -62, -63
				Table 11.1-11 METALS	Table 11.1-9	Table 11.1-9	Table 11.1-10	Table 11.1-10	Table 11.1-10	Table 11.1-10	Table 11.1-10	Table 11.1-12 METALS	Table 11.1-12 METALS	Table 11.1-12 METALS
		Acetaldehyde (TH)	75070		0.00032	0.00032			0.0013					
T	H	Acrolein (TH)	107028						0.000026					
	H	Antimony unlisted compounds (H)	SBC-other				0.00000018	0.00000018	0.00000018				0.00000018	0.00000018
T	H	Arsenic unlisted compounds (component of ASC) (TH)	ASC-other	0.00000048	0.00000046	0.00000046	0.00000056	0.00000056	0.00000056			0.0000013	0.00000056	0.00000056
T	H	Benzene (TH)	71432		0.00028	0.00028	0.00039	0.00039	0.00039					
		Benzo(a)anthracene (PAH)	56553		1.80E-09	1.80E-09	1.80E-09	1.80E-09	1.80E-09					
T	should ids	Benzo(a)pyrene (T)	50328		3.10E-10	3.10E-10	9.80E-09	9.80E-09	8.80E-09					
T	H	Beryllium metal (unreacted) (TH)	7440417	0.00000015	0.00000015	0.00000015	0	0	0			0	0	0
T	H	Cadmium metal (elemental unreacted) (TH)	7440439	0.00000091	0.00000091	0.00000091	0.00000041	0.00000041	0.00000041			0.0000042	0.00000041	0.00000041
	H	Chromium unlisted cmpds (add w/chrom acid to get CRC) (TH	CRC-other	0.00000022	0.00000022	0.00000022	0.00000505	0.00000505	0.00000505			0.000024	0.00000505	0.00000505
T	H	Chromic Acid (VI) (component of SolCRS and CRC) (TH)	7738945	0.00000048	0.00000048	0.00000048	0.00000045	0.00000045	0.00000045				0.00000045	0.00000045
	H	Cobalt unlisted compounds (H)	COC-other				0.00000026	0.00000026	0.00000026			0.0000015	0.00000026	0.00000026
	H	Ethyl benzene (H)	100414		0.0022	0.0022	0.00024	0.00024	0.00024					
T	H	Formaldehyde (TH)	50000		0.00074	0.00074	0.0031	0.0031	0.0031					
T		Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8 (T)	57653857					1.3E-12	1.3E-12	[illegible]				
T	H	Hexane, n- (TH)	110543				0.00092	0.00092	0.00022					
		Indeno(1,2,3-cd)pyrene (PAH)	193395		1.80E-09	1.80E-09	1.80E-09	1.80E-09	1.80E-09					
T		Hydrogen sulfide (T)	7783064		0.0000518	0.0000518	0.0000518	0.0000518	0.0000518					
	H	Lead unlisted compounds (H)	PBC-other	0.00000092	0.00000069	0.00000069	0.00000062	0.000015	0.000015			0.00054	0.00000057	0.000015
T	H	Manganese unlisted compounds (T)	MNC-other	0.0000069	0.0000069	0.0000069	0.0000077	0.0000077	0.0000077			0.00055	0.0000077	0.0000077
T	H	Mercury, vapor (TH)	7439976	0.00000041	0.00000041	0.00000041	0.00000034	0.0000026	0.0000026				0.00000074	0.00000026
T	H	Methyl chloroform (TH)	71556				4.80E-05	4.80E-05	4.80E-05					
T	H	Methyl ethyl ketone (TH)	78933						0.00022					
	H	Naphthalene (H)	91203		3.60E-05	3.60E-05	9.00E-05	6.50E-04	6.50E-04					
T	H	Nickel metal (TH)	7440020	0.000003	0.000003	0.000003	0.000063	0.000063	0.000063			0.0013	0.000063	0.000063
	H	Phosphorus Metal, Yellow or White (H)	7723140				0.000028	0.000028	0.000028			0.0012	0.000028	0.000028
	H	Polycyclic Organic Matter (H)	POM		0.00011	0.00023	0.00019	0.00088	0.00088	5.13E-05	0.00E+00			
	H	Propionaldehyde (H)	123386						0.00013					
	H	Quinone (H)	106514		0.00027	0.00027			0.00018					
	H	Selenium compounds (H)	SEC	0.00000049	0.00000049	0.00000049	0.00000035	0.00000035	0.00000035				0.00000035	0.00000035
T	H	Tetrachlorodibenzo-p-dioxin, 2,3,7,8- (TH)	1746016					2.1E-13	2.1E-13	[illegible]				
T	H	Toluene (TH)	108883		0.001	0.001	0.00015	0.0029	0.0029					
	H	Trimethylpentane, 2,2,4- (H)	540841				4.00E-05	4.00E-05	4.00E-05					
T	H	Xylene (TH)	1330207		0.0027	0.0027	0.0002	0.0002	0.0002					
		sums			0.00772126	0.00764126								
		Non- PAH HAPs, TOTAL			0.0075	0.0075	0.0051	0.0078	0.0095					
		PAH HAPs, TOTAL			0.00011	0.00023	0.00019	0.00088	0.00088					
		HAPs, TOTAL			0.0076	0.0077	0.0053	0.0087	0.01					
		Total PCDD						7.90E-11	7.90E-11	7.90E-11	2.80E-09			
		Total PCDF						4.00E-11	4.00E-11	4.00E-11	1.50E-10			
		Ind PCDD/PCDF						1.20E-10	1.20E-10	1.20E-10	2.95E-09			

2	plant types
1	1. Batch mix
2	2. Drum mix

3	fuel type
1	1.Natural gas-fired
2	2. No.2 fuel oil-fired
3	3. Waste or No.6 fuel oil-fired

2	controls
1	1. uncontrolled
2	2. Fabric filter controls
3	3. Venturi or wet scrubber controls

Table 11.1-1
PM Emission Factors for Batch Mix HMAPs

dryer, hot screens, mixer SCC 3-05-002-45, -46, -47	filterable PM	filterable PM10	inorganic condensible PM	organic condensible PM	TOTAL condensible PM	total PM	total PM10
uncontrolled	32	4.5	0.013	0.0041	0.0171	32	4.5
fabric filter	0.025	0.0098	0.013	0.0041	0.0171	0.042	0.027
venturi or wet scrubber	0.12	0.12	0.013	0.0041	0.0171	0.14	0.14

Table 11.1-3
PM Emission Factors for Drum Mix HMAPs

dryer, hot screens, mixer SCC 3-05-002-05, -55 to -63	filterable PM	filterable PM10	inorganic condensible PM	organic condensible PM	TOTAL condensible PM	total PM	total PM10
uncontrolled	28	6.4	0.0074	0.058	0.0654	28	6.5
fabric filter	0.014	0.0039	0.0074	0.012	0.0194	0.033	0.023
venturi or wet scrubber	0.026	0.026	0.0074	0.012	0.0194	0.045	0.045

Table 11.1-5 and 6

Emission Factors for CO, CO2, Nox and SO2 from Batch Mix HMAPs

	CO	CO2	NOx	SO2	VOC
Natural gas fired dryer, hot screens and mixer SCC 3-05-002-45	0.4	37	0.025		0.0082
No.2 fuel oil-fired dryer, hot screens and mixer SCC 3-05-002-46	0.4	37	0.12		0.0082
Waste oil-fired dryer, hot screens and mixer SCC 3-05-002-47	0.4	37	0.12		0.036
Coal-fired dryer, hot screens and mixer SCC 3-05-002-98	ND	37	ND		
No.6 fuel oil-fired dryer, hot screens and mixer SCC 3-05-002-47					0.036

Table 11.1-7 and 8

Emission Factors for CO, CO2, Nox and SO2 from Drum Mix HMAPs

	CO	CO2	NOx	SO2	VOC	HCL
Natural gas fired dryer SCC 3-05-002-55, -56, -57	0.13	33	0.026		0.032	ND
No.2 fuel oil-fired dryer SCC 3-05-002-58, -59, -60	0.13	33	0.055		0.032	ND
Waste oil-fired dryer SCC 3-05-002-61, -62, -63	0.13	33	0.055		0.032	0.00021
Coal-fired dryer, SCC 3-05-002-98	ND	33	ND			

from Chapter 1.3 , AP-42, Fuel Oil Combustion, revised 09/98, Table 1.3.1		
	over 100 mmBtu/hr	under 100 mmBtu/hr
No.6, No.5	157	157
no.2	157	142

Plant maximum production capacity:	250	tons per hour
Dryer heat input:	80	million Btu per hour
Fuel Sulfur Content:	0.5	%

natural gas HV	1020	mmBtu/million scf
emissionNG combustion EF	0.6	lb SO2/ million scf
	0.000588	lb SO2/ mmBtu

No. 2 HV	140	mmBtu/1000 gallons
No. 6 HV	150	mmBtu/1000 gallons

3	fuel type	EF (lb/ton)
1	1.Natural gas-fired	0.0001
2	2. No.2 fuel oil-fired	0.0897
3	3. Waste or No.6 fuel oil-fired	0.0837

Note : 50% of the fuel bound sulfur up to a maximum (as SO2) of 0.1 lb/ton of product is expected to be retained in product.
0.1 lb SO2 retained / ton of product

plant types	SCCs	SO emission factor (lb/1000 gallons)/ %S	SO emission factor (lb/mmBtu)	SO emission rate (lb/hr)	SO emission rate (lb/ton asphalt produced)	50% of fuel bound sulfur (as SO2, lb/ton)	less than 0.1 lb/ton?	Corrected SO emission rate (lb/ton asphalt produced)
1. Batch mix, natural gas-fired, no controls			0.000588235	0.047	0.0002	0.0001	9.41176E-05	0.0001
2. Batch mix, natrual gas-fired, fabric filter controls	3-05-002-45		0.000588235	0.047	0.0002	0.0001	9.41176E-05	0.0001
3. Batch mix, natrual gas-fired, venturi or wet scrubber controls			0.000588235	0.047	0.0002	0.0001	9.41176E-05	0.0001
4. Batch mix, No.2 fuel oil-fired, no controls		157	0.560714286	44.857	0.1794	0.0897	0.089714286	0.0897
5. Batch mix, No.2 fuel oil-fired, fabric filter controls	3-05-002-46	157	0.560714286	44.857	0.1794	0.0897	0.089714286	0.0897
6. Batch mix, No.2 fuel oil-fired, venturi or wet scrubber controls		157	0.560714286	44.857	0.1794	0.0897	0.089714286	0.0897
7. Batch mix, waste or No.6 fuel oil-fired, no controls		157	0.523333333	41.867	0.1675	0.0837	0.083733333	0.0837
8. Batch mix, waste or No.6 fuel oil-fired, fabric filter controls	3-05-002-47	157	0.523333333	41.867	0.1675	0.0837	0.083733333	0.0837
9. Batch mix, waste or No.6 fuel oil-fired, venturi or wet scrubber controls		157	0.523333333	41.867	0.1675	0.0837	0.083733333	0.0837
10. Drum mix, natural gas-fired, no controls			0.000588235	0.047	0.0002	0.0001	9.41176E-05	0.0001
11. Drum mix, natrual gas-fired, fabric filter controls	3-05-002-55, -56, -57		0.000588235	0.047	0.0002	0.0001	9.41176E-05	0.0001
12. Drum mix, natrual gas-fired, venturi or wet scrubber controls			0.000588235	0.047	0.0002	0.0001	9.41176E-05	0.0001
13. Drum mix, No.2 fuel oil-fired, no controls		157	0.560714286	44.857	0.1794	0.0897	0.089714286	0.0897
14. Drum mix, No.2 fuel oil-fired, fabric filter controls	3-05-002-58, -59, -60	157	0.560714286	44.857	0.1794	0.0897	0.089714286	0.0897
15. Drum mix, No.2 fuel oil-fired, venturi or wet scrubber controls		157	0.560714286	44.857	0.1794	0.0897	0.089714286	0.0897
16. Drum mix, waste or No.6 fuel oil-fired, no controls		157	0.523333333	41.867	0.1675	0.0837	0.083733333	0.0837
17. Drum mix, waste or No.6 fuel oil-fired, fabric filter controls	3-05-002-61, -62, -63	157	0.523333333	41.867	0.1675	0.0837	0.083733333	0.0837
18. Drum mix, waste or No.6 fuel oil-fired, venturi or wet scrubber controls		157	0.523333333	41.867	0.1675	0.0837	0.083733333	0.0837

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:	Aimee Andrews

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

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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:	**Prospect Hill**
FACILITY COUNTY:	**Caswell**
SPREADSHEET PREPARED BY:	**Aimee Andrews**

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		ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS)		POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS)	
	Pollutant	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	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**	PM	0.985	4.314	0.985	4.314	0.985	4.314
[sand & aggr.]	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 facility 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

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LEAD (HAP) EMISSIONS INFORMATION

LEAD 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	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)		POTENTIAL EMISSIONS (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)		POTENTIAL EMISSIONS (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)		POTENTIAL EMISSIONS (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)		POTENTIAL EMISSIONS (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**

EMISSION FACTOR SUMMARY FOR READY-MIXED CONCRETE BATCH FACILITIES

Emission Source Description	PM Emission Factors		PM_{10} Emission Factors		Arsenic Emission Factors		References
Cement Silo without controls	0.73	lb/ton cement	0.47	lb/ton cement	1.68E-06	lb/ton cement	U.S. EPA, Office of Air Quality Planning and Standards. AP-42; Chapter 11.12 (June 2006 w/ Feb2011), Table 11.12-2 (PM/PM10) & Table 11.12-8 (As)
Cement Silo with controls	0.00099	lb/ton cement	0.00034	lb/ton cement	4.24E-09	lb/ton cement	U.S. EPA, Office of Air Quality Planning and Standards. AP-42; Chapter 11.12 (June 2006 w/ Feb2011), Table 11.12-2 (PM/PM10) & Table 11.12-8 (As)
Suppl Silo without controls	3.14	lb/ton suppl	1.1	lb/ton suppl	No Data	-	U.S. EPA, Office of Air Quality Planning and Standards. AP-42; Chapter 11.12 (June 2006 w/ Feb2011), Table 11.12-2 (PM/PM10)
Suppl Silo with controls	0.0089	lb/ton suppl	0.0049	lb/ton suppl	0.000001	lb/ton suppl	U.S. EPA, Office of Air Quality Planning and Standards. AP-42; Chapter 11.12 (June 2006 w/ Feb2011), Table 11.12-2 (PM/PM10) & Table 11.12-8 (As)
Weigh Hopper without controls	0.0048	lb/ton aggr+sand	0.0028	lb/ton aggr+sand	No Data	-	U.S. EPA, Office of Air Quality Planning and Standards. AP-42; Chapter 11.12 (June 2006 w/ Feb2011), Table 11.12-2 (PM/PM10)
Weigh Hopper with controls	No Data	-	No Data	-	No Data	-	-
Truck Mix without controls	1.46	lb/ton cement+suppl	0.417	lb/ton cement+suppl	6.80E-05	lb/ton cement+suppl	Memorandum, Emission Factors for Ready-Mixed Concrete Facilities. From Mr. Keith Overcash (NC DAQ, Director) to Section Chiefs/Regional Supervisors. June 8, 2005.
Truck Mix with controls	0.028	lb/ton cement+suppl	0.0105	lb/ton cement+suppl	1.59E-06	lb/ton cement+suppl	Memorandum, Emission Factors for Ready-Mixed Concrete Facilities. From Mr. Keith Overcash (NC DAQ, Director) to Section Chiefs/Regional Supervisors. June 8, 2005.
Central Mix without controls	0.683	lb/ton cement+suppl	0.181	lb/ton cement+suppl	2.80E-05	lb/ton cement+suppl	Memorandum, Emission Factors for Ready-Mixed Concrete Facilities. From Mr. Keith Overcash (NC DAQ, Director) to Section Chiefs/Regional Supervisors. June 8, 2005.
Central Mix with controls	0.0212	lb/ton cement+suppl	0.00577	lb/ton cement+suppl	8.85E-07	lb/ton cement+suppl	U.S. EPA, Office of Air Quality Planning and Standards. AP-42; Chapter 11.12 (June 2006 w/ Feb2011), Table 11.12-2 (PM/PM10) & Table 11.12-8 (As)
Sand Plant-Wide*	0.0063	lb/ton sand	0.00297	lb/ton sand	No Data	-	U.S. EPA, Office of Air Quality Planning and Standards. AP-42; Chapter 11.12 (June 2006 w/ Feb2011), Table 11.12-2 (PM/PM10)
Aggr Plant-Wide*	0.0207	lb/ton aggr	0.0099	lb/ton aggr	No Data	-	U.S. EPA, Office of Air Quality Planning and Standards. AP-42; Chapter 11.12 (June 2006 w/ Feb2011), Table 11.12-2 (PM/PM10)

*There are 3 emission points for sand transfer and 3 emission points for aggr transfer plant-wide, so those emission factors are multiplied by 3 to get a plant-wide emission factor (consistent with Table 11.12-5

Emission Source Description	Beryllium Emission Factors		Cadmium Emission Factors		Chromium Emission Factors		Lead Emission Factors		References
Cement Silo without controls	1.79E-08	lb/ton cement	2.34E-07	lb/ton cement	2.52E-07	lb/ton cement	7.36E-07	lb/ton cement	U.S. EPA, Office of Air Quality Planning and Standards. AP-42; Chapter 11.12 (June 2006 w/ Feb2011), Table 11.12-8
Cement Silo with controls	4.86E-10	lb/ton cement	No Data	-	2.9E-08	lb/ton cement	1.09E-08	lb/ton cement	U.S. EPA, Office of Air Quality Planning and Standards. AP-42; Chapter 11.12 (June 2006 w/ Feb2011), Table 11.12-8
Suppl Silo without controls	No Data	-	No Data	-	No Data	-	No Data	-	U.S. EPA, Office of Air Quality Planning and Standards. AP-42; Chapter 11.12 (June 2006 w/ Feb2011), Table 11.12-8
Suppl Silo with controls	9.04E-08	lb/ton suppl	1.98E-08	lb/ton suppl	1.22E-06	lb/ton suppl	5.2E-07	lb/ton suppl	U.S. EPA, Office of Air Quality Planning and Standards. AP-42; Chapter 11.12 (June 2006 w/ Feb2011), Table 11.12-8
Weigh Hopper without controls	No Data	-	No Data	-	No Data	-	No Data	-	-
Weigh Hopper with controls	No Data	-	No Data	-	No Data	-	No Data	-	-
Truck Mix without controls	2.44E-07	lb/ton cement+suppl	3.42E-08	lb/ton cement+suppl	1.14E-05	lb/ton cement+suppl	3.62E-05	lb/ton cement+suppl	U.S. EPA, Office of Air Quality Planning and Standards. AP-42; Chapter 11.12 (June 2006 w/ Feb2011), Table 11.12-8
Truck Mix with controls	1.04E-07	lb/ton cement+suppl	9.06E-09	lb/ton cement+suppl	4.10E-06	lb/ton cement+suppl	1.53E-06	lb/ton cement+suppl	U.S. EPA, Office of Air Quality Planning and Standards. AP-42; Chapter 11.12 (June 2006 w/ Feb2011), Table 11.12-8
Central Mix without controls	No Data	-	1.18E-08	lb/ton cement+suppl	1.42E-06	lb/ton cement+suppl	3.82E-07	lb/ton cement+suppl	U.S. EPA, Office of Air Quality Planning and Standards. AP-42; Chapter 11.12 (June 2006 w/ Feb2011), Table 11.12-8
Central Mix with controls	No Data	-	7.10E-10	lb/ton cement+suppl	1.27E-07	lb/ton cement+suppl	3.66E-08	lb/ton cement+suppl	U.S. EPA, Office of Air Quality Planning and Standards. AP-42; Chapter 11.12 (June 2006 w/ Feb2011), Table 11.12-8
Sand & Aggr Plant-Wide	No Data	-	No Data	-	No Data	-	No Data	-	-

Emission Source Description	Manganese Emission Factors		Nickel Emission Factors		Phosphorous Emission Factors		Selenium Emission Factors		References
Cement Silo without controls	0.000204	lb/ton cement	0.0000176	lb/ton cement	0.0000118	lb/ton cement	No Data	-	U.S. EPA, Office of Air Quality Planning and Standards. AP-42; Chapter 11.12 (June 2006 w/ Feb2011), Table 11.12-8
Cement Silo with controls	1.17E-07	lb/ton cement	4.18E-08	lb/ton cement	No Data	-	No Data	-	U.S. EPA, Office of Air Quality Planning and Standards. AP-42; Chapter 11.12 (June 2006 w/ Feb2011), Table 11.12-8
Suppl Silo without controls	No Data	-	No Data	-	No Data	-	No Data	-	-
Suppl Silo with controls	2.56E-07	lb/ton suppl	2.28E-06	lb/ton suppl	3.54E-06	lb/ton suppl	7.24E-08	lb/ton suppl	U.S. EPA, Office of Air Quality Planning and Standards. AP-42; Chapter 11.12 (June 2006 w/ Feb2011), Table 11.12-8
Weigh Hopper without controls	No Data	-	No Data	-	No Data	-	No Data	-	-
Weigh Hopper with controls	No Data	-	No Data	-	No Data	-	No Data	-	-
Truck Mix without controls	6.12E-05	lb/ton cement+suppl	1.19E-05	lb/ton cement+suppl	3.84E-05	lb/ton cement+suppl	2.62E-06	lb/ton cement+suppl	U.S. EPA, Office of Air Quality Planning and Standards. AP-42; Chapter 11.12 (June 2006 w/ Feb2011), Table 11.12-8
Truck Mix with controls	2.08E-05	lb/ton cement+suppl	4.78E-06	lb/ton cement+suppl	1.23E-05	lb/ton cement+suppl	1.13E-07	lb/ton cement+suppl	U.S. EPA, Office of Air Quality Planning and Standards. AP-42; Chapter 11.12 (June 2006 w/ Feb2011), Table 11.12-8
Central Mix without controls	6.12E-05	lb/ton cement+suppl	3.28E-06	lb/ton cement+suppl	2.02E-05	lb/ton cement+suppl	No Data	-	U.S. EPA, Office of Air Quality Planning and Standards. AP-42; Chapter 11.12 (June 2006 w/ Feb2011), Table 11.12-8
Central Mix with controls	3.78E-06	lb/ton cement+suppl	2.48E-07	lb/ton cement+suppl	1.20E-06	lb/ton cement+suppl	No Data	-	U.S. EPA, Office of Air Quality Planning and Standards. AP-42; Chapter 11.12 (June 2006 w/ Feb2011), Table 11.12-8
Sand & Aggr Plant-Wide	No Data	-	No Data	-	No Data	-	No Data	-	-

A.1
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 **Facility ID: TBD** **Address: 4266 Wrenn Rd.** **Prospect Hill, NC 27314**	**Consultant (if applicable): Trinity Consultants** 1 Copley Parkway Suite 205 Morrisville, NC 27560
Contact Name: Scott Martino	**Contact Name: Jonathan Hill**
Phone Number: 984-202-4761 **Email: smartino@thesunrockgroup.com**	**Phone Number: 919-462-9693** **Email: jhill@trinityconsultants.com**

GENERAL

Description of New Source or Source / Process Modification: provide a short description of the new or modified source(s) and a brief discussion of how this change affects facility production or process operation.	**X**
Source / Pollutant Identification: provide a table of the affected pollutants, by source, which identifies the source type (point, area, or volume), maximum pollutant emission rates over the applicable averaging period(s), and, for point sources, indicate if the stack is capped or non-vertical (C/N).	**X**
Pollutant Emission Rate Calculations: indicate how the pollutant emission rates were derived (e.g., AP-42, mass balance, etc.) and where applicable, provide the calculations.	**X**
Site / Facility Diagram: provide a diagram or drawing showing the location of all existing and proposed emission sources, buildings or structures, public right-of-ways, and the facility property (toxics) / fence line (criteria pollutants) boundaries. The diagram should also include a scale, true north indicator, and the UTM or latitude/longitude of at least one point.	**X**
Certified Plat or Signed Survey: a certified plat (map) from the County Register of Deeds or a signed survey must be submitted to validate property boundaries modeled.	**SS**
Topographic Map: A topographic map covering approximately 5km around the facility must be submitted. The facility boundaries should be annotated on the map as accurately as possible.	**X**
Cavity Impact Analysis: No cavity analysis is required if using AERMOD. *See Section 4.2*	**NA**

Background Concentrations (criteria pollutant analyses only): Background concentrations must be determined for each pollutant for each averaging period evaluated. The averaged background value used (e.g., high, high-second-high, high-third-high, etc.) is based on the pollutant and averaging period evaluated. The background concentrations are added to the modeled concentrations, which are then compared to the applicable air quality standard to determine compliance.	**NA**
Offsite Source Inventories (criteria pollutant analyses only): Offsite source inventories must be developed and modeled for all pollutants for which onsite sources emissions are modeled in excess of the specific pollutant significant impact levels (SILs) as defined in the PSD New Source Review Workshop Manual. The DAQ AQAB must approve the inventories. An initial working inventory can be requested from the AQAB.	**NA**

SCREEN LEVEL MODELING

Model: The latest version of the AERSCREEN model must be used. The use of other screening models should be approved by NCDAQ prior to submitting the modeling report.	**NA**
Source / Source emission parameters: Provide a table listing the sources modeled and the applicable source emission parameters. See NC Form 3 – Appendix A.	**NA**
Merged Sources: Identify merged sources and show all appropriate calculations. See Section 3.3	**NA**
GEP Analysis: See Section 3.2 and NC Form 1 – Appendix A	**NA**
Terrain: Indicate the terrain modeled: simple (Section 4.4), and complex (Section 4.5 and NC Form 4 – Appendix A). If complex terrain is within 5 kilometers of the facility, complex terrain must be evaluated. Simple terrain must include terrain elevations if any terrain is greater than the stack base of any source modeled. Simple: _____ Complex:_____	NA
Meteorology: Refer to Section 4.1 for AERSCREEN inputs.	**NA**
Receptors: AERSCREEN – use shortest distance to property boundary for each source modeled and use sufficient range to find maximum (See Section 4.1 (i) and (j)). Terrain above stack base must be evaluated.	**NA**
Modeling Results: For each affected pollutant, modeling results should be summarized, converted to the applicable averaging period (See Table 3), and presented in tabular format indicating compliance status with the applicable AAL, SIL, or NAAQS. See NC Form S5 – Appendix A.	**NA**
Modeling Files: Either electronic or hard copies of AERSCREEN output must be submitted.	**NA**

REFINED LEVEL MODELING

Model: The latest version of AERMOD should be used, and may be found at http://www.epa.gov/scram001/dispersion_prefrec.htm. The use of other refined models must be approved by NCDAQ prior to submitting the modeling report.	**AERMOD v15181**
Source / Source emission parameters: Provide a table listing the sources modeled and the applicable source emission parameters. See NC Form 3 - Appendix A.	**X**
GEP Analysis: Use BPIP-Prime with AERMOD.	**X**
Cavity Impact Analysis: No separate cavity analysis is required when using AERMOD as long as receptors are placed in cavity susceptible areas. See Section 4.2 and 5.2.	**NA**
Terrain: Use digital elevation data from the USGS NED database (http://seamless.usgs.gov/index.php). Use of other sources of terrain elevations or the non-regulatory Flat Terrain option will require prior approval from DAQ AQAB.	**X**
Coordinate System: Specify the coordinate system used (e.g., NAD27, NAD83, etc.) to identify the source, building, and receptor locations. Note: Be sure to specify in the AERMAP input file the correct base datum (NADA) to be used for identifying source input data locations. Clearly note in both the protocol checklist and the modeling report which datum was used.	**NAD83**
Receptors: The receptor grid should be of sufficient size and resolution to identify the maximum pollutant impact. See Section 5.3.	**X**

Meteorology: Indicate the AQAB, pre-processed, 5-year data set used in the modeling demonstration: (See Section 5.5 and Appendix B) _2011-2015 BUY/GSO____ If processing your own raw meteorology, then pre-approval from AQAB is required. Additional documentation files (e.g. AERMET stage processing files) will also be necessary. For NC toxics, the modeling demonstration requires only the last year of the standard 5 year data set (e.g., 2005) provided the maximum impacts are less than 50% of the applicable AAL(s).	X
Modeling Results: For each affected pollutant and averaging period, modeling results should be summarized and presented in tabular format indicating compliance status with the applicable AAL, SIL or NAAQS. See NC Form R5 - Appendix A.	**X**
Modeling Files: Submit input and output files for AERMOD. Also include BPIP-Prime files, AERMAP files, DEM files, and any AERMET input and output files, including raw meteorological data.	**X**

SUNROCK®
CAROLINA SUNROCK LLC

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

March 9, 2017

Ms. Catesby Denison
Planning Director
Caswell County
144 Main Street
Yanceyville, NC 27379
VIA email: cdenison@caswellcountync.gov

Re: Air Permit Application Zoning Consistency Determination Request
Carolina Sunrock LLC

Dear Ms. Denison:

Carolina Sunrock LLC (Carolina Sunrock) is planning to drum mix hot asphalt plant and truck mix concrete plant: ***4266 Wrenn Road, Prospect Hill, NC 27314.*** The purpose of this letter is to request a zoning consistency determination for the air permit construction application as required by General Statute §143-215.108(f).

A copy of the permit application is included with this zoning consistency determination request. Once a determination has been made we respectfully request that you fax a copy of the determination directly to North Carolina Department of Environmental Quality, Winston-Salem Regional Office (NCDEQ, fax # 336.776.9797, Attention: Lisa Edwards, Regional Supervisor) as well as a copy to Carolina Sunrock (fax # 919.747.6305 to my attention).

Thank you for your assistance in this important matter. Should you have any questions please contact Ms. Aimee Andrews, Trinity Consultants, at 919.462.9693, or me at 919.747.6336.

Sincerely,
Carolina Sunrock LLC

Scott Martino,
Manager Environmental Compliance

Enclosures
Air Permit Construction Application

smartino@thesunrockgroup.com
Phone: 919.747.6336
Fax: 919.747.6305

Zoning Consistency Determination

Facility Name	Carolina Sunrock LLC – Prospect Hill Facility
Facility Street Address	4266 Wrenn Road
Facility City	Prospect Hill
Description of Process	Drum mix hot asphalt plant and truck mix ready concrete plant
SIC Code/NAICS	324121
Facility Contact	Scott Martino
Phone Number	984-202-4761
Mailing Address	4266 Wrenn Road
Mailing City, State Zip	Prospect Hill, NC 27314

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: _____

Agency _____

Name of Designated Official _____

Title of Designated Official _____

Signature _____

Date _____

Please forward to the mailing address listed above and the air quality office at the appropriate address as checked on the back of this form.

Courtesy of the Small Business Assistance Program
toll free at 1-877-623-6748 or on the web at www.envhelp.org/sb

All PSD and Title V Applications

Attn: Major Source Review Branch Supervisor
DAQ – Permitting Section
1641 Mail Service Center
Raleigh, NC 27699-1641

Local Programs

☐ Attn: David Brigman
Western NC Regional Air Quality Agency
49 Mount Carmel Road
Asheville, NC 28806
(828) 250-6777

☐ Attn: Leslie Rhodes
Mecklenburg County
Department of Environmental Protection
700 N. Tryon Street, Suite 205
Charlotte, NC 28202
(704) 336-55430

☐ Attn: William Minor Barnette
Forsyth County
Environmental Affairs Department
201 North Chestnut Street
Winston-Salem, NC 27101
(336) 703-2440

Division of Air Quality Regional Offices

☐ Attn: Paul Muller
Asheville Regional Office
2090 US Highway 70
Asheville, NC 28801
(828) 296-4500

☐ Attn: Steven Vozzo
Fayetteville Regional Office
225 Green Street, Suite 714
Fayetteville, NC 28301
(910) 486-1541

Attn: Bruce Ingles
Mooresville Regional Office
610 East Center Avenue Suite
301
Mooresville, NC 28115
(704) 663-1699

Attn: Patrick Butler
Raleigh Regional Office
3800 Barrett Drive
Raleigh, NC 27609
(919) 571-4700

☐ Attn: Robert Fisher
Washington Regional Office
943 Washington Square Mall
Washington, NC 27889
(252) 946-6481

☐ Attn: Brad Newland
Wilmington Regional Office
127 Cardinal Drive
Wilmington, NC 28405
(910) 395-3900

X Attn: Lisa Edwards
Winston-Salem Regional Office
450 West Hanes Mill Road, Suite 300
Winston-Salem, NC 27105
(336) 776-9800

Aimee Andrews

From: Catesby Denison <cdenison@caswellcountync.gov>
Sent: Friday, March 10, 2017 11:58 AM
To: Aimee Andrews
Subject: RE: Zoning Determination Request

Hi Aimee,

I have received your request and will submit the zoning determination with associated form to NC DEQ.

Sincerely,

Catesby Denison
Planning Director
Caswell County, NC
144 Main Street, P.O. Box 1406
Yanceyville, NC 27379
336-694-9731 ext. 205

From: Aimee Andrews [mailto:AAndrews@trinityconsultants.com]
Sent: Thursday, March 09, 2017 2:23 PM
To: cdenison@caswellcountync.gov
Cc: Scott Martino <smartino@thesunrockgroup.com>
Subject: Zoning Determination Request

Good Afternoon Ms. Denison,

I left you a voicemail earlier today regarding a request for zoning consistency determination. I'm helping my client, Carolina Sunrock, submit an air quality application to NCDEQ Winston-Salem Regional Office. They are planning to construct a new hot mix asphalt and truck mix concrete plant in Prospect Hill. As part of the air permit application process, we are required to submit the application to the relevant zoning office for a zoning consistency determination. Since I didn't find a local zoning department for Prospect Hill, I assumed it would be governed by the county's planning/zoning department.

Please see the attached air permit construction application and, in particular, Appendix C (Page 72-74 in the PDF file), which contains the zoning determination request letter and associated form. In order to submit the application to NC Department of Environmental Quality, we need to include in our air permit application documentation that you have received the request, so please reply to this email with "Received" or otherwise acknowledge our request. You can then as time permits, confirm the zoning request and send the form in Appendix C to the address specified on the form for DEQ's Winston-Salem Regional Office.

If I should direct this request to someone else in your department, please advise. Thanks so much for your assistance.

Best Regards,
Aimee

Aimee Andrews, PE, CEA
Managing Consultant

Trinity Consultants
One Copley Parkway, Suite 205 | Morrisville, North Carolina 27560

NOTE: SUITE NUMBER HAS CHANGED!

Office: **919-462-9693 x105**
Email: aandrews@trinityconsultants.com

Trinity Consultants

SUNROCK®
CAROLINA SUNROCK LLC

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

June 20, 2017

Ms. Lisa Edwards, P.E.
Air Quality Regional Supervisor
Winston-Salem Regional Office
450 West Hanes Mill Road, Suite 300
Winston-Salem, North Carolina 27105

Certified Mail
Return Receipt # 7015 0640 0007 8085 0188

Re: Fulfillment of 15A NCAC 02Q.0113 (Notification in Areas without Zoning)
Carolina Sunrock LLC – Prospect Hill Facility
Permit Application No. 1700015.17A
Facility Number: 1700015
Prospect Hill, Caswell County, North Carolina

Dear Ms. Edwards:

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. It should be noted that on May 24 2017 a public notice was published in The Caswell Messenger, which services the area of the facility. In addition, a sign was posted as set for by the governing regulations on June 6, 2017.

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,p
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

CLIPPING OF LEGAL ADVERTISEMENT ATTACHED HERE

NCDEQ Air Permit Application for the construction and operation of a Hot Mix Asphalt and Ready Mix Concrete facility located at: 4266 Wrenn Road, Prospect Hill, Caswell County, NC, 27314.

NORTH CAROLINA
CASWELL 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 Patricia Cheek 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, May 24, 2017 date 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 24th day of May 2017

Patricia Cheek

(Signature of person making affidavit)

Sworn to and subscribed before me, this 24th day of May ,2017

Notary Public

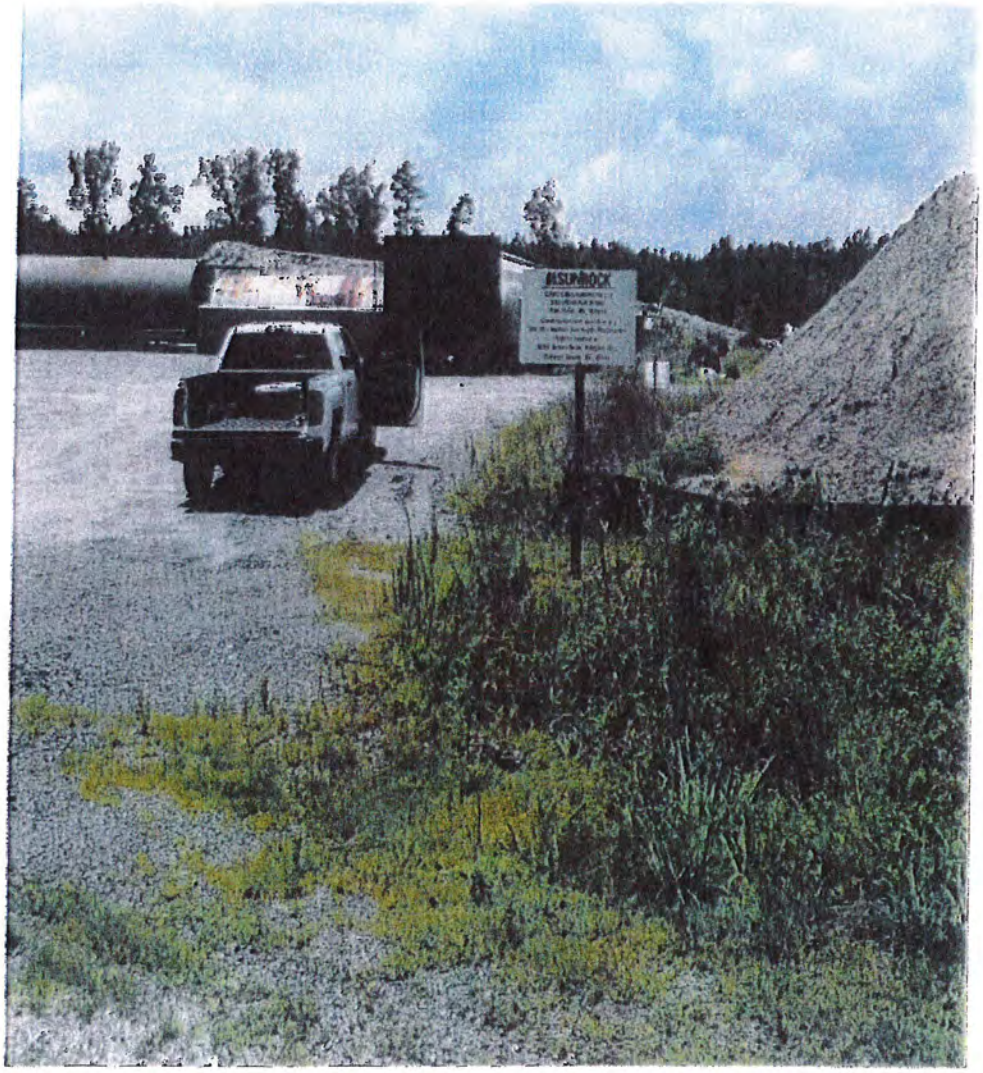
SUNROCK®

CAROLINA SUNROCK LLC

Prospect Hill Facility

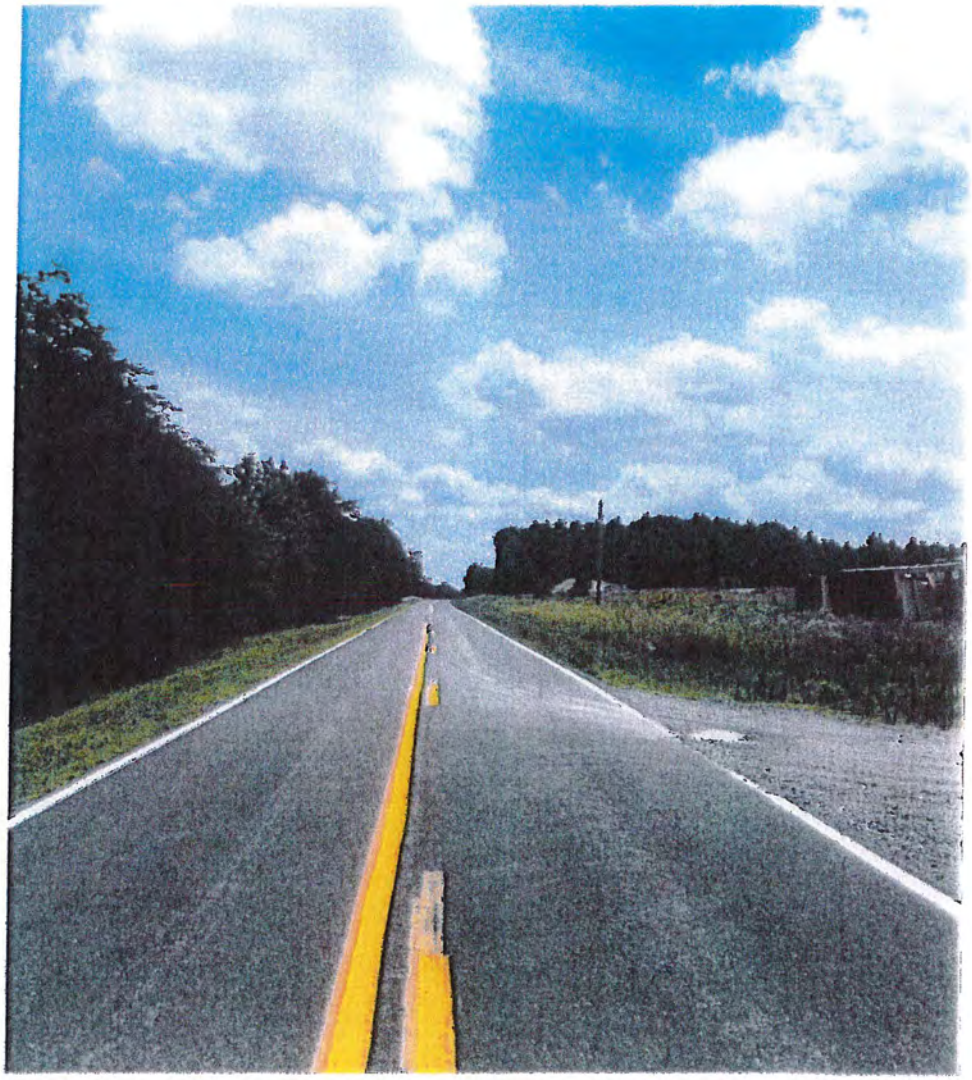
View of approximate sign location, located approximately 10' off of the road Right-of-Way

View of Posted sign looking west from Wrenn Road (white line).



View of posted sign from centerline of Wrenn Road.

View looking north along Wrenn Road perpendicular to the posted sign.



View looking south along Wrenn Road perpendicular to the posted sign.

Hartsfield, Taylor

From: Catesby Denison <cdenison@caswellcountync.gov>
Sent: Wednesday, April 12, 2017 2:58 PM
To: Hartsfield, Taylor
Subject: RE: Carolina Sunrock Zoning
Attachments: SKM_C36817041215060.pdf

Hi Taylor,

I have attached the signed form. I didn't realize when we spoke that it included both subdivision and zoning ordinance. The proposed facility is subject to our subdivision ordinance but not in a zoned area of the County. I hope my explanation under "other" will suffice. If I need to change the wording or provide additional information, please let me know.

Thanks,

Catesby

Catesby Denison
Caswell County Planning Director
144 Main Street
P.O. Box 1406
Yanceyville, NC 27379

(336)-694-9731 ext. 205
www.caswellcountync.gov

From: Hartsfield, Taylor [mailto:taylor.hartsfield@ncdenr.gov]
Sent: Monday, April 10, 2017 4:00 PM
To: cdenison@caswellcountync.gov
Subject: Carolina Sunrock Zoning

Hello Catesby,

As we discussed, attached is the request letter and form from Carolina Sunrock LLC for their proposed Prospect Hill facility.

Thank you,
Taylor

Taylor Hartsfield, EIT
Environmental Engineer
Division of Air Quality – WSRO
North Carolina Department of Environmental Quality

336 776 9800 office
336 776 9639 direct
336 776 9797 fax
taylor.hartsfield@ncdenr.gov

450 West Hanes Mill Road, Suite 300

Zoning Consistency Determination

Facility Name	Carolina Sunrock LLC – Prospect Hill Facility
Facility Street Address	4266 Wrenn Road
Facility City	Prospect Hill
Description of Process	Drum mix hot asphalt plant and truck mix ready concrete plant
SIC Code/NAICS	324121
Facility Contact	Scott Martino
Phone Number	984-202-4761
Mailing Address	4266 Wrenn Road
Mailing City, State Zip	Prospect Hill, NC 27314

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: There is no applicable zoning ordinance. The proposed operation is consistent with applicable subdivision ordinance.

Agency	Caswell County, NC
Name of Designated Official	Catesby Denison
Title of Designated Official	Planning Director
Signature	Catesby Denison
Date	04/12/2017

Please forward to the mailing address listed above and the air quality office at the appropriate address as checked on the back of this form.

Hartsfield, Taylor

From: Scott Martino <smartino@thesunrockgroup.com>
Sent: Monday, August 21, 2017 1:43 PM
To: Hartsfield, Taylor
Subject: RE: Question regarding concrete batch plant

Sorry for the Delay Taylor, the guy I normaly ask these questions to has been out.

I would say 35 ton per hour is a good number

Thanks

Scott

From: Hartsfield, Taylor [mailto:taylor.hartsfield@ncdenr.gov]
Sent: Tuesday, August 15, 2017 1:07 PM
To: Scott Martino <smartino@thesunrockgroup.com>
Subject: Question regarding concrete batch plant

Hello Scott,

Quick question for you:

Do you happen to know the loading rates of the cement and fly ash silos for the designed concrete batch plant? Typically silos of this size can handle about 35 tons per hour. I need to know this process rate to compare it to one of our particulate standards.

Thank you,
Taylor

Taylor Hartsfield, EIT
Environmental Engineer
Division of Air Quality – WSRO
North Carolina Department of Environmental Quality

336 776 9800 office
336 776 9639 direct
336 776 9797 fax
taylor.hartsfield@ncdenr.gov

450 West Hanes Mill Road, Suite 300
Winston-Salem, NC 27105

Hartsfield, Taylor

From: Scott Martino <smartino@thesunrockgroup.com>
Sent: Tuesday, July 11, 2017 2:54 PM
To: Hartsfield, Taylor
Subject: RE: Question regarding RAP processing system

Hello Taylor good to hear from you.

As for the screen and belt, I am not sure as we have yet to purchase this. Typically we have portable units that go from site to site as needed.

If I had to guess it would be no bigger than what we use currently for portables.

The belts are 36" inclined. As for the screen will be 2 decks dimensions 8' X 20'. I know it's over kill for the production, but when I get answers or a decision gets made down the road Ill just update everything. I do not see us installing this portion of the plant for quite some time, but it's something we carry on all our air permits.

Let me know if you need anything else and I'll do my best to track down the information for you.

Thanks

Scott

From: Hartsfield, Taylor [mailto:taylor.hartsfield@ncdenr.gov]
Sent: Tuesday, July 11, 2017 2:13 PM
To: Scott Martino <smartino@thesunrockgroup.com>
Subject: Question regarding RAP processing system

Hello Scott,

I am in the process of preparing your air quality permit for the Prospect Hill facility. I need to know the sizes of the RAP conveyor and screen associated with the 65 tons per hour crusher.

For example:
RAP 4' x 8' Double Deck Screen
RAP 30" Inclined Belt Conveyor

Can you get those details for me?

Thank you,
Taylor

Taylor Hartsfield, EIT
Environmental Engineer
Division of Air Quality – WSRO
North Carolina Department of Environmental Quality

336 776 9800 office
336 776 9639 direct
336 776 9797 fax
taylor.hartsfield@ncdenr.gov

Hartsfield, Taylor

From: Aimee Andrews <AAndrews@trinityconsultants.com>
Sent: Wednesday, April 12, 2017 5:06 PM
To: Hartsfield, Taylor
Cc: Jonathan Hill; Scott Martino
Subject: Carolina Sunrock Modeling Update - Prospect Hill
Attachments: Carolina Sunrock Prospect Hill Construction Application -Revised Modeling 2017-04-12.pdf

Hi Taylor,

Per our discussion with you, we have revised the modeling section to include formaldehyde and benzene from the 5 silos and truck loadout for the HMA plant. I'm attaching the replacement pages for Section 4 of the application. Behind those pages are the silo forms. I updated the fields to indicate there is no control device on the silos (the original silo forms indicated they were vented to the HMA baghouse).

Should we resend the modeling files via burned CD? Jon also said he could upload them to a FTP site for the modeling group if needed.

Thanks so much,
Aimee

Aimee Andrews, PE, CEA
Managing Consultant

Trinity Consultants
One Copley Parkway, Suite 205 | Morrisville, North Carolina 27560

NOTE: SUITE NUMBER HAS CHANGED!

Office: **919-462-9693 x105**
Email: aandrews@trinityconsultants.com

From: Jonathan Hill
Sent: Tuesday, April 11, 2017 12:42 PM
To: Hartsfield, Taylor
Cc: Aimee Andrews
Subject: RE: Carolina Sunrock Modeling Status

Yes...the loadouts are pass underneath so there will be 5 volumes for those in the model.

Get Outlook for Android

On Tue, Apr 11, 2017 at 12:12 PM -0400, "Hartsfield, Taylor" <taylor.hartsfield@ncdenr.gov> wrote:

> Hello Jon,
>
> Thank you for the follow up. Will the truck load out be included as we discussed also?
>
> Taylor
>
> **Taylor Hartsfield, EIT**
> Environmental Engineer
> Division of Air Quality – WSRO
> North Carolina Department of Environmental Quality
>
> 336 776 9800 office
> 336 776 9639 direct
> 336 776 9797 fax
> taylor.hartsfield@ncdenr.gov
>
> 450 West Hanes Mill Road, Suite 300
> Winston-Salem, NC 27105
>
> Nothing Compares
>
>
>
> ---
>
> **From:** Jonathan Hill [mailto:JHill@trinityconsultants.com]
> **Sent:** Tuesday, April 11, 2017 12:10 PM
> **To:** Hartsfield, Taylor <taylor.hartsfield@ncdenr.gov>
> **Cc:** Aimee Andrews <AAndrews@trinityconsultants.com>
> **Subject:** Carolina Sunrock Modeling Status
>
> Taylor,
>
> Thanks for talking though the Carolina Sunrock application with us. We have again discussed the plant layout with Scott Martino and he confirmed that the silos do in fact vent to the atmosphere. We are awaiting some additional data from the site but will get those sources added to the modeling and send you revised pages for those that have changes ASAP.
>
> Best Regards,
>
> Jon
>
> ** We have moved...please note new address below **

Jonathan Hill
Managing Consultant/Meteorologist

Trinity Consultants
1 Copley Parkway, Suite 205 | Morrisville, NC 27560

Office: **919-462-9693**
Email: jhill@trinityconsultants.com

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South Carolina: May 11, 2017 – Columbia

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Trinity Consultants

4. AIR DISPERSION MODELING ANALYSIS

This section presents the input data and modeling methodology utilized in the TAP modeling compliance demonstration. The modeling methodology conforms to the Guidelines for Evaluating the Air Quality Impacts of Toxic Pollutants in North Carolina (February 2014) and more recent changes posted on NCDAQ's Air Quality Analysis Branch (AQAB) website. In lieu of a modeling protocol, a protocol checklist is provided in Appendix B.

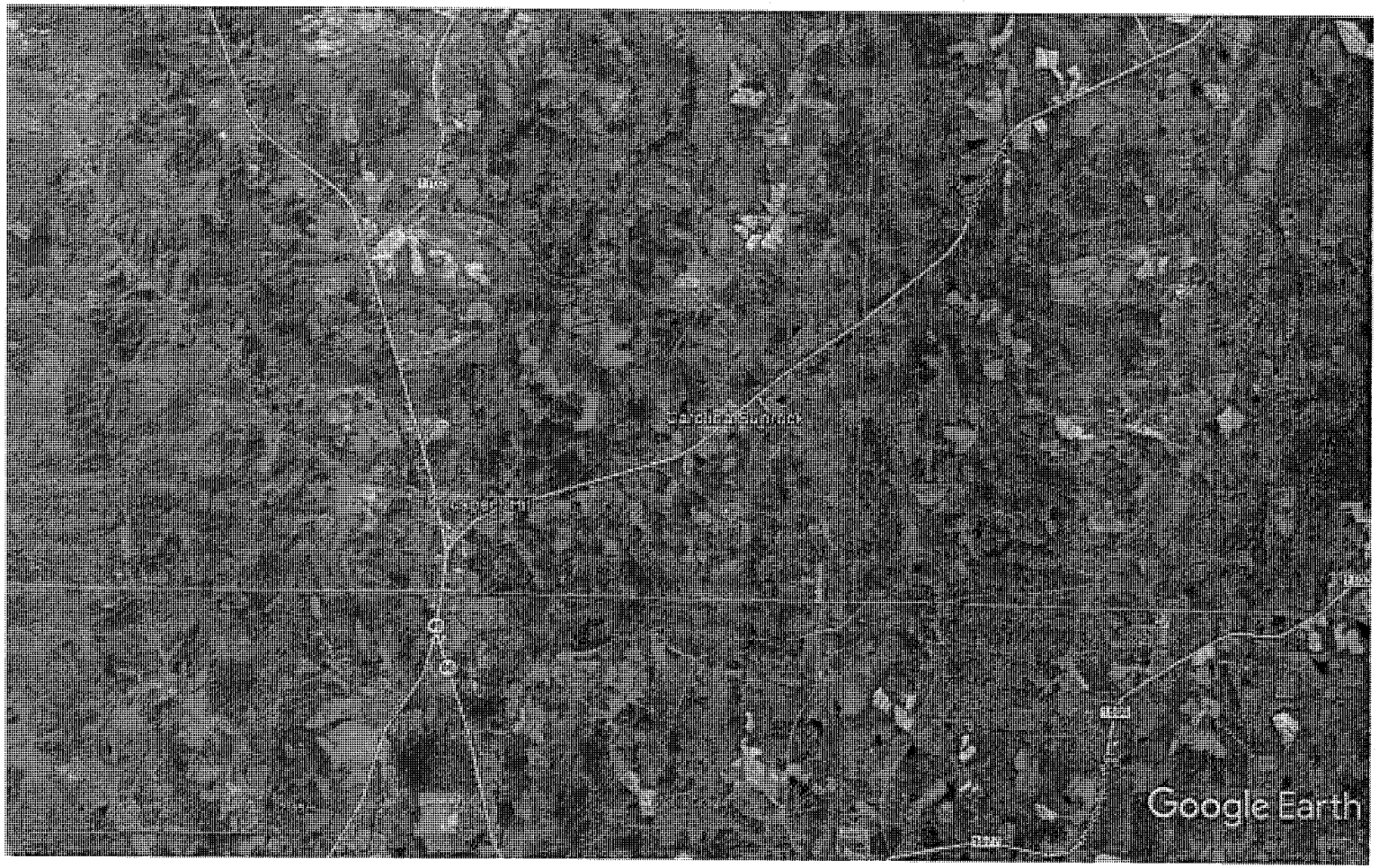
As previously discussed, potential emissions of five (5) compounds regulated under 15A NCAC 2Q .0700 (NC Air Toxics) exceed their TPER and this air dispersion modeling evaluation has been conducted to demonstrate compliance with all applicable AAL.

4.1. FACILITY LOCATION

Figure 4-1 provides a topographical map of the area surrounding the Carolina Sunrock Prospect Hill property. The approximate central Universal Transverse Mercator (UTM) coordinates of the facility are 664.3 kilometers (km) east and 4,013.6 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 4-1. Map of Area Surrounding Carolina Sunrock



4.2. MODEL SELECTION

The AERMOD dispersion model (version 16216r) 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 Prospect Hill facility.[2] AERMOD was run using the regulatory default option, which automatically implements NCDAQ and U.S. EPA recommended model options.

4.3. SOURCE DESCRIPTION

Tables 4-1 and 4-2 presents a table of the modeled point and volume sources, respectively, including their locations at the facility. All locations are expressed in UTM Zone 18 (NAD83) coordinates.

Table 4-1. Modeled Point Source Locations

Model ID	Description	UTM-E (m)	UTM-N (m)	Elevation (m)
CD1	Asphalt Plant Baghouse	664,296.2	4,013,715.6	215.7
CD2	Concrete Plant Baghouse	664,364.9	4,013,723.0	214.2
IES4	Asphalt Heater	664,313.7	4,013,717.7	215.8
IES5	Liquid Asphalt Heater	664,298.7	4,013,704.8	215.8
HMASILO1	Asphalt Silo 1 Vent	664,305.7	4,013,690.5	216.0
HMASILO2	Asphalt Silo 2 Vent	664,309.6	4,013,691.5	216.1
HMASILO3	Asphalt Silo 3 Vent	664,313.5	4,013,692.4	216.1
HMASILO4	Asphalt Silo 4 Vent	664,317.3	4,013,693.4	216.0
HMASILO5	Asphalt Silo 5 Vent	664,321.2	4,013,694.4	216.0

Table 4-2. Modeled Volume Source Locations

Model ID	Description	UTM-E (m)	UTM-N (m)	Elevation (m)
HMALO1	Silo 1 Truck Loadout	664,305.7	4,013,690.5	216.0
HMALO2	Silo 2 Truck Loadout	664,309.6	4,013,691.5	216.1
HMALO3	Silo 3 Truck Loadout	664,313.5	4,013,692.4	216.1
HMALO4	Silo 4 Truck Loadout	664,317.3	4,013,693.4	216.0
HMALO5	Silo 5 Truck Loadout	664,321.2	4,013,694.4	216.0

[2] 40 CFR 51, Appendix W–*Guideline on Air Quality Models*, Appendix A.1– AMS/EPA Regulatory Model (AERMOD).

Tables 4-3 and 4-4 presents the stack parameters input to the model for each of the point and volume sources, respectively. The stacks for sources IES4 and IES5 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.

Table 4-3. Modeled Point Source Parameters

Model ID	Stack Height (m)	Exit Temp. (K)	Exit Velocity (m/s)	Stack Diameter (m)
CD1	9.22	388.71	29.41	0.96
CD2	10.67	298.15	24.38	0.46
IES4	2.74	435.93	0.01	0.30
IES5	4.57	435.93	0.01	0.05
HMASILO1	19.81	298.15	0.01	0.30
HMASILO2	19.81	298.15	0.01	0.30
HMASILO3	18.29	298.15	0.01	0.30
HMASILO4	18.29	298.15	0.01	0.30
HMASILO5	18.29	298.15	0.01	0.30

Table 4-4. Modeled Volume Source Parameters

Model ID	Release Height (m)	Init. Lat. Dimension (K)	Init. Vert. Dimension (m/s)
HMALO1	3.66	0.15	1.70
HMALO2	3.66	0.15	1.70
HMALO3	3.66	0.15	1.70
HMALO4	3.66	0.15	1.70
HMALO5	3.66	0.15	1.70

Table 4-5 presents the emission rates modeled for each of the triggered TAPs. These rates represent values that are in excess of the calculated potential rates in order to provide the facility with operational flexibility.

Table 4-5. Modeled Emission Rates

Model ID	Modeled Emission Rates (g/s) ARSENIC	BENZENE	FORM	MERCURY	NICKEL
CD1	7.06E-05	4.99E-02	4.02E-01	3.28E-04	7.94E-03
CD2	3.32E-05	0.00E+00	0.00E+00	0.00E+00	9.69E-05
IES4	2.42E-06	1.24E-06	1.43E-04	1.81E-06	1.81E-06
IES5	2.22E-06	1.14E-06	1.31E-04	1.66E-06	1.66E-06
HMASILO1	0.00E+00	7.37E-05	2.12E-03	0.00E+00	0.00E+00
HMASILO2	0.00E+00	7.37E-05	2.12E-03	0.00E+00	0.00E+00
HMASILO3	0.00E+00	7.37E-05	2.12E-03	0.00E+00	0.00E+00
HMASILO4	0.00E+00	7.37E-05	2.12E-03	0.00E+00	0.00E+00
HMASILO5	0.00E+00	7.37E-05	2.12E-03	0.00E+00	0.00E+00
HMALO1	0.00E+00	4.09E-05	9.22E-05	0.00E+00	0.00E+00
HMALO2	0.00E+00	4.09E-05	9.22E-05	0.00E+00	0.00E+00
HMALO3	0.00E+00	4.09E-05	9.22E-05	0.00E+00	0.00E+00
HMALO4	0.00E+00	4.09E-05	9.22E-05	0.00E+00	0.00E+00
HMALO5	0.00E+00	4.09E-05	9.22E-05	0.00E+00	0.00E+00

The above modeled emission rates, in g/s, would correspond to the following averaging period-specific limits shown in Table 4-6, which Carolina Sunrock is requesting be included in the permit.

Table 4-6. Requested Permit Limits

Model ID	Requested Permit Limits ARSENIC (lb/yr)	BENZENE (lb/yr)	FORM (lb/hr)	MERCURY (lb/day)	NICKEL (lb/day)
CD1	4.91E+00	3.47E+03	3.19E+00	6.24E-02	1.51E+00
CD2	2.31E+00	-	-	-	1.85E-02
IES4	1.68E-01	8.61E-02	1.13E-03	3.46E-04	3.46E-04
IES5	1.54E-01	7.89E-02	1.04E-03	3.17E-04	3.17E-04
HMASILO1	-	5.12E+00	1.68E-02	-	-
HMASILO2	-	5.12E+00	1.68E-02	-	-
HMASILO3	-	5.12E+00	1.68E-02	-	-
HMASILO4	-	5.12E+00	1.68E-02	-	-
HMASILO5	-	5.12E+00	1.68E-02	-	-
HMALO1	-	2.84E+00	7.32E-04	-	-
HMALO2	-	2.84E+00	7.32E-04	-	-
HMALO3	-	2.84E+00	7.32E-04	-	-
HMALO4	-	2.84E+00	7.32E-04	-	-
HMALO5	-	2.84E+00	7.32E-04	-	-

4.4. 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). These stations are recommended by NCDAQ for modeling facilities located in Caswell County. The base elevation for the surface station is 188 m.[3]

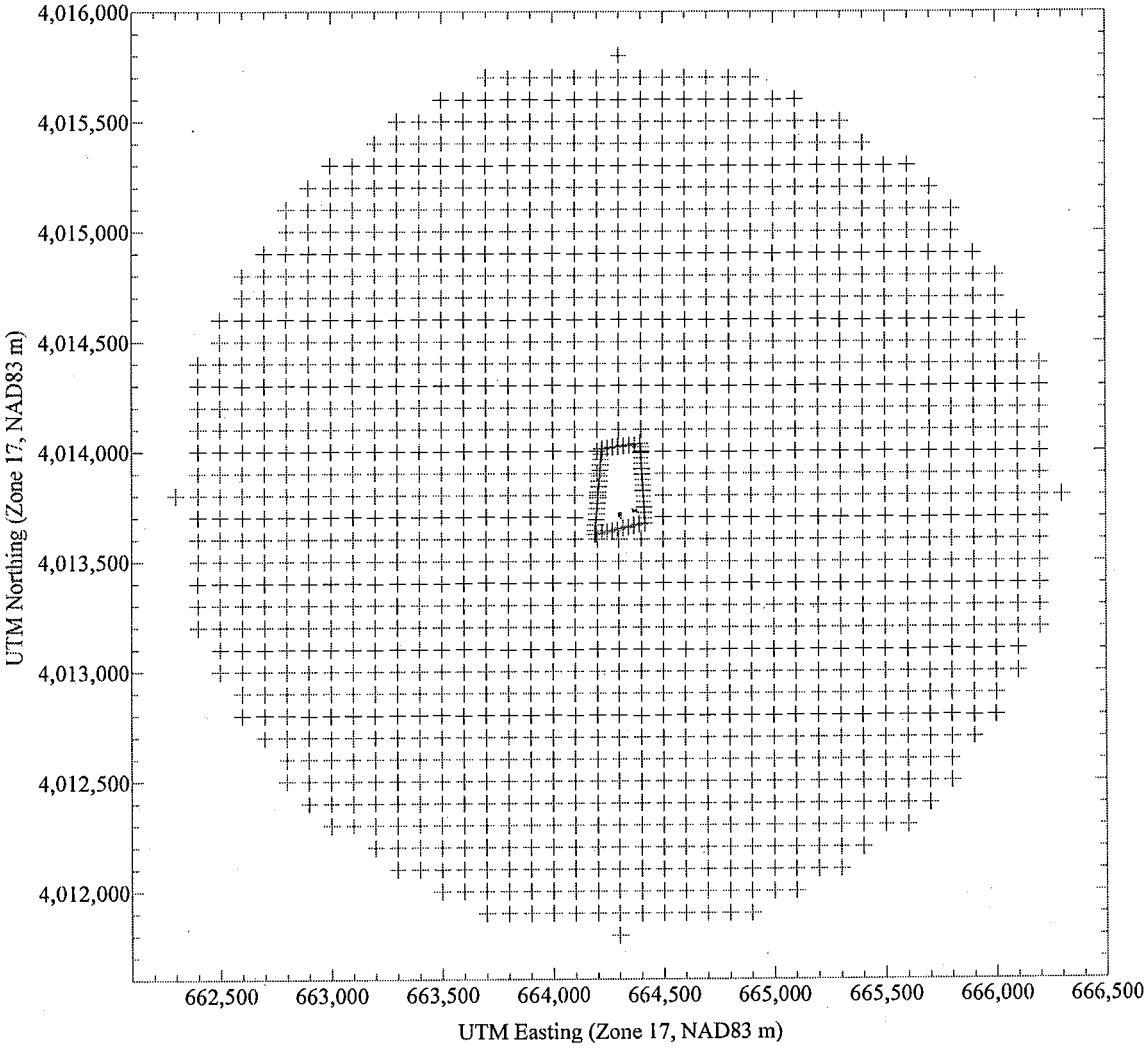
Since the modeled impacts based on the optimized emission rates were expected to exceed 50% of the AAL, five (5) years of data were modeled. The 5, most recent years of meteorological data (2010-2014) were downloaded from NCDAQ's website and input to AERMOD.

4.5. MODELED RECEPTORS

The receptors included in the modeling analysis consisted of property line receptors, spaced 25 meters (m) apart, and Cartesian receptor points spaced every 100 m, extending out 2 km from the center of the facility. There are no public right-of-ways (e.g. roads) traversing the property line, so only a single property line was included in the modeling. The impacts were reviewed to ensure that the maximum impacts were captured within the 100 m spaced grid. Figure 4-2 shows the receptors included in the modeling analysis.

[3] http://www.ncair.org/permits/mets/ProfileBaseElevations.pdf

Figure 4-2. Modeled Receptor Grid



The AERMOD model is capable of handling both simple and complex terrain. Through the use of the AERMOD terrain preprocessor (AERMAP), AERMOD incorporates not only the receptor heights, but also an effective height (hill height scale) that represents the significant terrain features surrounding a given receptor that could lead to plume recirculation and other terrain interaction.[4]

Receptor terrain elevations input to the model were interpolated from National Elevation Database (NED) data obtained from the USGS. NED data consist of arrays of regularly spaced elevations. The array elevations are at a resolution of 1 arcsecond (approximately 30 m intervals) and were interpolated using the latest version of AERMAP (version 11103) 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

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

topographical quadrangle maps. AERMAP was also used to establish the base elevation of all Carolina Sunrock structures and emission sources.

4.6. 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:

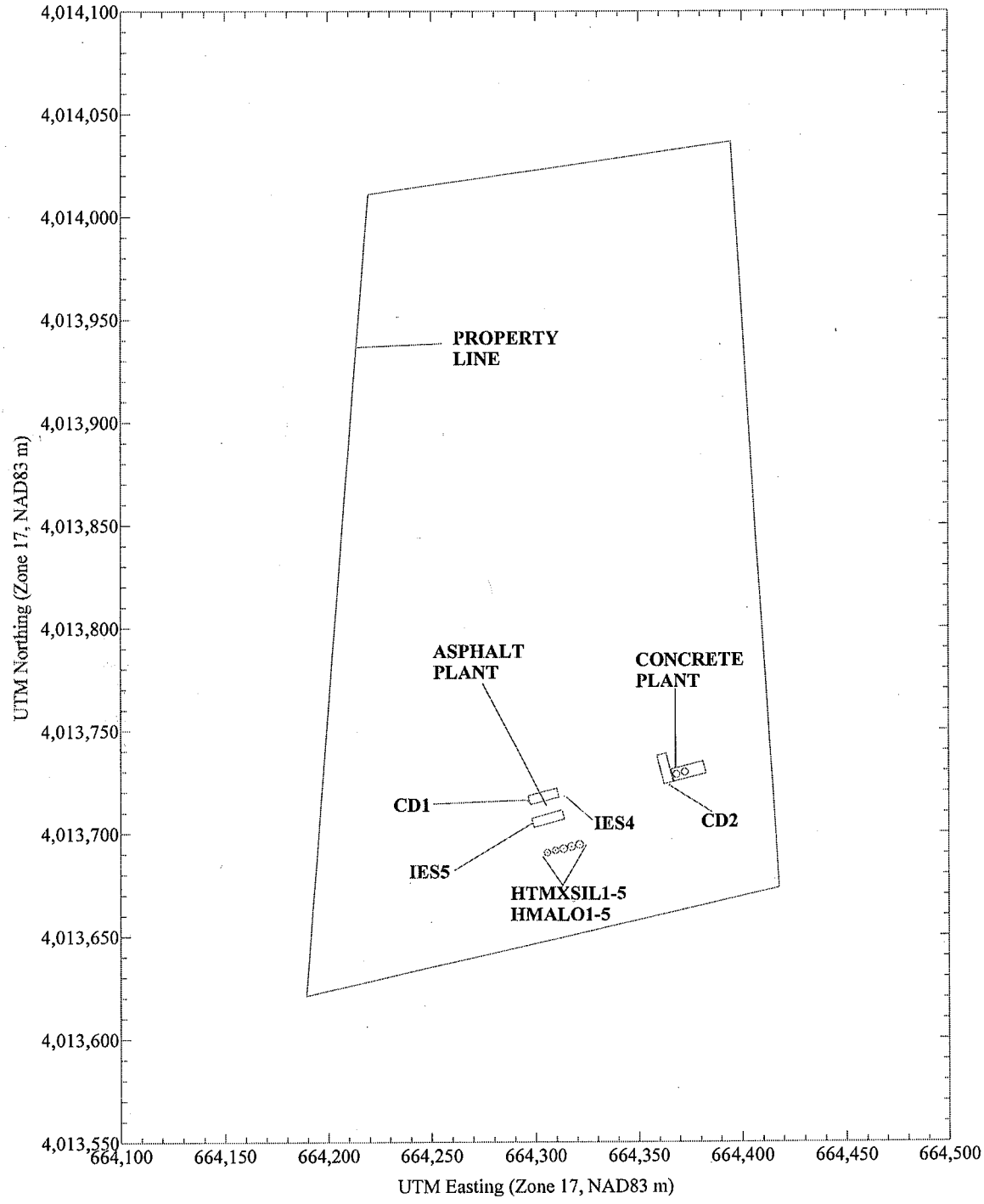
H_{GEP} = minimum GEP stack height,
H = structure height, and
L = lesser dimension of the structure (height or projected width).

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.[5] None of the proposed emission units at the Prospect Hill facility will exceed GEP height.

Figure 4-3 presents a site layout for the facility that shows the source and building arrangement as modeled. The electronic BPIP input and output files are included on the CD-ROM in Appendix B.

[5] 40 CFR §51.100(ii)

Figure 4-3. Carolina Sunrock Prospect Hill Modeled Site Layout



4.7. TAP MODELING RESULTS

Table 4-7 presents the model results for each of the triggered TAP. As shown, all impacts are below their respective AAL. The electronic modeling files used in the TAP analysis are contained on the CD-ROM in Appendix B.

Table 4-7. TAP Modeling Results

Pollutant	Avg. Period	UTM-E (m)	UTM-N (m)	Date/Time or Year	Max. Modeled Impact ($\mu g/m^3$)	AAL ($\mu g/m^3$)	% of AAL (%)
Arsenic	Annual	664,413.2	4,013,745.7	2011	1.58E-03	2.10E-03	75.24%
Benzene	Annual	664,293.6	4,013,644.8	2014	1.12E-01	0.12	92.92%
Formaldehyde	1-Hour	664,317.9	4,013,650.4	11091302	45.03	150	30.02%
Mercury	24-Hour	664,293.6	4,013,644.8	15021024	1.15E-02	0.6	1.91%
Nickel	24-Hour	664,244.8	4,013,633.7	15100424	2.51E-01	6	4.18%

FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 12/01/04 — NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate — **B6**

EMISSION SOURCE DESCRIPTION: **HMA Drum Plant - Hot Mix Asphalt Silo 1**	EMISSION SOURCE ID NO: **HMA-Silo1**
	CONTROL DEVICE ID NO(S): **N/A**
OPERATING SCENARIO: 1 OF 1	EMISSION POINT(STACK) ID NO(S):

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

1. **DRYING OF AGGREGATE (DRYING DRUM)**
2. **Mixing of aggregate and rap with liquid asphalt (mixing drum)**
3. **Storage of final product (silos)**

MATERIAL STORED:	**Hot Mix Asphalt**			DENSITY OF MATERIAL (LB/FT3):			
CAPACITY	CUBIC FEET:			TONS: **150**			
DIMENSIONS (FEET)	HEIGHT:	DIAMETER:	***(OR)***	LENGTH:	WIDTH 10	HEIGHT: 65	
ANNUAL PRODUCT THROUGHPUT (TONS)	ACTUAL:			MAXIMUM DESIGN CAPACITY:			

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

NO. FILL TUBES:

MAXIMUM ACFM:

MATERIAL IS FILLED TO:

BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO? **GRAVITY**

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

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

COMMENTS:

OIL FILLED SEAL AT TOP OF SILO.

Attach Additional Sheets As Necessary

FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

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

EMISSION SOURCE DESCRIPTION: **HMA Drum Plant - Hot Mix Asphalt Silo 2**	EMISSION SOURCE ID NO: **HMA-Silo2**
	CONTROL DEVICE ID NO(S): **N/A**
OPERATING SCENARIO: 1 OF 1	EMISSION POINT(STACK) ID NO(S):

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

1. **DRYING OF AGGREGATE (DRYING DRUM)**
2. **Mixing of aggregate and rap with liquid asphalt (mixing drum)**
3. **Storage of final product (silos)**

MATERIAL STORED:	**Hot Mix Asphalt**			DENSITY OF MATERIAL (LB/FT3):			
CAPACITY	CUBIC FEET:			TONS:	**150**		
DIMENSIONS (FEET)	HEIGHT:	DIAMETER:	***(OR)***	LENGTH:	WIDTH **10**	HEIGHT:	**65**
ANNUAL PRODUCT THROUGHPUT (TONS)	ACTUAL:			MAXIMUM DESIGN CAPACITY:			

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

NO. FILL TUBES:

MAXIMUM ACFM:

MATERIAL IS FILLED TO:

BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO? **GRAVITY**

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

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

COMMENTS:

OIL FILLED SEAL AT TOP OF SILO.

Attach Additional Sheets As Necessary

FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

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

EMISSION SOURCE DESCRIPTION: **HMA Drum Plant - Hot Mix Asphalt Silo 3**	EMISSION SOURCE ID NO: **HMA-Silo3**
	CONTROL DEVICE ID NO(S): **N/A**
OPERATING SCENARIO: 1 OF 1	EMISSION POINT(STACK) ID NO(S):

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

1. **DRYING OF AGGREGATE (DRYING DRUM)**
2. **Mixing of aggregate and rap with liquid asphalt (mixing drum)**
3. **Storage of final product (silos)**

MATERIAL STORED: **Hot Mix Asphalt**				DENSITY OF MATERIAL (LB/FT3):		
CAPACITY	CUBIC FEET:			TONS: **200**		
DIMENSIONS (FEET)	HEIGHT:	DIAMETER:	***(OR)***	LENGTH:	WIDTH: **12**	HEIGHT: **60**
ANNUAL PRODUCT THROUGHPUT (TONS)	ACTUAL:			MAXIMUM DESIGN CAPACITY:		

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

NO. FILL TUBES:

MAXIMUM ACFM:

MATERIAL IS FILLED TO:

BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO? **GRAVITY**

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

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

COMMENTS:

OIL FILLED SEAL AT TOP OF SILO.

Attach Additional Sheets As Necessary

FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

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

EMISSION SOURCE DESCRIPTION: **HMA Drum Plant - Hot Mix Asphalt Silo 4**	EMISSION SOURCE ID NO: **HMA-Silo4**
	CONTROL DEVICE ID NO(S): **N/A**
OPERATING SCENARIO: **1** OF **1**	EMISSION POINT(STACK) ID NO(S):

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

1. **DRYING OF AGGREGATE (DRYING DRUM)**
2. **Mixing of aggregate and rap with liquid asphalt (mixing drum)**
3. **Storage of final product (silos)**

MATERIAL STORED: **Hot Mix Asphalt**				DENSITY OF MATERIAL (LB/FT3):		
CAPACITY	CUBIC FEET:			TONS: **200**		
DIMENSIONS (FEET)	HEIGHT:	DIAMETER:	***(OR)***	LENGTH:	WIDTH: **12**	HEIGHT: **60**
ANNUAL PRODUCT THROUGHPUT (TONS)	ACTUAL:			MAXIMUM DESIGN CAPACITY:		

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

NO. FILL TUBES:

MAXIMUM ACFM:

MATERIAL IS FILLED TO:

BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO? **GRAVITY**

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

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

COMMENTS:

OIL FILLED SEAL AT TOP OF SILO.

Attach Additional Sheets As Necessary

FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 12/01/01 **NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate** **B6b**

EMISSION SOURCE DESCRIPTION: **HMA Drum Plant - Hot Mix Asphalt Silo 5**	EMISSION SOURCE ID NO: **HMA-Silo5**
	CONTROL DEVICE ID NO(S): **N/A**
OPERATING SCENARIO: 1 OF 1	EMISSION POINT(STACK) ID NO(S):

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

1. **DRYING OF AGGREGATE (DRYING DRUM)**
2. **Mixing of aggregate and rap with liquid asphalt (mixing drum)**
3. **Storage of final product (silos)**

MATERIAL STORED: **Hot Mix Asphalt**				DENSITY OF MATERIAL (LB/FT3):		
CAPACITY	CUBIC FEET:			TONS: **200**		
DIMENSIONS (FEET)	HEIGHT:	DIAMETER:	***(OR)***	LENGTH:	WIDTH: **12**	HEIGHT: **60**
ANNUAL PRODUCT THROUGHPUT (TONS)	ACTUAL:			MAXIMUM DESIGN CAPACITY:		

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

NO. FILL TUBES:

MAXIMUM ACFM:

MATERIAL IS FILLED TO:

BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO? **GRAVITY**

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

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

COMMENTS:

OIL FILLED SEAL AT TOP OF SILO.

Attach Additional Sheets As Necessary

Hartsfield, Taylor

From: Jones, Nancy
Sent: Friday, September 08, 2017 9:26 AM
To: Hartsfield, Taylor
Cc: Murphy, Davis; Anderson, Tom
Subject: Re: Carolina Sunrock Modeling Update - Prospect Hill

Sure. I'll take a look.

From: Hartsfield, Taylor
Sent: Friday, September 8, 2017 9:20:17 AM
To: Jones, Nancy
Cc: Murphy, Davis; Anderson, Tom
Subject: FW: Carolina Sunrock Modeling Update - Prospect Hill

Hello Nancy,

You previously reviewed the modeling files submitted for Carolina Sunrock (1700015) and issued the memo on May 11, 2017. The modeling files were prepared by Trinity Consultants for the facility.

When I combed back through the emission values the facility used to conduct the modeling, I realized there were slight errors with the formaldehyde lb/hr emission values for the silos (HMASILO1-5) and the truck loadouts (HMALO1-5). These values were slightly lower than the values that should have been selected based on the maximum hourly production rate of the asphalt plant.

I asked Trinity to revise the modeling with the corrected emissions for formaldehyde from the silos and loadouts. Rather than modeling as if all silos and loadouts were operating simultaneously (which is an unlikely occurrence), they modeled for the worst case silo and loadout scenario. If you would like some more background about the changes, it may be helpful to read though our conversation below.

Using the new modeling files (attached), could you please review and revise the May 11, 2017 memo for Carolina Sunrock? I'd also be happy to answer any questions you may have. If there are any questions about the modeling files, please contact:

Jonathan Hill
Managing Consultant/Meteorologist
Trinity Consultants
1 Copley Parkway, Suite 205
Morrisville, NC 27560
Office: 919-462-9693
Email: jhill@trinityconsultants.com

Thank you,
Taylor

Taylor Hartsfield, EIT
Environmental Engineer
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North Carolina Department of Environmental Quality

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taylor.hartsfield@ncdenr.gov

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Winston-Salem, NC 27105

Nothing Compares

From: Jonathan Hill [mailto:JHill@trinityconsultants.com]
Sent: Wednesday, September 06, 2017 9:45 PM
To: Hartsfield, Taylor <taylor.hartsfield@ncdenr.gov>; Aimee Andrews <AAndrews@trinityconsultants.com>
Cc: Scott Martino <smartino@thesunrockgroup.com>
Subject: RE: Carolina Sunrock Modeling Update - Prospect Hill

Taylor,

Typically, the assumption that all sources are operating simultaneously is considered conservative as all sources are not actually emitting at the same time in reality. In any case, I conducted a modeling scenario to determine the worst-case source combination, where the entire 2.1E-02 lb/hr emission rate comes from an individual silo and 7.32E-04 from an individual loadout. When taking this approach, the maximum impact is 61.82 ug/m3 or roughly 41% of the AAL. I have attached the AERMOD input and output file. Let us know if you require any additional information on this.

Best Regards,

Jon

** We have moved...please note new address below **

Jonathan Hill
Managing Consultant/Meteorologist

Trinity Consultants
1 Copley Parkway, Suite 205 | Morrisville, NC 27560

Office: **919-462-9693**
Email: jhill@trinityconsultants.com

From: Hartsfield, Taylor [mailto:taylor.hartsfield@ncdenr.gov]
Sent: Wednesday, September 06, 2017 4:15 PM
To: Aimee Andrews <AAndrews@trinityconsultants.com>
Cc: Jonathan Hill <JHill@trinityconsultants.com>; Scott Martino <smartino@thesunrockgroup.com>
Subject: RE: Carolina Sunrock Modeling Update - Prospect Hill

Hello Aimee,

Thank you for your explanation. However, I think I still have a concern with this process.

By conducting the model in this manner, it is as if all five silos are being loaded simultaneously with a formaldehyde emission rate of 1.68E-02 lbs/hr, each. And similarly, all five silos are unloading simultaneously with a formaldehyde emission rate of 7.32E-04 lbs/hr, each.

More realistically, the facility would be loading one silo at a time and using one or two loadout operations at a time. If the facility wants to operate at its rated capacity of 250 tons/hour, this could mean that one silo, while being filled is emitting 2.10E-02 lbs/hr of formaldehyde. This would exceed the modeled rate of 1.68E-02 lbs/hr, which would go into the permit as a limit under 2D .1100.

If we want to leave the modeled rates as is, then the plant rated capacity would have to be limited as follows:

1.68E-02 lbs/hr ÷ 8.41E-05 lbs/ton (silo emission factor) = 199.7 ton/hr (lower limit would be in permit)
7.32E-04 lbs/hr ÷ 3.66E-06 lbs/ton (loadout emission factor) = 200 ton/hr

While I realize it is highly unlikely that this discrepancy will result in an AAL exceedance, my concern is that if a silo or truck loadout is being used at the max plant capacity, that the modeled rate would be exceeded. As I mentioned, these modeled rates are to be listed as permit limits.

So I think these are the options:

1. Revise the modeling to show all silos emitting 2.10E-02 lbs/hr of formaldehyde and all loadouts emitting 9.15E-04 lbs/hr of formaldehyde. This of course over estimates the maximum impact concentration because not all silos would be loading and unloading simultaneously during normal operation, but no limits on plant rated capacity would be necessary.
2. Revise the modeling to show the worst case silo (maybe closest to property boundary?) emitting 2.10E-02 lbs/hr of formaldehyde and two loadout points (again worst case) emitting 9.15E-04 lbs/hr of formaldehyde. This reflects more of an accurate maximum impact concentration with no limits on plant rated capacity.
3. Keep modeling as is, but the plant rated capacity would be limited to 199.7 tons/hr such that one silo being loaded could not exceed the modeled formaldehyde emission rate of 1.68E-02 lbs/hr.

Please let me know your thoughts on this matter.

Thank you,
Taylor

Taylor Hartsfield, EIT
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Nothing Compares

From: Aimee Andrews [mailto:AAndrews@trinityconsultants.com]
Sent: Tuesday, September 05, 2017 10:52 AM
To: Hartsfield, Taylor <taylor.hartsfield@ncdenr.gov>
Cc: Jonathan Hill <JHill@trinityconsultants.com>; Scott Martino <smartino@thesunrockgroup.com>
Subject: RE: Carolina Sunrock Modeling Update - Prospect Hill

Hi Taylor,

Yes we just looked at these again and Jon optimized the modeled emission rates by using emission rates that were 4 times the calculated rate in the DEQ HMA spreadsheet. The difference is the formaldehyde limit requested was 1.68E-2 lb/hr for *each* silo, so a total of 0.0835 lb/hr for all silos, which is 4 times the calculated potential emission rate of 2.1E-02 lb/hr for silo filling.

Similarly, truck loadout modeled rate was 7.32E-04 lb/hr per loadout point, so a total of 3.7E-03 lb/hr for all truck loadout, which is 4 times the calculated potential emission rate of 9.15E-04 lb/hr.

Please let me know if you'd like to discuss on a phone call.

Thanks!
Aimee

Aimee Andrews, PE, CEA
Managing Consultant

Trinity Consultants
One Copley Parkway, Suite 205 | Morrisville, North Carolina 27560

NOTE: SUITE NUMBER HAS CHANGED!

Office: **919-462-9693 x105**
Email: aandrews@trinityconsultants.com

Trinity Consultants

From: Hartsfield, Taylor [mailto:taylor.hartsfield@ncdenr.gov]
Sent: Tuesday, September 05, 2017 9:33 AM
To: Aimee Andrews <AAndrews@trinityconsultants.com>
Cc: Jonathan Hill <JHill@trinityconsultants.com>; Scott Martino <smartino@thesunrockgroup.com>
Subject: RE: Carolina Sunrock Modeling Update - Prospect Hill

Hello Aimee,

Just checking on the status of my questions below. Have you and Jon had a chance to look at this yet?

Thank you,
Taylor

Taylor Hartsfield, EIT
Environmental Engineer
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Nothing Compares

From: Aimee Andrews [mailto:AAndrews@trinityconsultants.com]
Sent: Tuesday, August 15, 2017 10:47 AM
To: Hartsfield, Taylor <taylor.hartsfield@ncdenr.gov>
Cc: Jonathan Hill <JHill@trinityconsultants.com>; Scott Martino <smartino@thesunrockgroup.com>
Subject: RE: Carolina Sunrock Modeling Update - Prospect Hill

Hi Taylor,

Ok - understood. Jon and I will look at this shortly and get back to you.

Thank you!
Aimee

Aimee Andrews, PE, CEA
Managing Consultant

Trinity Consultants
One Copley Parkway, Suite 205 | Morrisville, North Carolina 27560

NOTE: SUITE NUMBER HAS CHANGED!

Office: **919-462-9693 x105**
Email: aandrews@trinityconsultants.com

From: Hartsfield, Taylor [mailto:taylor.hartsfield@ncdenr.gov]
Sent: Tuesday, August 15, 2017 10:30 AM
To: Aimee Andrews <AAndrews@trinityconsultants.com>
Cc: Jonathan Hill <JHill@trinityconsultants.com>; Scott Martino <smartino@thesunrockgroup.com>
Subject: RE: Carolina Sunrock Modeling Update - Prospect Hill

Hello Aimee,

Based on my conversation with Scott a couple weeks ago, I believe the facility would like to maximize its limits if possible. The facility has agreed to a sulfur content limit of 0.5% for all fuel oils. According to our asphalt spreadsheet, this means they could produce up to 1,488,581 tons of asphalt per year and still remain synthetic minor for PM10, SO2, and CO. Therefore, at their request, I am trying to raise the originally proposed limit of 250,000 to 1,488,581 tons per year.

My only reservation is trying to make sure that this does not exceed the production rate that the facility modeled for. I have now compared the modeled rates from Table 4-6 to the DAQ asphalt spreadsheet based on 1,488,581 tons per year. It looks like all the modeled rates are greater than the emission rates of the spreadsheet except for formaldehyde emissions from the silos and the loadouts.

Table 4-6 requests that the limit for formaldehyde be 1.68E-02 lbs/hr for silo filling and 7.32E-04 lbs/hr for truck loadout. However, based on the following calculations, I believe these limits should be higher.

The DAQ asphalt spreadsheet has formaldehyde emission factors of 8.41E-05 lbs/ton for silo filling and 3.66E-06 lbs/ton for truck loadout. Multiplying these factors by the dryer maximum production capacity of 250 tons/hr (which is unaffected by yearly production limits), equals emission rates of 2.10E-02 lbs/hour for silo filling and 9.15E-04 lbs/hr for truck loadout. These are slightly greater than the modeled rates.

Can you tell me what was the basis for coming up with the formaldehyde emission rates for silo loading and truck loadout used in the model? If you have any questions, please let me know.

Thank you,
Taylor

Taylor Hartsfield, EIT
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From: Aimee Andrews [mailto:AAndrews@trinityconsultants.com]
Sent: Monday, August 14, 2017 2:03 PM
To: Hartsfield, Taylor <taylor.hartsfield@ncdenr.gov>
Cc: Jonathan Hill <JHill@trinityconsultants.com>; Scott Martino <smartino@thesunrockgroup.com>
Subject: RE: Carolina Sunrock Modeling Update - Prospect Hill

Hi Taylor,

We'd like to keep the maximum production limit presented in the calculations – i.e., 250 tph HMA plant maximum production capacity and 250,000 tons per year as the requested annual production limit. The TAP limits were optimized to offer flexibility, but we don't want those to correspond to a higher production level than permitted since the site wants to remain synthetic minor for PM and an area source for HAPs.

Please let me know if you'd like to discuss further.

Thanks!
Aimee

Aimee Andrews, PE, CEA
Managing Consultant

Trinity Consultants
One Copley Parkway, Suite 205 | Morrisville, North Carolina 27560

NOTE: SUITE NUMBER HAS CHANGED!

FMC; AGE
Office: **919-462-9693 x105**
Email: aandrews@trinityconsultants.com

Trinity Consultants

From: Hartsfield, Taylor [mailto:taylor.hartsfield@ncdenr.gov]
Sent: Monday, August 14, 2017 12:36 PM
To: Aimee Andrews <AAndrews@trinityconsultants.com>
Cc: Jonathan Hill <JHill@trinityconsultants.com>; Scott Martino <smartino@thesunrockgroup.com>
Subject: RE: Carolina Sunrock Modeling Update - Prospect Hill

Hello Aimee,

I have a quick question regarding the modeling performed for Carolina Sunrock. In the revised document you sent us, it says the following:

"Table 4-5 presents the emission rates modeled for each of the triggered TAPs. These rates represent values that are in excess of the calculated potential rates in order to provide the facility with operational flexibility. [Insert Table 4-5] The above modeled emission rates, in g/s, would correspond to the following averaging period specific limits shown in Table 4-6, which Carolina Sunrock is requesting be included in the permit."

Can you tell me what asphalt production throughput corresponds to these emission limits? Please let me know if you have any questions.

Thank you,
Taylor

Taylor Hartsfield, EIT
Environmental Engineer
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Nothing Compares

Hartsfield, Taylor

From: Scott Martino <smartino@thesunrockgroup.com>
Sent: Wednesday, December 27, 2017 1:56 PM
To: Hartsfield, Taylor
Subject: [External] Carolina Sunrock LLC
Attachments: Prospect Hill Air Permit Stack Locations.xlsx

Hello Taylor, I hope you had a good Christmas break. Attached is the spread sheet converting over the UTM Coordinates in our permit as to what they should be in State Plane coordinates.

As we talked when I did the coordinates everything was more or less off by 60 feet or so most likely from the result of dropping significant figures along the way. Let me know if you need anything else, like I said I just want to make sure everything is as right as possible and the last thing I want to have to explain is survey.

Hope you have a good new year's holiday.

Thanks
Scott

Scott Martino
Manager Environmental Compliance/Mine Engineering
The Sunrock Group
200 Horizon Drive, Suite 100
Raleigh, NC 27615
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Carolina Sunrock LLC - Prospect Hill Facility
Prospect Hill, Caswell County, North Carolina
Facility ID: 1700015
Permit No: 10529R00

Emissions Point ID	UTM Coordinates	State Plane NC83 US-feet)
CD-1	17N 664296.2, 4013715.6	1949534.2294, 911524.2842
CD-2	17N 664296.2, 4013723.0	1949688.0981, 911577.4571
ES-H1	17N 664313.7, 4013717.7	1949519.9903, 911470.5899
ES-H2	17N 664298.7, 4013704.8	1949581.5974, 911489.8935

Hartsfield, Taylor

From: Scott Martino <smartino@thesunrockgroup.com>
Sent: Tuesday, December 19, 2017 1:38 PM
To: Hartsfield, Taylor
Subject: [External] GPS Data for prospect hill
Attachments: original Summit dwr Prospect hill-Layout1.pdf

Hi Taylor, thanks again for the chat. Let me what you find out. I attached a PDF of a map I have been working on. The big red circles are the points in the permit converted over to state plane.

If you take for example the CD-1 which is the asphalt baghouse stack it should be where the circle is on the baghouse. I want to say it's all a conversion error if anything. The remainder of the drawling is what was used for the modeling I have just been cleaning it up a bit. Everything seems to be off about 60 feet or so mostly to the north and a little to the west. I have seen this before when the decimals get dropped in coordinates systems its about 35 feet for minutes and seconds depending on which and amount.

Either way let me know, and I'll see whatever it is I need to do.

Thanks again

Scott

Scott Martino
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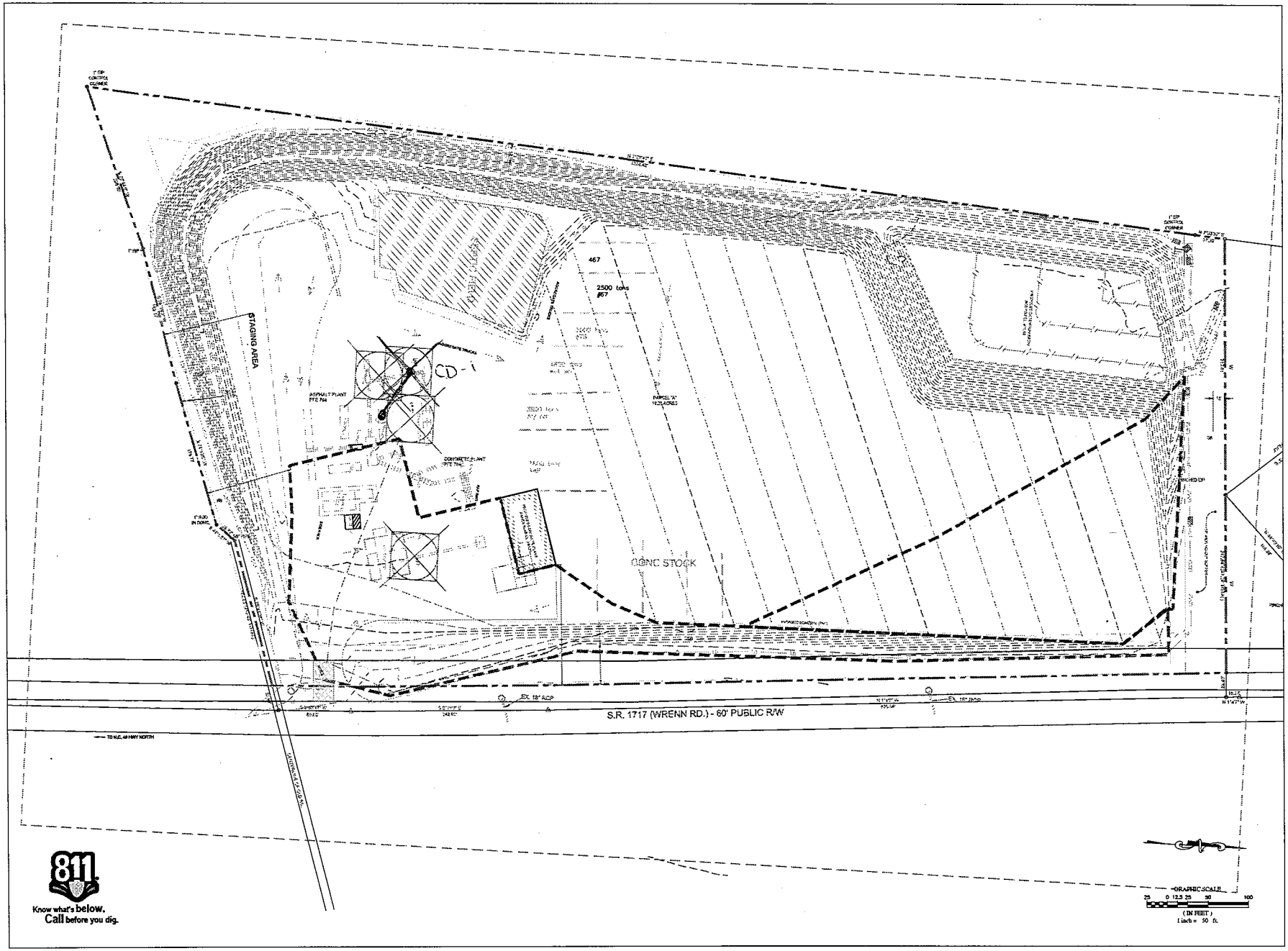

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