

Air Quality Construction Permit Application CAROLINA SUNROCK LLC •

'n,

PROSPECT HILL, NORTH CAROLINA



NC Department of Environmental Quality Received Check # 033678 \$400°

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Winston-Salem Regional Office

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Project 163401.0109



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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

3.1. 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 CO₂e.

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 (CO₂e), 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).

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 000]

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 PM₁₀ and total suspended particulates.
- 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.

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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 of the facility,

ii. the nature and cause of the malfunction or breakdown,

iii.the time when the malfunction or breakdown is first observed,

iv. the expected duration, and

v. an estimated rate of emissions.

b. Notify the Director or his designee immediately when the corrective measures have been accomplished.

3.5.9. 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
- > SO₂

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).

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.

See corrections

4/12/17

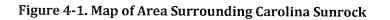
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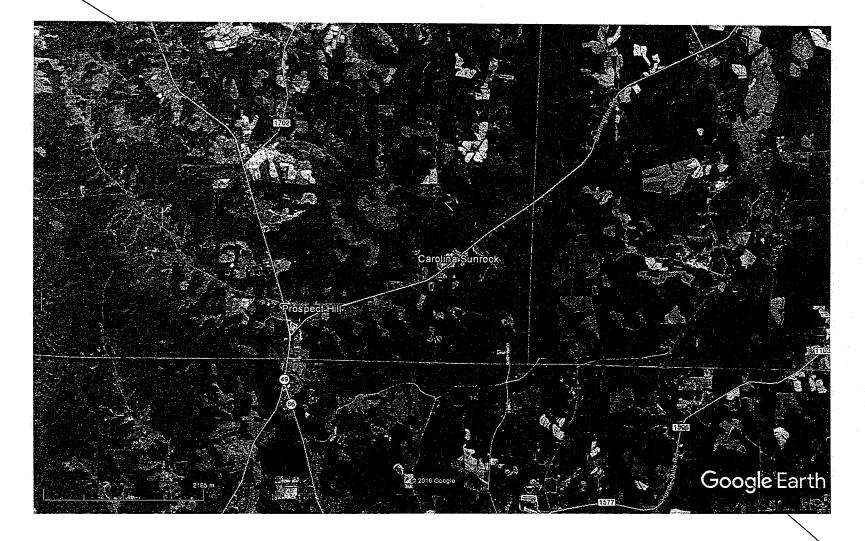
As previously discussed, potential emissions of five (5) compounds regulated under 15A NCAC 2Q .0700 (NC Air Toxics) exceed their TPER and this air dispersion modeling evaluation has been conducted to demonstrate compliance with all applicable AAL.

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.





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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 &FR 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 Synrock'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.

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 4-1.	Modeled Sourc	e Locations
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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 paincaps 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		

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.

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	0.0ØE+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		

Table 4-3.	Modeled	Emission	Rates
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The above modeled emission rates, in g/s, would correspond to the following averaging periodspecific limits shown in Table 4-4, which Carolina Sunrock is requesting be included in the permit.

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

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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.

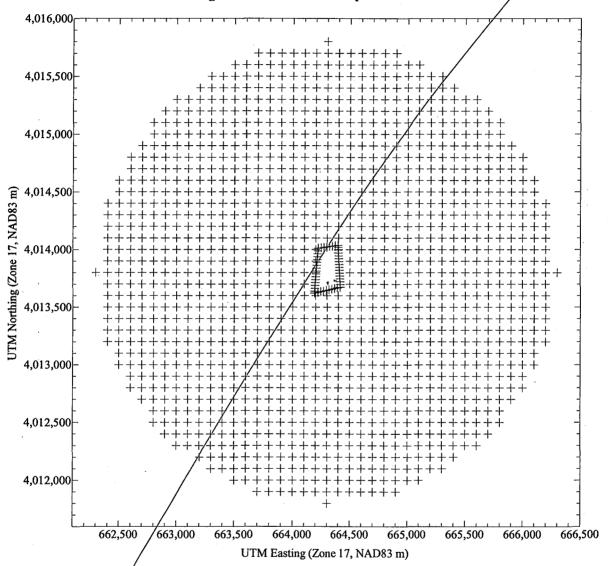


Figure 4-2. Modeled Receptor Grid

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.

⁵40 CFR §51.100(ii)

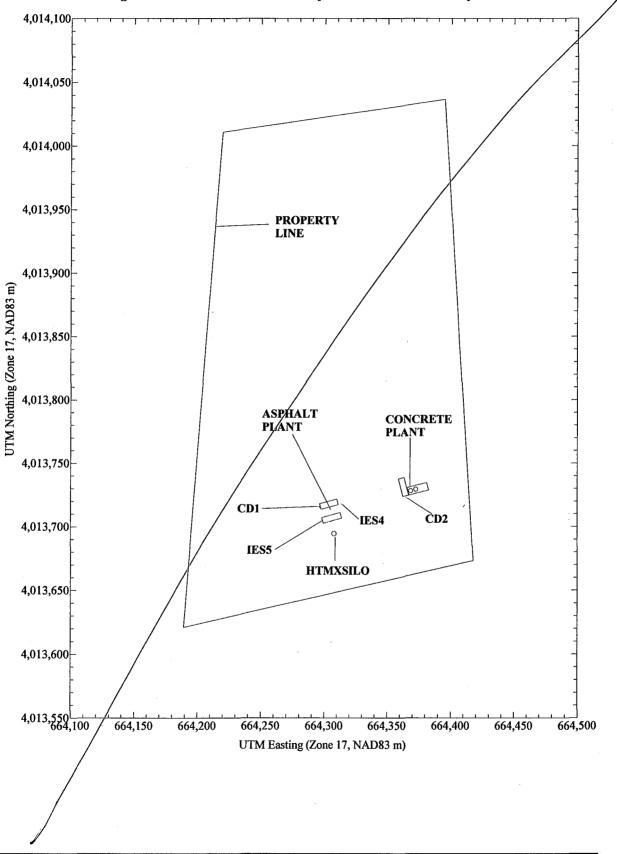


Figure 4-3. Carolina Sunrock Prospect Hill Modeled Site Layout

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.

Pollutant	Avg. Period	UTM-E (m)	UTM-N (m)	Date/Time or Year	Max. Modeled Impact (µg/m ³)	AAL (μg/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%

Table 4-3. TAP Modeling Results

		NC Department of Environmental Quality Received eneral Information) MAR 1 3 2017
	FC	
	FACILITY (G	eneral Information) MAR 1 3 2017
REVISED 05/25/12		cation for Air Permit to Construct/Operate
	NOTE- APPLICATION WILL NOT BE	PROCESSED WITHOUT THE FOLLOWING -Salem
🗸 Local Zo		cility Reduction & Recycling Survey Form (Form 4) 01 a A Recycling Survey Form
		propriate Number of Copies of Application Dec. Seal (if required)
		LINFORMATION
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
		TINFORMATION
Permit/Technical Contact:		Facility/Inspection Contact:
Name/Title: Scott Martino - Complia Mailing Address Line 1: 200 Horizo		Name/Title: Scott Martino - Compliance Manager
	n Drive, Ste 100	Mailing Address Line 1: 200 Horizon Drive, Ste 100
Mailing Address Line 2:		Mailing Address Line 2:
City: Ratelgh State:		315 City: Ratelgh State: NC Zip Code: 27615
Phone No. (area code) 984-202-47		Phone No. (area code) 984-202-4761 Fax No. (area code) 919-747-6305
	<u>hesunrockgroup.com</u>	Email Address: <u>smartino@thesunrockgroup.com</u>
Responsible Official/Authorized Cont	act:	Invoice Contact:
Name/Title: Greg Bowler / CFO		Name/Title: Scott Martino - Compliance Manager
Mailing Address Line 1: 200 Horizo	n Drive, Ste 100	Mailing Address Line 1: 200 Horizon Drive, Ste 100
Mailing Address Line 2:		Mailing Address Line 2:
City: Raleigh State	e: NC Zip Code: 276	115 City: Raleigh State: NC Zip Code: 27615
Phone No. (area code) 919-747-64	00 Fax No. (area code) 919-747-6305	Phone No. (area code) 984-202-4761 Fax No. (area code) 919-747-6305
Email Address: <u>Gbowler@</u>	thesunrockgroup.com	Email Address: <u>smartino@thesunrockgroup.com</u>
	APPLICATION	IS BEING MADE FOR
Vew Non-permi	Rene	acility (permitted)
Second Second Second Second	FACILITY CLASSIFICATION AF	TER APPLICATION (Check Only One)
General Small	Prohibitory Small	Synthetic Minor
	FACILITY (Plan	it Site) INFORMATION
Describe nature of (plant site) operation(This is to be a Drum mix hot asphalt p	s): Facility ID No. : パロのの plant and a truck mix ready Mix Concrete Plant.	<u>×015</u>
Primary SIC/NAICS Code:	324121	Current/Previous Air Permit No. N/A Expiration Date:
Facility Coordinates: Latitud		Longitude: 79* 10' 13.56"
Does this application contain confider data?		e contact the DAQ Regional Office prior to submitting this application.*** (See
	PERSON OR FIRM THA	AT PREPARED APPLICATION
Person Name: Almee And		
		Firm Name: Trinity Consultants
		Mailing Address Line 2: Suite 205
City: Morrisville	State: NC	Zip Code: 27560 County: Wake
Phone No. (area code) 919-462-96		Email Address: <u>aandrews@trinityconsultants.com</u>
aanaa kaana ka	SIGNATURE OF RESPONSIBLE	
Name (typed): Greg M. Bo	wier	Title: CFO
X Signature(Blue Ink):	nB	Date:

FORMs A2, A3

EMISSION SOURCE LISTING FOR THIS APPLICATION - A2

112r APPLICABILITY INFORMATION - A3

		10	
REVISED 04/10/07	NCDENR/Division of Air Quality - Application for Air Permit to	Construct/Operate	A
	EMISSION SOURCE LISTING: New, Modified, Previously Unpermit	ed, Replaced, D	eleted
MISSION SOURCE	EMISSION SOURCE	CONTROL DEVICE	CONTROL DEVICE
ID NO.	DESCRIPTION	ID NO.	DESCRIPTION
	Equipment To Be ADDED By This Application (New, Previously Unp	mitted, or Repl	acement)
	It Plant (250 tons per hour capacity) consisting of:		n an tha an tha ann an tha an tha Tha an tha an
•	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		
HMA-1	input capacity)	HMA-CD1	Bagfilter
	Hot mix asphalt storage silo (150 tons maximum capacity)		N/A
HMA-Silo2	Hot mix asphalt storage silo (150 tons maximum capacity)		N/A
HMA-Silo3	Hot mix asphalt storage silo (200 tons maximum capacity)	N/A	N/A
	Hot mix asphalt storage silo (200 tons maximum capacity)		N/A
	Hot mix asphalt storage silo (200 tons maximum capacity)		N/A
HMA-Silo5			N/A N/A
HMA-LO1	asphalt loadout	wA.	
IMA-LO2	truck loadout operation		
PAP Cruebing 9	ystem consisting of:	·····	
			N/A
RAP-CRSH	One crusher (65 tph)		N/A
RAP-CNV	One conveyor		N/A
RAP-SCN	One screen	N/A	N/A
	ete Batch Plant (120 cubic yards per hour) consisting of:		
			Bagfilter
RM-2			Bagfilter
RM-3			Bagfilter
RM-4	Cement/flyash weigh batcher (5 tons maximum capacity)		Bagfilter
RM-5	Aggregate weigh batcher (5 tons maximum capacity)	N/A	<u>N/A</u>
	•		
	Existing Permitted Equipment To Be MODIFIED By This	Application	
	ου το		
			·····
	·		· · · · · · · · · · · · · · · · · · ·

	Equipment To:BeiDELETED By This Applicati	ON MERCENSION	
	· · · · · · · · · · · · · · · · · · ·		
	· · · · · · · · · · · · · · · · · · ·		······································
	······································		· · · · · · · · · · · · · · · · · · ·

 112(f) APPLICABILITY INFORMATION

 Is your facility subject to 40 CFR Part 68 "Prevention of Accidental Releases" - Section 112(r) of the Federal Clean Air Act?

 Yes / No

 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: _____

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

Yes 🕙 No 🔮 If yes, please specify:

If submitted, RMP submittal date: _

FORM D4

EXEMPT AND INSIGNIFICANT ACTIVITIES SUMMARY

REVISED: 12/01/01

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

D4

	ACTIVITIES EXEMPTI INSIGNIFICANT ACTIVITIES PER 2		
	DESCRIPTION OF EMISSION SOURCE	SIZE OR PRODUCTION RATE	BASIS FOR EXEMPTION OR INSIGNIFICANT ACTIVITY
 	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)
	20,000 gal No. 2 fuel oil tank IES-3	20,000 gal	15A NCAC 2Q .0102(g)(4)
۱. 	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)
). 			
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8.			
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0. 			

Attach Additional Sheets As Necessary

FORM D1

FACILITY-WIDE EMISSIONS SUMMARY

REVISED 12/01/01 NCDENR/D	ivision of Air Qua	ality - Application	for Air Permit to	Construct/	Operate		D1
CRITERIA AI	RPOLLUTANT	EMISSIONS IN	FORMATION - F	ACILITY,	WIDE		
		EXPECTED AC	UAL EMISSIONS	OTENTIA	EMISSION	POTENTIA	L EMISSIONS
		(AFTER C	ONTROLS /	BEFORE (ONTROLS	(AFTER C	ONTROLS /
		LIMITA	TIONS)	LIMIT	TIONS)	LIMIT	ATIONS)
AIR POLLUTANT EMITTED		tor	ns/yr	tor	ns/yr	to	ns/yr
PARTICULATE MATTER (PM)		See Ap	pendix A				
PARTICULATE MATTER < 10 MICRONS (PM1	o) ·						
PARTICULATE MATTER < 2.5 MICRONS (PM	2.5)						
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							
HAZARDOUS	IR POLLUTAN	T EMISSIONS I	NFORMATION.	FACILIT	-WIDE		
		EXPECTED ACT	UAL EMISSIONS	OTENTIAL	EMISSION	POTENTIA	EMISSIONS
		(AFTER C	ONTROLS /	BEFORE C	ONTROLS	•	ONTROLS /
		LIMITA	TIONS)	LIMITA	TIONS)	LIMIT	ATIONS)
HAZARDOUS AIR POLLUTANT EMITTED	CAS NO.	tor	is/yr	tor	ns/yr	to	ns/yr
See Appendix A							
·							
· · · · · · · · · · · · · · · · · · ·							
TOXICAIR	OLLUTANT	MISSIONS INFO	RMATION - FA	CILITY-W	DE		
INDICATE REQUESTED ACTUAL EMISSIONS						MIT EMISS	ON RATE
(TPER) IN 15A NCAC 2Q .0711 MAY REQUIRE	AIR DISPERSIO	N MODELING. U		M D2 IF NE	CESSARY.		
					Modeling I	Required ?	
TOXIC AIR POLLUTANT EMITTED	CAS NO.	lb/hr	lb/day	lb/year	Yes	No	
See Appendix A							
····							
· · · · · · · · · · · · · · · · · · ·	Г						
					1 ···		
	-				[
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	1						
·····							
	1						
COMMENTS:	I	<u>I</u>		L	L		
	Attach Additi	ional Sheets		rv			

TECHNICAL ANALYSIS TO SUPPORT PERMIT APPLICATION

RE	VISED: 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 REGULA	
	DEMONSTRATIONS MADE IN THIS APPLICATION. INCLUDE A COMPREHENSIVE PROCESS FLOW DIAGRA NECESSARY TO SUPPORT AND CLARIFY CALCULATIONS AND ASSUMPTIONS. ADDRESS THE	AM AS
	FOLLOWING SPECIFIC ISSUES ON SEPARATE PAGES:	
A	SPECIFIC EMISSIONS SOURCE (EMISSION INFORMATION) (FORM B) - SHOW CALCULATIONS USED, INCLUDING EMISSION FACTORS AND/OR OTHER METHODS FROM WHICH THE POLLUTANT EMISSION RATES IN THIS APPLICATION WERE DERIVED. INCLUDE CALCU	
	BEFORE AND, WHERE APPLICABLE, AFTER CONTROLS. CLEARLY STATE ANY ASSUMPTIONS MADE AND PROVIDE ANY REFERENCE	
ļ	SUPPORT MATERIAL BALANCE CALCULATIONS.	·
В	 SPECIFIC EMISSION SOURCE (REGULATORY INFORMATION)(FORM E2 - TITLE V ONLY) - PROVIDE AN ANALYSIS OF ANY REGULATIO	INS APPLICABLE TO
	INDIVIDUAL SOURCES AND THE FACILITY AS A WHOLE. INCLUDE A DISCUSSION OUTING METHODS (e.g. FOR TESTING AND/OR MON	NITORING
	REQUIREMENTS) FOR COMPLYING WITH APPLICABLE REGULATIONS, PARTICULARLY THOSE REGULATIONS LIMITING EMISSIONS BA RATES OR OTHER OPERATIONAL PARAMETERS. PROVIDE JUSTIFICATION FOR AVOIDANCE OF ANY FEDERAL REGULATIONS (PREV	
i,	DETERIORATION (PSD), NEW SOURCE PERFORMANCE STANDARDS (NSPS), NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR	
	(NESHAPS), TITLE V), INCLUDING EXEMPTIONS FROM THE FEDERAL REGULATIONS WHICH WOULD OTHERWISE BE APPLICABLE TO ANY REQUIRED TO DOCUMENT COMPLIANCE WITH ANY REGULATIONS. INCLUDE EMISSION RATES CALCULATED IN ITEM "A" ABOVI	
	MANUFACTURE, CONTROL EQUIPMENT, ETC. TO SUPPORT THESE CALCULATIONS.	
C	CONTROL DEVICE ANALYSIS (FORM C) - PROVIDE A TECHNICAL EVALUATION WITH SUPPORTING REFERENCES FOR ANY CONTROL	
	ON SECTION C FORMS, OR USED TO REDUCE EMISSION RATES IN CALCULATIONS UNDER ITEM "A" ABOVE. INCLUDE PERTINENT O	PERATING PARAMETERS
	(e.g. OPERATING CONDITIONS, MANUFACTURING RECOMMENDATIONS, AND PARAMETERS AS APPLIED FOR IN THIS APPLICATION) (PROPER PERFORMANCE OF THE CONTROL DEVICES). INCLUDE AND LIMITATIONS OR MALFUNCTION POTENTIAL FOR THE PARTICL	
	AS EMPLOYED AT THIS FACILITY. DETAIL PROCEDURES FOR ASSURING PROPER OPERATION OF THE CONTROL DEVICE INCLUDING	
	AND MAINTENANCE TO BE PERFORMED.	
D	PROCESS AND OPERATIONAL COMPLIANCE ANALYSIS - (FORM E3 - TITLE V ONLY) - SHOWING HOW COMPLIANCE WILL BE ACHIEV	ED WHEN USING
	PROCESS, OPERATIONAL, OR OTHER DATA TO DEMONSTRATE COMPLIANCE. REFER TO COMPLIANCE REQUIREMENTS IN THE REG	SULATORY ANALYSIS IN
	ITEM "B" WHERE APPROPRIATE. LIST ANY CONDITIONS OR PARAMETERS THAT CAN BE MONITORED AND REPORTED TO DEMONS WITH THE APPLICABLE REGULATIONS.	TRATE COMPLIANCE
·		······································
	PROFESSIONAL ENGINEERING SEAL - PURSUANT TO 15A NCAC 2Q .0112 "APPLICATION REQUIRING A PROFESSIONAL ENGINEER A PROFESSIONAL ENGINEER REGISTERED IN NORTH CAROLINA SHALL BE REQUIRED TO SEAL TECHNICAL PORTIONS OF THIS APP	
	NEW SOURCES AND MODIFICATIONS OF EXISTING SOURCES. (SEE INSTRUCTIONS FOR FURTHER APPLICABILITY).	
	I,Aimee Andrews, attest that this application forCarolina Sunrock has been reviewed by me and is accurate, complete and consistent with the inf	
	in the engineering plans, calculations, and all other supporting documentation to the best of my knowledge. I further attest that to	o the best of my
	knowledge the proposed design has been prepared in accordance with the applicable regulations. Although certain portions of the	
,	package may have been developed by other professionals, inclusion of these materials under my seal signifies that I have review and have judged it to be consistent with the proposed design. Note: In accordance with NC General Statutes 143-215.6A and 1	
	person who knowingly makes any false statement, representation, or certification in any application shall be guilty of a Class 2 m	-
	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) PLACE NORTH CAROLINA SEA	AL HERE
	NAME: Aimee Andrews	
	DATE: ALON TA CARO	
	COMPANY: Trinity Consultants of NC PC	
	ADDRESS: One Copley Parkway Ste 205, Morrisville, NC	
	TELEPHONE: (919) 462-9693 SIGNATURE: 029987	
	SIGNATURE:	
	PAGES CERTIFIED AII	
× .		
	(IDENTIFY ABOVE EACH PERMIT FORM AND ATTACHMENT	
	THAT IS BEING CERTIFIED BY THIS SEAL)	

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

			(•••••==			
REVISED 12/01/(NCDENR/Division of A	Vir Quality - /	Application					В
EMISSION SOURCE DESCRIPTION:				SOURCE		HMA-1	
250 TPH HMA Double barrel DRUM PLAN	Г			DEVICE I		HMA-CD1	
OPERATING SCENARIO0F					TACK) ID N	CEP-1	
DESCRIBE IN DETAILTHE EMISSION SOURCE	•			•			
1. Drying of aggregate (drying drum) 2. Mixing	of Aggregat	e, rap and I	iquid asph	alt (mixing	drum) 3. S	Storage of f	inal Product
(silos)							
TYPE OF EMISSION SOURCE (CHECK AN	D COMPLET	E APPROP					•
Coal,wood,oil, gas, other burner (Forn Uwood)	dworking (Fo	rm B4)	🗌 Manuf	act. of chen	nicals/coatin	igs/inks (Foi	rm 87)
Int.combustion engine/generator (Forr D Coati	ng/finishing/p	printing (For	r 🔲 Incinei	ration (Form	1 B8)		
Liquid storage tanks (Form B3)	ige silos/bins	(Form B6)	Other	(Form B9)			
START CONSTRUCTION DATE: OPERAT	ION DATE:		DATE MAI	NUFACTUR	ED:		
MANUFACTURER / MODEL NO.: Astec		EXPECTE	D OP. SCH	EDULE:	10_HR/DAY	(_6_ D/	AY/WK _50_
IS THIS SOURCE SUBJECT TO? NSPS (SUBPA	RT?):I		P (SUBPAR			T (SUBPAF	RT?):
PERCENTAGE ANNUAL THROUGHPUT (%): DE	C-FEB 15	MAR	MAY 3	0 JU	N-AUG	30	SEP-NOV 2
EXPECTED ANNUAL HOURS OF OPEF 100	0 VISIBLE S	TACK EMIS	SIONS UN		AL OPERA	TION: _<20	% OPAC
GRITERIA VIR POULUTA							
	SOURCE O	EXPECTE			POTENTIA		
		1		BEFORE CON			TROLS / LIMITS)
AIR POLLUTANT EMITTED	FACTOR		tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM)	See Apper	L					
PARTICULATE MATTER<10 MICRONS (PM10)		1					
PARTICULATE MATTER<2.5 MICRONS (PM2.5)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)	+						
CARBON MONOXIDE (CO)					<u> </u>		
VOLATILE ORGANIC COMPOUNDS (VOC)	1						
LEAD		· · · · · · · · · · · · · · · · · · ·			· · · · · ·		
OTHER							
HAZARDOUS AIR POLLUT	ANTIEMIS	STONS I	NEORMAN	r(0)N(=:0)	RTHISS	OUR(CES)	
	SOURCE O					L EMSSION	
							TROLS / LIMITS)
HAZARDOUS AIR POLLUTANT AND CAS NO.	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
See Appendix A	TAOTOR	10/11	tons/yr	10/10	tono/yi	10/11	tonory
	-						
· · · · · · · · · · · · · · · · · · ·							
TOXIC AIR POLLUTAN	L MEMIQQIA	NSINER	BMAMO	NEODT	us som	201	
		and the state of the state					
TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE		/hr				b/yr
	I SUUKU	10		/di	day		or yı
See Appendix A	+						
	1						
		ļ					
Attachments: (1) emissions calculations and supporting doc					entorceable a	ermit limite / c	a hours of
operation, emission rates) and describe how these are mon							
this source.					.		• • • •

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

Attach Additional Sheets As Necessary

File: Forms 2017-03-09 Sheet: B - HMA Plant

FORM B9 EMISSION SOURCE (OTHER)

	A SOOKC		
REVISED: 12/01/01 NCDENR/Division of Air Quality	y - Application	for Air Permit to Construct/Or	perate 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 OF1		EMISSION POINT (STACK) ID) NO(S): EP-1
DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRA	M):		
1. DRYING OF AGGREGATE (DRYING DRUM) 2. MIXING OF AGGREGATE AND RAP WITH LIQU 3. STORAGE OF FINAL PRODUCT (Silos)	ID ASPHAL	T (MIXING DRUM)	
MATERIALS ENTERING PROCESS CONTINUOUS PRO	OCESS	MAX. DESIGN	REQUESTED CAPACITY
ТҮРЕ	UNITS	CAPACITY (UNIT/HR)	LIMITATION(UNIT/HR)
Aggregate (virgin and RAP)	tons	250	250
Liquid AC	tons	12	12
· · · · · · · · · · · · · · · · · · ·			
MATERIALS ENTERING PROCESS BATCH OPERA		MAX. DESIGN	REQUESTED CAPACITY
ТҮРЕ	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UNIT/BATCH)
	_		
			·
			<u> </u>
MAXIMUM DESIGN (BATCHES / HOUR):			•
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/\	/R):	·
FUEL USED: NG/#2/ REC #2/ REC #4	TOTAL MAX	IMUM FIRING RATE (MILLION	BTU/HR): 80
MAX. CAPACITY HOURLY FUEL USE:	REQUESTER	D CAPACITY ANNUAL FUEL U	SE:
COMMENTS:			

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FORM B1 EMISSION SOURCE (WOOD, COAL, OIL, GAS, OTHER FUEL-FIRED BURNER) B1a **REVISED 12/01/01** NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate EMISSION SOURCE DESCRIPTION: EMISSION SOURCE ID NO: HMA-1 HMA Drum Plant Dryer Heater (Hauck, 80 MMBTU/hr burner) CONTROL DEVICE ID NO(S): HMA-CD1 OF **OPERATING SCENARIO:** EMISSION POINT (STACK) ID EP-1 SPACE HEAT d ELECTRICAL GENERATION DESCRIBE USE: PROCESS HEAT d CONTINUOUS US STAND BY/EMERGENCY OTHER (DESCRIBE): HEATING MECHANISM: DIRECT MAX. FIRING RATE (MMBTU/HOUR): 80 MMBTU/hr WOOD-FIRED BURNER WOOD TYPE: ø BARK & WOOD/BARK e WET WOOD DRY WOOD ø OTHER (DESCRIBE) PERCENT MOISTURE OF FUEL CONTROLLED WITH FLYASH REINJECTION CONTROLLED W/O REINJECTION UNCONTROLLED STEAM AIR & OTHER FUEL FEED METHOD: HEAT TRANSFER MEDIA: METHOD OF TUBE CLEANING: CLEANING SCHEDULE: COAL-FIRED BURNER TYPE OF BOILER IF OTHER DESCRIBE: PULVERIZED OVERFEED STOKER UNDERFEED STOKER SPREADER STOKER FLUIDIZED BED UNCONTROLLED UNCONTROLLED CIRCULATING WET BED ø UNCONTROLLED CONTROLLED CONTROLLED RECIRCULATING DRY BED A FLYASH REINJECTION SO FLYASH REINJECTION TRAVELING GRATE METHOD OF LOADING: ø CYCLONE HANDFIRED ø OTHER (DESCRIBE): ø CLEANING SCHEDULE: METHOD OF TUBE CLEANING: OIL/GAS-FIRED_BURNER I T UTILITY INDUSTRIAL COMMERCIAL RESIDENTIAL TYPE OF BOILER: | TANGENTIAL | | LOW NOX BURNERS | INO LOW NOX BURNER NORMAL TYPE OF FIRING: METHOD OF TUBE CLEANING CLEANING SCHEDULE OTHER FUELSFIRED BURNER TYPE OF FUEL: PERCENT MOISTURE: I | UTILITY | | INDUSTRIAL | | RESIDENTIAL TYPE OF BOILER: TYPE OF FIRING: TYPE OF CONTROL (IF ANY): FUEL FEED METHOD: METHOD OF TUBE CLEANING **CLEANING SCHEDULE:** FUEL USAGE (INCLUDE STARTUP/BACKUP FUELS) REQUESTED CAPACITY MAXIMUM DESIGN FUEL TYPE UNITS CAPACITY (UNIT/HR) LIMITATION (UNIT/HR) Propane/NG/ #2/ Rec #2/ Rec #4 cf/gallons 80 MMBtu/hr FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE) SPECIFIC SULFUR CONTENT ASH CONTENT FUEL TYPE **BTU CONTENT** (% BY WEIGHT) (% BY WEIGHT) SAMPLING PORTS, COMPLIANT WITH EPA METHOD 1 WILL BE INSTALLED ON THE STACKS: & YES ø NO COMMENTS:

EMISSION SOURCE (STORAGE SILO/BINS)

REVI	SED 12/01/01		Divieic	on of Air Quality - Ap	- (• ·		mit to C	onetruc	/ t/Operate	Г	B6
	SION SOURCE DESCR			n of Air Quality - Ap	picatio	1		OURCE I			
EIVIIG	HMA Drum Plant		Aenh	alt Silo 1					NO(S): HMA-CD1		MA
OPF	RATING SCENARIO:	1	тэрп	OF1					ACK) ID NO(S): EP		<u>\</u>]4
	CRIBE IN DETAIL THE		тасн							-	
	1. DRYING OF AGG										
	2. Mixing of aggrega			-	rum)						
	3. Storage of final pr		in nyu	asphalt (mixing a	iuniy						
	5. Glorage of final pr	oddor (Silos)									
МАТЕ	ERIAL STORED:	Hot Mix Aspl	nait			DENSITY O		RIAL (LB	/FT3):		
	CAPACITY	CUBIC FEET				TONS:	150				
D	IMENSIONS (FEET)	HEIGHT:		DIAMETER:	(OR)	LENGTH:		WIDTH	10 HEIGHT:	65	
	NUAL PRODUCT THR		NS)	ACTUAL:	<u> </u>	· · · · · · · · · · · · · · · · · · ·	MUM DE		APACITY:		
	PNEUMATICALLYF			MECHANIC	ALLYF				FILLED FRO	M	
ø	BLOWER		ø	SCREW CONVEYO	R			e I	RAILCAR		
ø	COMPRESSOR		ø	BELT CONVEYOR		MOTOR	HP:		TRUCK		
ø	OTHER:			BUCKET ELEVATO	R			,	STORAGE PILE		
			ø	OTHER:		· · · · · · · · · · · · · · · · · · ·		·	OTHER: PLANT		
NO. F	ILL TUBES:										
	MUM ACFM:								ν.		
MATE	RIAL IS FILLED TO:			· · · · · · · · · · · · · · · · · · ·				· .			
BY W	HAT METHOD IS MATE	ERIAL UNLOA	DED FI	ROM SILO? GRAVIT	ΓY						
				-							
MAXI	MUM DESIGN FILLING	RATE OF MAT	FERIAL	. (TONS/HR):							
MAXI	MUM DESIGN UNLOAD	ING RATE OF	MATE	RIAL (TONS/HR):	· ·		<u> </u>				
	MENTS:	· · · · ·			· · · ·			÷			
00111		D SEAL AT	TOP								
	ULT ILL		101								

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EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 12/01/01	NCDENR/Divisi	on of Air Quality - Ap	plicatio	on for Air Peri	mit to C	construct	/Operate	B6
EMISSION SOURCE DESCR		· · · · · · · · · · · · · · · · · · ·		EMISS	SION SC	OURCE II	NO: HMA-Silo	2
HMA Drum Plant		alt Silo 2					NO(S): HMA-CD1	NA
OPERATING SCENARIO:	1	OF1			_		CK) ID NO(S): EP	
DESCRIBE IN DETAIL THE F	ROCESS (ATTACH	FLOW DIAGRAM):					· · ·	
1. DRYING OF AGGE	REGATE (DRYING	DRUM)						
2. Mixing of aggrega			rum)					
3. Storage of final pr	oduct (silos)							
		<u></u>						
MATERIAL STORED:	Hot Mix Asphalt	·		DENSITY OF	MATER	RIAL (LB/	FT3):	
CAPACITY	CUBIC FEET:			TONS:	150			
DIMENSIONS (FEET)	HEIGHT:	DIAMETER:	(OR)	LENGTH:		WIDTH	10 HEIGHT:	65
ANNUAL PRODUCT THRO	DUGHPUT (TONS)	ACTUAL:			IUM DE	SIGN CA		
RNEUMATICALLYF	LLED	MECHANIC	alluy f	LLED.			FILLED FR	0M
d blower	ର୍ଷ	SCREW CONVEYO	R			e P	RAILCAR	
	න්	BELT CONVEYOR		MOTOR I	HP:	øт	RUCK	
🖞 OTHER:		BUCKET ELEVATO	R			ଶ ଓ	TORAGE PILE	
	ą	OTHER:					OTHER: PLANT	
NO. FILL TUBES:								
MAXIMUM ACFM:								
MATERIAL IS FILLED TO:								
BY WHAT METHOD IS MATE	RIAL UNLOADED F	ROM SILO? GRAVIT	Ϋ́					
MAXIMUM DESIGN FILLING	RATE OF MATERIA	L (TONS/HR):						
MAXIMUM DESIGN UNLOAD	ING RATE OF MAT	ERIAL (TONS/HR):					· · · · · · · · · · · · · · · · · · ·	
COMMENTS:			<u></u>				<u> </u>	
	D SEAL AT TOP	P OF SILO.						

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REVIS	ED 12/01/01	NCDENR/Divisi	on of Air Quality - A	pplicatio	on for Air Permit to	Construct/Operate		B6
EMISS	SION SOURCE DESCR				EMISSION S	OURCE ID NO: HN	IA-Silo3	
	HMA Drum Plant	- Hot Mix Aspł	nalt Silo 3		CONTROL	EVICE ID NO(S): HM	IA-CD1	NA
OPER	ATING SCENARIO:	1	OF1		_ EMISSION F	OINT(STACK) ID NO	(S): EP-1	
DESC	RIBE IN DETAIL THE F	PROCESS (ATTACH	FLOW DIAGRAM):				·	
	1. DRYING OF AGG	REGATE (DRYING D	DRUM)					
	2. Mixing of aggrega	te and rap with liqu	uid asphalt (mixing o	drum)				
	3. Storage of final pr	oduct (silos)						
				•				
MATE	RIAL STORED:	Hot Mix Asphalt			DENSITY OF MATE	RIAL (LB/FT3):		
	CAPACITY	CUBIC FEET:		······	TONS: 200	-T		
	MENSIONS (FEET)	HEIGHT:	DIAMETER:	(OR)	LENGTH:		IGHT:	
ANN	IUAL PRODUCT THRO	AND REAL PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY ADDR	ACTUAL:			ESIGN CAPACITY:		
	PNEUMATICALLY		MECHANIC	CALLYF	(ELLED)		LEDIFROM	
୶	BLOWER	6	SCREW CONVEY		· · · · · · · · · · · · · · · · · · ·	RAILCAR		
ø	COMPRESSOR	e e	BELT CONVEYOR		MOTOR HP:	e TRUCK		
Ć	OTHER:		BUCKET ELEVATO	DR		STORAGE F		
			OTHER:			OTHER: P	LANT	
	LL TUBES:	·						
	IUM ACFM:					·····		···
MATE	RIAL IS FILLED TO:							
				373/				
BY WF	HAT METHOD IS MATE		-ROM SILO? GRAVI	:				•
	IUM DESIGN FILLING							
		·····						
	IUM DESIGN UNLOAD		ERIAL (TONS/HR):					
COWN	IENTS:							
	OIL FILLE	D SEAL AT TO	P OF SILO.					
								.•
				5 A				
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EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 12/01/01		ion of Air Quality - Ap	•		•	B6
EMISSION SOURCE DESCR				T	SOURCE ID NO: HMA-Silo4	<u>L</u>
•		ix Asphalt Silo 4			DEVICE ID NO(S): HMA-CD1	NA
OPERATING SCENARIO:	1	OF1		1	POINT(STACK) ID NO(S): EP-1	/\
DESCRIBE IN DETAIL THE	PROCESS (ATTACH	H FLOW DIAGRAM):			<u>a, a, a, a, a, a, a, a</u> , a, a,	
1. DRYING OF AGGI						
2. Mixing of aggrega	ate and rap with liq	uid asphalt (mixing d	rum)			
3. Storage of final p	roduct (silos)					
·						
·				r		
MATERIAL STORED:	Hot Mix Asphalt			DENSITY OF MATE	i de la construcción de la constru	
CAPACITY	CUBIC FEET:		(0.2)	TONS: 200	· · · · · · · · · · · · · · · · · ·	
DIMENSIONS (FEET)	HEIGHT:	DIAMETER:	(OR)	LENGTH:	WIDTH: HEIGHT:	
ANNUAL PRODUCT THR		ACTUAL: MECHANIC	NHI ME		ESIGN CAPACITY:	
BLOWER	lester d	SCREW CONVEYO			RAILCAR	
COMPRESSOR	e e	BELT CONVEYOR	•	MOTOR HP:	d TRUCK	
OTHER:		BUCKET ELEVATOR	2		STORAGE PILE	
		OTHER:			OTHER: PLANT	
NO. FILL TUBES:						
MAXIMUM ACFM:						
MATERIAL IS FILLED TO:						
	<u></u>			· · · · · · · · · · · · · · · · · · ·		
BY WHAT METHOD IS MATE	ERIAL UNLOADED I	FROM SILO? GRAVIT	Y			
				<u> </u>		
MAXIMUM DESIGN FILLING						<u></u>
MAXIMUM DESIGN UNLOAD	DING RATE OF MAT	ERIAL (TONS/HR):				
COMMENTS:						
OIL FILLE	D SEAL AT TO	P OF SILO.				

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EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 12	(01/01			on of Air Quality - An	•				-		ſ	B6b
Г	OURCE DESCR	······	DIVISIO	on of Air Quality - Ap	plicatio		MISSION S			HMA-Silo5		DOD
1	Drum Plant		Aenh	alt Silo 5			CONTROL D				A	14
OPERATING		1 - 110t mix 7	-spin	OF1						IO(S): EP-1		
			ТАСН	FLOW DIAGRAM):		<u> </u>						
	YING OF AGGR											
				id asphalt (mixing di	rum)							
	brage of final pr		in nqui	a aspirate (mixing a	uniy							
0. 00	age of marpi	04401 (01100)										
MATERIAL S	TORED:	Hot Mix Aspl	nait			DENSIT	Y OF MATE	RIAL (L	.B/FT3):			
	PACITY	CUBIC FEET		· · · · · · · · · · · · · · · · · · ·		TONS:	200					
	ONS (FEET)	HEIGHT:		DIAMETER:	(OR)	LENGT		WIDT	 H: H	IEIGHT:		
	RODUCT THRO		NS)	ACTUAL:		<u> </u>						
	IMATICALLY , FI	AND CONTRACTOR STORE STORE AND		MECHANIC	ALLY F					FILLED FRO	MS-6.5.	
ର୍ଶ୍ଚ BLOW	/ER		ø	SCREW CONVEYO	R			ø	RAILCAR			
•	RESSOR		ø	BELT CONVEYOR		мот	FOR HP:	ø	TRUCK			
d othe				BUCKET ELEVATO	२			ø	STORAG	E PILE		
				OTHER:						PLANT		
NO. FILL TUE	BES:									· · · · ·		
MAXIMUM AG	CFM:											· ·
MATERIAL IS	FILLED TO:											
BY WHAT ME	ETHOD IS MATE	RIAL UNLOAI	DED FI	ROM SILO? GRAVIT	Υ							
												<u>^</u>
	·											
MAXIMUM DE	ESIGN FILLING	RATE OF MAT	FERIAL	. (TONS/HR):								
	ESIGN UNLOAD	ING RATE OF	MATE	RIAL (TONS/HR):								
COMMENTS:									· · · ·	<u> </u>		
COMMENTO.		D SEAL AT	TOP	OF SILO.								
				••••••••								
											•	

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SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

PARTICULATE MATTER (PM) See Appendix A Image: Construct of the second seco	REVISED 12/01/0 NCDENR/Division of	Air Quality	- Applicati	on for Air P	ermit to Cons	truct/Operate)	В
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 crusher (65 tph) One crusher (65 tph) One crusher (65 tph) One screen Woodworking (Form B4) Manufact. of chemicals/coatings/inks (Form B7) Int.combustion engine/generator (Form Coatings/inishing/printing (Form B6) Other (Form B8) Starge silos/bins (Form B3) Storage silos/bins (Form B6) Other (Form B9) START CONSTRUCTION DATE: [Detertion AnuptactrureD: MANUFACTURED: MANUFACTURER / MODEL NO.: TELSMITH HIS 2421 EXPECTED OP. SCHEDULE: HR/DAY START CONSTRUCTION DATE: [Detertion AnuptactrureD: MACT (SUBPART?); PAY: PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB MAR-MAY JUN-AUG SEP-NOV EXPECTED ANNUAL HOURS OF OPERATION: VISIBLE STACK EMISSIONS SUDRER NORMAL OPERATION: <20				EMISSION	SOURCE ID	RAP-CRSH	RAP-CNV	RAP-SCN
DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM): RAP Crushing System consisting of: One crusher (66 tph) One conveyor One data construction TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES): Call and the burner (Form Incload wood, all, gas, other burner (Form Other (Lacombustion engine/generator (Form Coating/finishing/printing (Form B6) Other (Form B3) Starage sites/bins (Form B6) Other (Construction DATE: OPERATION DATE: DEFRATION DATE: DATURE A MAUFACTURED: MANUFACTURER / MODEL NO: TELSMITH HIS 2421 EXPECTED AP, SCHEDULE: HR/DAY JUN-JAUG SEP-NOV EXPECTED ANNUAL THROUGHPUT (%): DEC-FEB MAR-MAY JUN-JAUG SEP-NOV EXPECTED ANNUAL THROUGHPUT (%): DEC-FEB MARMARY JUN-JAUG SEP-NOV EXPECTED ANNUAL THROUGHPUT (%): DEC-FEB MAR-MAY JUN-JAUG SEP-NOV EXPECTED ACTURER AIR POLLUTANT EMITERIA AIR POLICUTANT EMISSIONS UNDER NORMAL OPERA				CONTROL	DEVICE ID N	O(S):	N/A	
RAP Crushing System consisting of: One crusher (65 tph) One corveyor One screen TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES): □ claim Coal,wood,oil, gas, other burner (Forr □ Woodworking (Form B4) □ Manufact. of chemicals/coatings/links (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: 0PERATION DATE: DATE MANUFACTURED: MANUFACTURER / MODEL NO.: TELSMITH HIS 2421 [EXPECTED OP. SCHEDULE: HR/DAY DAY/WK WK/YF 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_ % OPACIT	OPERATING SCENARIOOF	1		EMISSION	POINT (STAC	K) ID NO(S):		
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 (Forn 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 BY START CONSTRUCT TO? NSPS (SUBPART?): OOO NESHAP (SUBPART?): MACT (SUBPART?): PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB MAR-MAY JUN-AUG SEP-NOV EXPECTED ANNUAL THROUGHPUT (%): DEC-FEB MAR-MAY JUN-AUG SEP-NOV EXPECTED ANNUAL HOURS OF OPERATION: VISIBLE STACK EMISSIONS UNDER NORMAL OPERATION: <20	RAP Crushing System consisting of: One crusher (65 tph)	ROCESS (A	TTACH FL	OW DIAGR/	AM):			
□ Coal,wood,oil, gas, other burner (Forr □ Woodworking (Form B4) □ Manufact. of chemicals/coatings/inks (Form B7) □ Int.combustion engine/generator (Forn □ 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	One screen							
□ Coal,wood,oil, gas, other burner (Forr □ Woodworking (Form B4) □ Manufact. of chemicals/coatings/inks (Form B7) □ Int.combustion engine/generator (Forn □ 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	TYPE OF EMISSION SOURCE (CHECK A	ND COMPL	ETE APPR		ORM B1-B9 O			ES):
□ Int.combustion engine/generator (Form □ Coating/finishing/printing (Form □ Incineration (Form B8) □ Liquid storage tanks (Form B3) □ Storage silos/bins (Form B6) ③ START CONSTRUCTION DATE: [OPERATION DATE:: DATE MANUFACTURED: MANUFACTURER / MODEL NO.: TELSMITH HIS 2421 [EXPECTED OP. SCHEDULE:								•
□ Liquid storage tanks (Form B3) □ Storage silos/bins (Form B6) Other (Form B9) START CONSTRUCTION DATE: IDATE MANUFACTURED: MANUFACTURER / MODEL NO.: TELSMITH HIS 2421 EXPECTED OP. SCHEDULE: HR/DAY DAY/WK WK/YF IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?): OOO	Int.combustion engine/generator (Forn Coatin	a/finishina/p	rintina (For	n 🗂 Inciner	ation (Form B	3)	•	
START CONSTRUCTION DATE: OPERATION DATE: DATE MANUFACTURED: MANUFACTURER / MODEL NO.: TELSMITH HIS 2421 EXPECTED OP. SCHEDULE: HR/DAY DAYWK WKYFF IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?): MACT (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_					•	1		
MANUFACTURER / MODEL NO: TELSMITH HIS 2421 EXPECTED OP, SCHEDULE: HR/DAY DAY/WK WKYF IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?): OOO			_ (. 5 20)					
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):OOONESHAP (SUBPART?):MACT (SUBPART?):PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEBMAR-MAYJUN-AUGSEP-NOV EXPECTED ANNUAL HOURS OF OPERATION: VISIBLE STACK EMISSIONS UNDER NORMAL OPERATION: <20 % OPACIT CRITERIA AIR POLLUTANT.EMISSIONSINFORMATION.FOR THIS SOURCE SOURCE OF EXPECTED ACTUAL POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) (AFTER CONTROLS / LIMITS) (AFTER CONTROLS / LIMITS) (AFTER CONTROLS / LIMITS) (AFTER CONTROLS / LIMITS) (AFTER CONTROLS / LIMITS) PARTICULATE MATTER (PM) See Appendix A PARTICULATE MATTER (PM) See Appendix A PARTICULATE MATTER (PM) See Appendix A SULFUR DIOXIDE (SO2) SULFUR DIOXIDE (SO2) NITROGEN OXIDES (NOX) CARBON MONOXIDE (CO) OTHER OTHER MAZARDOUS AIR POLLUUTANT/EMISSIONS INFORMATION FOR THIS SOURCE SOURCE OF EXPECTED ACTUAL EMISSION AFTER CONTROLS / LIMITS) (AFTER CONTROLS / LIMITS) (Invocoto					14/1/0/00
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB MAR-MAY JUN-AUG SEP-NOV EXPECTED ANNUAL HOURS OF OPERATION: VISIBLE STACK EMISSIONS UNDER NORMAL OPERATION: _<20 % OPACIT								
EXPECTED ANNUAL HOURS OF OPERATION: VISIBLE STACK EMISSIONS UNDER NORMAL OPERATION: _<20 % OPACIT				·····	······):
CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE SOURCE O EXPECTED ACTUAL POTENTIAL EMSSIONS AIR POLLUTANT EMITTED FACTOR Ib/In tons/yr Ib/In tons/yr Ib/In tons/yr AIR POLLUTANT EMITTED FACTOR Ib/In tons/yr Ib/In Ib/In In Ib/In Ib/In Ib/In In In In <t< td=""><td></td><td></td><td></td><td></td><td></td><td>-</td><td></td><td>0040177/</td></t<>						-		0040177/
SOURCE O EXPECTED ACTUAL POTENTIAL EMSSIONS AIR POLLUTANT EMITTED FACTOR Ib/hr tons/yr Ib/hr Ib/hr to								
EMISSION AFTER CONTROLS / LIMITS) (BEFORE CONTROLS / LIMITS) (AFTER CONTROLS / LIMITS) AIR POLLUTANT EMITTED FACTOR Ib/hr tons/yr Ib/hr Ib/hr tons/yr Ib/hr <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
AIR POLLUTANT EMITTED FACTOR Ib/hr tons/yr Ib/hr tons/yr Ib/hr tons/yr PARTICULATE MATTER (PM) See Appendix A							1	
PARTICULATE MATTER (PM) See Appendix A Image: Constraint of the second sec				1		1		
PARTICULATE MATTER<10 MICRONS (PM10)				tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER<2.5 MICRONS (PM2.6)		See Apper	ndix A				<u> </u>	
SULFUR DIOXIDE (SO2) Image: Solid and the solid and th								
NITROGEN OXIDES (NOx)								
CARBON MONOXIDE (CO) Image: Constraint of the second s					·	·		
VOLATILE ORGANIC COMPOUNDS (VOC) Image: Compound of the second of th								
LEAD OTHER OTHER Image: Control of the control of								
OTHER OTHER HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE SOURCE O EXPECTED ACTUAL POTENTIAL EMSSIONS EMISSION AFTER CONTROLS / LIMITS) (BEFORE CONTROLS / LIMITS) (AFTER CONTROLS / LIM								
HAZARDOUS AIR POLILUITANT EMISSIONS INFORMATION FOR THIS SOURCE. SOURCE O EXPECTED ACTUAL POTENTIAL EMSSIONS EMISSION AFTER CONTROLS / LIMITS) (BEFORE CONTROLS / LIMITS) (AFTER CONTROLS / LIM								
SOURCE O EXPECTED ACTUAL POTENTIAL EMSSIONS EMISSION AFTER CONTROLS / LIMITS) (BEFORE CONTROLS / LIMITS) (AFTER CONTROLS / LIM		JARE SERV	15/57/57/15					STRATE BOOK
EMISSION AFTER CONTROLS / LIMITS) (BEFORE CONTROLS / LIMITS) (AFTER CONTROLS / LIM								NUMBER OF STREET
	E E E E E E E E E E E E E E E E E E E						1	
Imazakuous Aik Pollutianti Anu Gas NO. FACTOR ib/hr tons/yr lb/hr tons/yr lb/hr tons/yr Imazakuous Aik Pollutianti Anu Gas NO. FACTOR ib/hr tons/yr lb/hr lb/hr tons/yr lb/hr tons/yr lb/hr lb/hr tons/yr <t< td=""><td></td><td></td><td></td><td></td><td colspan="3"></td><td></td></t<>								
Image: state stat	HAZARDOUS AIR POLLUTANT AND CAS NO.	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	ib/hr	tons/yr
						i		
Image: state stat	· · · · · · · · · · · · · · · · · · ·		· · · ·					······
			L	· · · · ·				
	and the second					· · · · · ·		
		<u> </u>						
								·····
			100000					
TOXICAIR POLILUTANT EMISSIONS INFORMATION FOR THIS SOURCE							E	
INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS								
TOXIC AIR POLLUTANT AND CAS NO. EF SOURCE Ib/hr ib/day ib/yr	TOXIC AIR POLLUTANT AND CAS NO.	F SOURCE	lb.	/hr	lb/d	ay	lt.	/yr
								<u> </u>
		·						
								
		montena	1	FOOLLOOK F	0.000			
Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and tederal 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.	this source.					-		

CLETE 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 Quali	ity - Application	n for Air Permit to Construct/C	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 OF1		EMISSION POINT (STACK) I	D NO(S):							
DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGR/	AM):									
RAP Crushing System consisting of: One crusher (65 tph)										
One conveyor										
One screen				•						
MATERIALS ENTERING PROCESS CONTINUOUS PR	OCESSAR DE	MAX. DESIGN	REQUESTED C/	PACITY						
ТҮРЕ	UNITS	CAPACITY (UNIT/HR)	LIMITATION(UN	IT/HR)						
RAP	tons	65								
				··						
			······							
	-									
			· · · · · · · · · · · · · · · · · · ·							
MATERIALS ENTERING PROCESS - BATCHIOPERA		MAX. DESIGN	REQUESTED CA							
TYPE	UNITS	CAPACITY (UNIT/BATCH)								
				ion on y						
				· • • • • • • •						
· · · · · · · · · · · · · · · · · · ·	_		<u> </u>							
	-									
		·								
			·							
				2779-07-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0						
MAXIMUM DESIGN (BATCHES / HOUR):			· · ·							
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/)	/R):								
FUEL USED:	TOTAL MAX	IMUM FIRING RATE (MILLION	BTU/HR):							
MAX. CAPACITY HOURLY FUEL USE:	REQUESTE	D CAPACITY ANNUAL FUEL U	SE:							
COMMENTS:										
			· · · · · · · · · · · · · · · · · · ·							

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SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 12/01/C NCDENR/Division of	Air Quality	- Applicati	on for Air P	ermit to Cons	struct/Operat	e	В
EMISSION SOURCE DESCRIPTION:			EMISSION	SOURCE ID	NO:	RM-1 thr	ough RM-5
Truck Mix Concrete Batch Plant (120 c	ubic vard	s per hou	CONTROL	DEVICE ID N	O(S):	N/A	
OPERATING SCENARIOOF	1_			POINT (STAC		;	
DESCRIBE IN DETAILTHE EMISSION SOURCE F	ROCESS (ATTACH FL					
Truck Mix Concrete Batch Plant (120 cubic yard	s 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 maxi	mum capac	ity)					
Aggregate weigh batcher (5 tons maximur	n capacity)						
TYPE OF EMISSION SOURCE (CHECK A	ND COMPLI	ETE APPR	OPRIATE F	ORM B1-B9 O	N THE FOLL	OWING PA	GES):
Coal,wood,oil, gas, other burner (Forr Wood	working (Fo	rm B4)	🛄 Manuf	act. of chemica	als/coatings/ir	nks (Form B	7)
Int.combustion engine/generator (For Coatir	ıg/finishing/p	printing (For	r 🔲 Inciner	ation (Form Ba	8)		
Liquid storage tanks (Form B3)	ige silos/bin	s (Form B6)	Other	(Form B9)			
START CONSTRUCTION DATE: OPERATI	ON DATE:	· · · · · ·	DATE MAN	UFACTURED	:	······································	
MANUFACTURER / MODEL NO .:	······	EXPECTE	D OP. SCH	EDULE: H	R/DAY	DAY/WK	WK/YR
IS THIS SOURCE SUBJECT TO? NSPS (SUBPAR	XT?):	NESI	HAP (SUBP	ART?):	MAC	T (SUBPAR	T?):
PERCENTAGE ANNUAL THROUGHPUT (%): DEC	C-FEB	MAR-M	AY	JUN-AUG		SEP-NOV	
EXPECTED ANNUAL HOURS OF OPERATION:				DER NORMAL			% OPACITY
ORITERIA AIR POLLUT	an <i>tremis</i>	SIONS/I	NEORMAN	TIONIFOR	THIS SOU	roe	
	SOURCE O	EXPECTE	D ACTUAL		POTENTIAL	EMSSIONS	
	EMISSION	AFTER CONT	ROLS / LIMITS)	(BEFORE CONT	ROLS / LIMITS)	(AFTER CON	TROLS / LIMITS)
AIR POLLUTANT EMITTED	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM)	See Apper	ndix A					
PARTICULATE MATTER<10 MICRONS (PM10)							
PARTICULATE MATTER<2.5 MICRONS (PM2.5)				·			
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)]				<u> </u>		
LEAD							
OTHER		NAME AND ADDRESS	WAANDA AND AND AND AND AND AND AND AND AN	A STREET PROVIDENCE AND A			STERT SOLATION MONOTONICAL
HAZARDOUS AIR POLLU	the second se						
	SOURCE O				POTENTIAL	MSSIONS	
		E		(BEFORE CONT			TROLS / LIMITS)
HAZARDOUS AIR POLLUTANT AND CAS NO.	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
See Appendix A					ļ		
					<u> </u>		
						ļ	
······							
						ļ	
·		· · · ·					•
					ļ		
							THE REPORT OF
TOXICAIR POLIUTAN						ÆU.	
		· · · · · · · · · · · · · · · · · · ·				r	
www	EF SOURCI	lb.	/hr	lb/d	lay		o/yr
See Appendix A	 						
			·				
	 					<u> </u>	
	 						<u> </u>
Attachments: (1) emissions calculations and supporting doc	umentation: (/) indicate all	tequested sta	te and tederal or	tomeshie nem	nit limits /e.c.	nours of
operation, emission rates) and describe how these are mon							

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

Attach Additional Sheets As Necessary Page 12 of 14

File: Forms 2017-03-09 Sheet: B - Concrete Batch

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FORM B9 EMISSION SOURCE (OTHER)

REVISED: 12/01/01 NCDENR/Division	of Air Quality - Applicat	ion for Air Permit to Construct	t/Operate	B9				
EMISSION SOURCE DESCRIPTION: EMISSION SOURCE ID NO: RM-1 through RM-5								
Truck Mix Concrete Batch Plant (120 cut	oic yards per hour) con	CONTROL DEVICE ID NO(S)	N/A					
OPERATING SCENARIO:1 O	NO(S):							
DESCRIBE IN DETAIL THE PROCESS (ATTACH) Truck Mix Concrete Batch Plant (120 c Cement silo (185 tons maximum Fly ash silo (135 tons maximum Truck loadout point Cement/flyash weigh batcher (5	cubic yards per ho capacity) capacity)							
MATERIALSIENTERING PROCESS CONTINUES TYPE		MAX. DESIGN CAPACITY (UNIT/HR)	REQUESTED CA LIMITATION(UNI					
Cement	lbs	448	<u> </u>					
Supplement	lbs	148	· · · · · · · · · · · · · · · · · · ·					
Coarse Aggregate	lbs	1980		·				
Sand Water	lbs lbs	1440 140						
MATERIALSENTERINGPROCESS	CHOPERATION	MAX. DESIGN	REQUESTED CA	PACITY				
TYPE	UNI	CAPACITY (UNIT/BATCH)	LIMITATION (UNIT/					
MAXIMUM DESIGN (BATCHES / HOUR):			<u></u>					
REQUESTED LIMITATION (BATCHES / HOUR):	(BATC	HES/YR):						
FUEL USED:		TAL MAXIMUM FIRING RATE (MILLION BTU/HR):						
MAX. CAPACITY HOURLY FUEL USE:		QUESTED CAPACITY ANNUAL FUEL USE:						
COMMENTS:			<u></u>					

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FORM C1

	Division of Air Qua	•		•	rate	CT
CONTROL DEVICE ID NO: HMA-CD1	CONTROLS EMI	SSIONS FROM	WHICH EMISSI	ON SOURCE ID NO	D(S): See Fo	rm A2&A3
EMISSION POINT (STACK) ID NO(S): EP-1	POSITION IN SE	RIES OF CONTI	ROLS	NC). 1 OF 1	UNITS
MANUFACTURER: Astec		MODEL NO:	RBH45:DB		- 44 44 - 11 - 11 11 11 14	
DATE MANUFACTURED: 1995		PROPOSED O	PERATION DA	TE: 8/1/2016	····	
OPERATING SCENARIO				RUCTION DATE:	06/01/2016	
		P.E. SEAL RE	QUIRED (PER 2	20.0112)?	YES	ð NO
DESCRIBE CONTROL SYSTEM: Astec Model RBH-45 - 45,00 HMA Plant.	0 CFM to cont	trol emissic	ns from dr	ying and mix	ing drums in	i the
POLLUTANT(S) COLLECTED:	interfering and a split level of the constrained	PM	PM10	<u></u>		
BEFORE CONTROL EMISSION RATE (LB/HR):		See Appen	dix A			-
CAPTURE EFFICIENCY:		<u>~100</u> %	~100	%	_%	_%
CONTROL DEVICE EFFICIENCY:		~93 %	~90	%	_%	%
CORRESPONDING OVERALL EFFICIENCY:		<u>93</u> %	90	%	%	%
EFFICIENCY DETERMINATION CODE:		1	1			_
TOTAL EMISSION RATE (LB/HR):		See Appen	dix A			_
PRESSURE DROP (IN. H ₂ 0): MIN: MAX:	GAUGE	? YES	e NO	WARNING ALAR	M? d YES	l NO
BULK PARTICLE DENSITY (LB/FT ³):	······································	INLET TEMPE	RATURE (°F):	MIN M/	X .	
POLLUTANT LOADING RATE: & LB/HI		OUTLET TEM	PERATURE (°F)	: MIN MA	x	
NLET AIR FLOW RATE (ACFM): 45,000 cfr	n .	FILTER MAX C	PERATING TE	MP. (°F):		
NO. OF COMPARTMENTS: 1 NO. OF BAG	S PER COMPARTM	ENT: 640		LENGTH OF BA	AG (IN.): 120 .	5 inches
DIAMETER OF BAG (IN.): 4 5/8 inch DRAFT:		G. 👌 FORCE	D/POS.	FILTER SURFA	CE AREA (FT ²):	7778
AIR TO CLOTH RATIO: 5.78:1 FILTER MAT	ERIAL:	Nomex		& wovi		
DESCRIBE CLEANING PROCEDURES:					ICLESIZEDISTR	CONTRACTOR OF CONTRACTOR
				SIZE	WEIGHT %	CUMULATIVE
REVERSE FLOW	SIMPLE BAG			(MICRONS)	OF TOTAL	%
	RING BAG C	OLLAPSE		0-1	<u>40</u> 60	40.2 100
d OTHER	·			1-10		100
DESCRIBE INCOMING AIR STREAM: Hot air from drying and mixing drums in HMA plant						
					+	
				50-100		
				>100		AL = 100
METHOD FOR DETERMINING WHEN TO CLEAN:						
				· · · · · ·		
		SION d	DTHER			
MOISTURE BLINDING & CHEMICAL RES	SISTIVITY	OTHER				
EXPLAIN:						
DESCRIBE MAINTENANCE PROCEDURES: Month	ly inspections unles	ss more frequei	t indicated. A	record will be mai	ntained on the a	ge
of each bag and of each bag replaced du	le to detected p	roblem or pe	r manufactu	ırer's		
recommended schedule.	E					
DN A SEPARATE PAGE ATTACH A DIAGRAM SHO		ONSHIP OF THE			SION SOURCE/S	;).

Attach Additional Sheets As Necessary

Carolina Sunrock

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File: Forms 2017-03-09 Sheet: C1 - HMA Bagfilter

FORM C1 CONTROL DEVICE (FABRIC FILTER)

REVISED 12/01/01		JNIROL DE	•		:K) to Construct/Opera	ta	CI
CONTROL DEVICE ID NO:	RMC-CD2	Т		·····			e Form A2&A3
EMISSION POINT (STACK) ID NO(S):		POSITION IN SEF			ON SOURCE ID NO		1 UNITS
			1				1 01113
MANUFACTURER: C&	N Manufactur	ing	MODEL NO:	RA-140	TE: 8/1/2016	•••	
	SCENARIO					06/01/2016	-
			<u> </u>	QUIRED (PER)		YES	ð NO
DESCRIBE CONTROL SYSTEM: C&W Manufacturing - RA-1 and aggregate and truck		FM to contro	l emissions	from cem	ent /fly ash sil	os	• •
POLLUTANT(S) COLLECTED:			РМ	PM10			_
BEFORE CONTROL EMISSION RATE	(LB/HR):						
CAPTURE EFFICIENCY:			%		%	%	%
CONTROL DEVICE EFFICIENCY:	CONTROL DEVICE EFFICIENCY:				<u> </u>	%	- %
CORRESPONDING OVERALL EFFICI	ENCY:		%			%	- %
EFFICIENCY DETERMINATION CODE	:			<u> </u>		<u> </u>	
TOTAL EMISSION RATE (LB/HR):			<u></u>	<u></u>	<u></u>		-
PRESSURE DROP (IN. H ₂ 0): MIN:	MAX:	GAUGE?	YES	e NO		M? ∉YES	
BULK PARTICLE DENSITY (LB/FT ³):		GAUGE:			MIN MA		
POLLUTANT LOADING RATE:	lB/HR	d GR/FT ³		PERATURE (°F)		······································	
INLET AIR FLOW RATE (ACFM):	6500 cfm			PERATING TE		· · · · · · · · · · · · · · · · · · ·	
NO. OF COMPARTMENTS: 2	T		1		LENGTH OF BA	3 (IN): 11	4 inches
DIAMETER OF BAG (IN.):	DRAFT:	INDUCED/NE	······	D/POS.	FILTER SURFAC		
AIR TO CLOTH RATIO: 4.54:1	FILTER MATERI		feit				
DESCRIBE CLEANING PROCEDURES				· · · · · · · · · · · · · · · · · · ·	A MAR PARTI	oue size distri	RIBUTION
AIR PULSE		SONIC			SIZE	WEIGHT %	CUMULATIVE
REVERSE FLOW		SIMPLE BAG C	OLLAPSE		(MICRONS)	OF TOTAL	%
MECHANICAL/SHAKER		🕴 RING BAG C	OLLAPSE		0-1	40	40.2
OTHER					1-10	60	100
DESCRIBE INCOMING AIR STREAM:	· · · · · · · · · · · · · · · · · · ·				10-25		
weighing and truck load	ing of aggreg	ate, fly ash and	l cement		25-50		
					50-100		
					>100		
						тот	AL = 100
METHOD FOR DETERMINING WHEN	TO CLEAN:						
	& MANUAL						
	INSPECTION		SION d	DTHER			
SPECIAL CONDITIONS: & MOISTURE BLINDING & CI EXPLAIN:	HEMICAL RESIST	IVITY	d OTHER				
DESCRIBE MAINTENANCE PROCEDU	JRES: Monthly in	spections unless	more frequent	ndicated. A re	cord will be mainta	ined on the age)
of each bag and of each bag r	eplaced due t	o detected pro	blem or per	manufacture	ər'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

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EMISSION CALCULATIONS Emissions Summary

Carolina Sunrock Prospect Hill

		HAP/T	Un	controlled Po	Central Emils	nuila.	n van heiden. Nederlander der d	Control Pol	tential Emissio	
urce Name	Pollutant	AP	(lb/hr)	(lbs/day)	(ibs/yr)	(tons/yr)	(lb/hr)	(lbs/day)	(lbs/yr)	(tons/y
t 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+
t blix rispitant i fant	PM-10	l	7.76E+00	1.86E+02	6.79E+04	3.40E+01	8.33E-01	2.00E+01	7.29E+03	3.65E+
	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+
	SO2	l	2.21E+01	5.30E+02	1.94E+05	9.68E+01	3.56E+00	8.53E+01	3.12E+04	1,56E+
	NOx		1.41E+01	3.38E+02	1.23E+05	6.17E+01	1.90E+00	4.56E+01	1.66E+04	8.31E+
	СО	<u> </u>	3.32E+01	7.97E+02	2.91E+05	1.45E+02	3,86E+00	9.27E+01	3.39E+04	1.69E+
	VOC	 	1.20E+01	2.89E+02	1.05E+05	5.27E+01	1.38E+00	3.31E+01	1.21E+04	6.04E+
	Acetaldehyde	н/т	3.25E-01	7.80E+00	2.85E+03	1.42E+00	3.25E-01	7.80E+00	3.25E+02	1.63E-
	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-
	Antimony unlisted compounds	н	4.50E-05	1.08E-03	3.94E-01	1.97E-04	4.50E-05	1.08E-03	4.50E-02	2.25E-
	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-
	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-
	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-
	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+
	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-
	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-
	Chromium unlisted empds (add w/chrom acid to get CRC		1.26E-03	3.03E-02	1.11E+01	5.53E-03	1.26E-03	3.03E-02	1.26E+00	6.31E-
	Chromic acid (VI) (component of solCR6 and CRC)	н/т	1.13E-04	2.70E-03	9.86E-01	4.93E-04	1.13E-04	2.70E-03	1.13E-01	5.63E-
	Cobalt unlisted compounds	Н	6.50E-06	1.56E-04	5.69E-02	2.85E-05	6.50E-06	1.56E-04	6.50E-03	3.25E-
	Cumene	Н	1.14E-03	2,74E-02	1.00E+01	5.01E-03	1.14E-03	2,74E-02	1.14E+00	5.72E-
	Ethyl benzene	н	6.41E-02	1.54E+00	5.61E+02	2.81E-01	6.41E-02	1.54E+00	6.41E+01	3.20E-
	Ethyl chloride (chloroethane)	н	2.18E-06	5.24E-05	1.91E-02	9.56E-06	2.18E-06	5.24E-05	2.18E-03	1.09E-
	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-
	Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8	Т	3.25E-10	7.80E-09	2.85E-06	1.42E-09	3.25E-10	7.80E-09	3.25E-07	1.63E-
	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-
	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-
	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-
	Lead unlisted compounds	н	3.75E-03	9.00E-02	3.29E+01	1.64E-02	3.75E-03	9.00E-02	3.75E+00	1,88E-
	Manganese unlisted compounds	Т	1.93E-03	4.62E-02	1.69E+01	8.43E-03	1.93E-03	4.62E-02	1.93E+00	9.63E-
	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-
	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-
	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-
	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-
	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-
	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-
	Napthalene	н	1.65E-01	3.95E+00	1.44E+03	7.21E-01	1.65E-01	3.95E+00	1.65E+02	8.24E-
	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-
	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-
	Phenol	н/т	1.01E-03	2.41E-02	8.81E+00	4.41E-03	1.01E-03	2.41E-02	1.01E+00	5.03E-
	Phosphorus Metal, Yellow or White	Н	7.00E-03	1.68E-01	6.13E+01	3.07E-02	7.00E-03	1.68E-01	7.00E+00	3.50E-
	Polycyclic Organic Matter	Н	2.20E-01	5.28E+00	1.93E+03	9.64E-01	2.20E-01	5.28E+00	2.20E+02	1.10E-
	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-
	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-
	Selenium compounds	Н	8.75E-05	2.10E-03	7.67E-01	3.83E-04	8.75E-05	2.10E-03	8.75E-02	4.38E-0
	Styrenc	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-0
	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-
	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-0
	Trichloroethylene	Н/Т	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+
	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-0
	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-0
	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-0
crete 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+
	PM-10 PM-2,5		3.93E+01	9.44E+02	3.44E+05	1.72E+02	2.44E+00	5.85E+01	2.13E+04 2.13E+04	1.07E+
		u/r	3.93E+01	9.44E+02	3.44E+05	1.72E+02	2.44E+00	5.85E+01		1.07E+
	Arsenic unlisted empds (comp. of ASC)	H/T	2.49E-03	5.97E-02	2.18E+01	1.09E-02 4.38E-05	6,59E-05	1.58E-03	5.77E-01	2.88E-0
	Beryllium metal (unreacted) Cadmium metal (elemental unreacted)	H/T H/T	1.00E-05 7.69E-06	2.40E-04	8.77E-02 6.74E-02	4.38E-05 3.37E-05	4.53E-06 5.00E-07	1.09E-04 1.20E-05	3.97E-02 4.38E-03	1.99E-0 2.19E-0
	Chromic acid (VI) (component of solCR6 and CRC)	H/I H	4.25E-06	1.85E-04 1.02E-02	3.73E+00	3.37E-03	1.58E-04	3.80E-03	4.38E-03	6.93E-0
		H I	4.25E-04 1.32E-03	1.02E-02 3.17E-02		1.86E-03 5.78E-03	1.58E-04 5.96E-05	1.43E-03	5.22E-01	2.61E-0
	Lead unlisted compounds Manganese unlisted compounds	H H/T	1.32E-03 7.67E-03		1.16E+01	3.36E-03	5.96E-05 7.49E-04	1.43E-03	5.22E-01 6.56E+00	2.61E-0 3.28E-0
		H/T		1.84E-01	6.72E+01 8.05E+00	4.02E-02	1.92E-04	4.62E-02		3.28E-0 8.42E-0
	Nickel metal Phosphopus Matal. Vellow or White		9.19E-04 1.72E-03	2.21E-02		4.02E-03 7.54E-03	4.71E-04	4.62E-03	1.68E+00 4.13E+00	8.42E-0 2.06E-0
	Phosphorus Metal, Yellow or White Selenium compounds	H H	9.43E-05	4.13E-02 2.26E-03	1.51E+01 8.26E-01	4.13E-04	4.71E-04 4.68E-06	1.13E-02 1.12E-04	4.13E+00 4.10E-02	2.06E-0
halt Cement Heater*	2-Methylnaphthalene	**	2.81E-08			4.13E-04 1.23E-07	2.81E-08	6.74E-07	2.46E-04	1.23E-0
ian Cement rieater"	2-Methylnaphtnalene 3-Methylchloranthrene		2.81E-08 2.11E-09	6.74E-07 5.05E-08	2.46E-04 1.84E-05	9.22E-09	2.81E-08 2.11E-09	6.74E-07 5.05E-08	2.46E-04 1.84E-05	9.22E-0
				5.05E-08 4.49E-07	1.84E-05 1.64E-04		1.87E-08	4.49E-07		9.22E-0 8.20E-0
	7,12-Dimethylbenz(a)anathracene Acenaphthene	H	1.87E-08 1.81E-07			8.20E-08 7.92E-07	1.87E-08 1.81E-07	4.49E-07 4.34E-06	1.64E-04 1.58E-03	7.92E-0
				4.34E-06 5.20E-08	1.58E-03	9.50E-09	2.17E-09	4.34E-06 5.20E-08	1.58E-03 1.90E-05	9.50E-C
	Accenaphtylene	H V/T	2.17E-09		1.90E-05					
	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-0
	Acrolein	H/T T	2.11E-08	5.05E-07	1.84E-04	9.22E-08	2.11E-08	5.05E-07	1.84E-04	9.22E-0
	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-0
	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-0
	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-0
	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-0
	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-0
	Benzo(b)fluoranthene	н	1.27E-08	3.04E-07	1.11E-04	5.56E-08	1.27E-08	3.04E-07	1.11E-04	5.56E-0
		·· T	1.94E-08	4.65E-07	1.70E-04	8.48E-08	1.94E-08	4.65E-07	1.70E-04	8.48E-0
	Benzo(g,h,i)perylene	Н								
	Benzo(k)fluoranthene	H H	2.11E-09	5.05E-08	1.84E-05	9.22E-09	2.11E-09	5.05E-08	1.84E-05	9.22E-0

Carolina Sunrock

Appendix A Emission Calculations Page 1 of 6

File:TAP summary 2016-12-05 Sheet:Emissions Summary

EMISSION CALCULATIONS Emissions Summary

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Carolina Sunrock Prospect Hill

			Un	controlled Po	tential Emiss	ions		Controlled Pot	ential Emissior	is .
Source Name	Pollutant	HAP/T AP	(ib/hr)	(lbs/day)	(lbs/yr)	(tons/yr)	(lb/hr)	(lbs/day)	(lbs/yr)	(tons/yr)
onice insuie	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	Н	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	н	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	н н/т	3.83E-08 2.83E-04	9.20E-07 6.79E-03	3.36E-04 2.48E+00	1.68E-07 1.24E-03	3.83E-08 2.83E-04	9.20E-07 6.79E-03	3.36E-04 2.48E+00	1.68E-07 1.24E-03
	Formaldehyde Hexane	н/т	2.83E-04 2.11E-03	5.05E-02	1.84E+01	9.22E-03	2.83E-04 2.11E-03	5.05E-02	1.84E+01	9.22E-03
	Indeno(1,2,3-cd)pyrene	н	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	н	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	н	9.00E-08	2.16E-06	7.88E-04	3.94E-07	9.00E-08 1.87E-03	2.16E-06 4.49E-02	7.88E-04 1.64E+01	3.94E-07 8.20E-03
	Propane Pyrene	н	3.64E-08	4.49E-02 8.74E-07	1.64E+01 3.19E-04	8.20E-03 1.60E-07	3.64E-08	8.74E-02	3.19E-04	1.60E-07
	Toluene	Н/Т	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	Н/Т	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	нл т	5.15E-06 3.60E-06	1.24E-04 8.64E-05	4.51E-02	2.25E-05	5.15E-06 3.60E-06	1.24E-04 8.64E-05	4.51E-02 3.15E-02	2.25E-05 1.58E-05
	Beryllium Cadmium	H/T	3.60E-06	8.64E-05	3.15E-02 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 3.60E-06	1.73E-04	6.31E-02	3.15E-05 1.58E-05	7.20E-06 3.60E-06	1.73E-04 8.64E-05	6.31E-02 3.15E-02	3.15E-05 1.58E-05
	Mercury Molybdenum	Н/Т	1.29E-06	8.64E-05 3.09E-05	3.15E-02 1.13E-02	1.58E-05 5.64E-06	1.29E-06	8.64E-05 3.09E-05	1.13E-02	5.64E-06
	Nickel	нл	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	н	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
quid Asphalt Tank Heater**	PM		1.57E-02	3.77E-01	1.38E+02	6.88E-02	1.57E-02 9.75E-03	3.77E-01	1.38E+02	6.88E-02
	PM-10 SO2		9.75E-03 5.58E-01	2.34E-01 1.34E+01	8.54E+01 4.89E+03	4.27E-02 2.44E+00	9.75E-03 5.58E-01	2.34E-01 1.34E+01	8.54E+01 4.89E+03	4.27E-02 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	н	1.72E-08 1.66E-07	4.12E-07 3.98E-06	1.50E-04 1.45E-03	7.51E-08 7.26E-07	1.72E-08 1.66E-07	4.12E-07 3.98E-06	1.50E-04 1.45E-03	7.51E-08 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 Benzene	H H/T	3.15E-08 2.25E-06	7.56E-07 5.40E-05	2.76E-04 1.97E-02	1.38E-07 9.86E-06	3.15E-08 2.25E-06	7.56E-07 5.40E-05	2.76E-04 1.97E-02	1.38E-07 9.86E-06
	Benzo(a)pyrene	H/T	1.29E-09	3.09E-08	1.13E-02	5.64E-09	1.29E-09	3.09E-08	1.13E-02	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	Н	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 8.19E-08
	Chrysene Dihama (a b)arthereter	H	1.87E-08 1.31E-08	4.49E-07 3.15E-07	1.64E-04 1.15E-04	8.19E-08 5.75E-08	1.87E-08 1,31E-08	4.49E-07 3.15E-07	1.64E-04 1.15E-04	5.75E-08
	Dibenzo(a,h)anthracene Dichlorobenzene	н/Т	1.31E-08 1.29E-06	3.09E-05	1.13E-04	5.64E-06	1.31E-06	3.09E-05	1.13E-04	5.64E-06
			3.32E-03	7.98E-02	2.91E+01	1.46E-02	3.32E-03	7.98E-02	2.91E+01	1.46E-02
	Ethanc						5,00E-07	1.20E-05	4.38E-03	2.19E-06
	Ethanc Ethylbenzene	Н	5.00E-07	1.20E-05	4.38E-03	2.19E-06	3,006-07		4.566-05	
		H H	5.00E-07 3.80E-08	1.20E-05 9.13E-07	3.33E-04	1.67E-07	3.80E-08	9.13E-07	3.33E-04	1.67E-07
	Ethylbenzene Fluoranthene Fluorene	H H	5.00E-07 3.80E-08 3.51E-08	1.20E-05 9.13E-07 8.43E-07	3.33E-04 3.08E-04	1.67E-07 1.54E-07	3.80E-08 3.51E-08	8.43E-07	3.33E-04 3.08E-04	1.54E-07
	Ethylbenzene Fluoranthene Fluorene Formaldehyde	H H H/T	5.00E-07 3.80E-08 3.51E-08 2.59E-04	1.20E-05 9.13E-07 8.43E-07 6.22E-03	3.33E-04 3.08E-04 2.27E+00	1.67E-07 1.54E-07 1.14E-03	3.80E-08 3.51E-08 2.59E-04	8.43E-07 6.22E-03	3.33E-04 3.08E-04 2.27E+00	1.54E-07 1.14E-03
	Ethylbenzene Fluoranthene Fluorene Formaldehyde Hexane	H H H/T H/T	5.00E-07 3.80E-08 3.51E-08 2.59E-04 1.93E-03	1.20E-05 9.13E-07 8.43E-07 6.22E-03 4.63E-02	3.33E-04 3.08E-04 2.27E+00 1.69E+01	1.67E-07 1.54E-07 1.14E-03 8.45E-03	3.80E-08 3.51E-08 2.59E-04 1.93E-03	8.43E-07 6.22E-03 4.63E-02	3.33E-04 3.08E-04 2.27E+00 1.69E+01	1.54E-07 1.14E-03 8.45E-03
	Ethylbenzene Fluoranthene Fluorene Formaldehyde Hexane Indeno(1,2,3-cd)pyrene	H H/T H/T H/T H	5.00E-07 3.80E-08 3.51E-08 2.59E-04	1.20E-05 9.13E-07 8.43E-07 6.22E-03 4.63E-02 4.04E-07	3.33E-04 3.08E-04 2.27E+00 1.69E+01 1.47E-04	1.67E-07 1.54E-07 1.14E-03	3.80E-08 3.51E-08 2.59E-04	8.43E-07 6.22E-03	3.33E-04 3.08E-04 2.27E+00	1.54E-07 1.14E-03
	Ethylbenzene Fluoranthene Fluorene Formaldehyde Hexane	H H H/T H/T	5.00E-07 3.80E-08 3.51E-08 2.59E-04 1.93E-03 1.68E-08	1.20E-05 9.13E-07 8.43E-07 6.22E-03 4.63E-02	3.33E-04 3.08E-04 2.27E+00 1.69E+01	1.67E-07 1.54E-07 1.14E-03 8.45E-03 7.36E-08	3.80E-08 3.51E-08 2.59E-04 1.93E-03 1.68E-08	8.43E-07 6.22E-03 4.63E-02 4.04E-07	3.33E-04 3.08E-04 2.27E+00 1.69E+01 1.47E-04	1.54E-07 1.14E-03 8.45E-03 7.36E-08
	Ethylbenzene Fluorente Fluorene Formaldehyde Hexanc Indeno(1,2,3-cd)pyrene Naphthalene OCDD Pentane	H H/T H/T H/T H H	5.00E-07 3.80E-08 3.51E-08 2.59E-04 1.93E-03 1.68E-08 8.88E-06 2.44E-11 2.79E-03	1.20E-05 9.13E-07 8.43E-07 6.22E-03 4.63E-02 4.04E-07 2.13E-04 5.85E-10 6.69E-02	3.33E-04 3.08E-04 2.27E+00 1.69E+01 1.47E-04 7.78E-02 2.13E-07 2.44E+01	1.67E-07 1.54E-07 1.14E-03 8.45E-03 7.36E-08 3.89E-05 1.07E-10 1.22E-02	3.80E-08 3.51E-08 2.59E-04 1.93E-03 1.68E-08 8.88E-06 2.44E-11 2.79E-03	8.43E-07 6.22E-03 4.63E-02 4.04E-07 2.13E-04 5.85E-10 6.69E-02	3.33E-04 3.08E-04 2.27E+00 1.69E+01 1.47E-04 7.78E-02 2.13E-07 2.44E+01	1.54E-07 1.14E-03 8.45E-03 7.36E-08 3.89E-05 1.07E-10 1.22E-02
	Ethylbenzene Ethylbenzene Fluorente Formaldehyde Hexane Indeno(1,2,3-cd)pyrene Naphthalene OCDD Pentane Phenanathrene	H H/T H/T H/T H	5.00E-07 3.80E-08 3.51E-08 2.59E-04 1.93E-03 1.68E-08 8.88E-06 2.44E-11 2.79E-03 8.25E-08	1.20E-05 9.13E-07 8.43E-07 6.22E-03 4.63E-02 4.04E-07 2.13E-04 5.85E-10 6.69E-02 1.98E-06	3.33E-04 3.08E-04 2.27E+00 1.69E+01 1.47E-04 7.78E-02 2.13E-07 2.44E+01 7.23E-04	1.67E-07 1.54E-07 1.14E-03 8.45E-03 7.36E-08 3.89E-05 1.07E-10 1.22E-02 3.61E-07	3.80E-08 3.51E-08 2.59E-04 1.93E-03 1.68E-08 8.88E-06 2.44E-11 2.79E-03 8.25E-08	8.43E-07 6.22E-03 4.63E-02 4.04E-07 2.13E-04 5.85E-10 6.69E-02 1.98E-06	3.33E-04 3.08E-04 2.27E+00 1.69E+01 1.47E-04 7.78E-02 2.13E-07 2.44E+01 7.23E-04	1.54E-07 1.14E-03 8.45E-03 7.36E-08 3.89E-05 1.07E-10 1.22E-02 3.61E-07
	Ethylbenzene Ethylbenzene Fluorene Formaldehyde Hexane Indenc(1,2,3-cd)pyrene Naphthalene OCDD Pentane Phenanaltyrene Propane Propane	H H/T H/T H/T H H	5.00E-07 3.80E-08 3.51E-08 2.59E-04 1.93E-03 1.68E-08 8.88E-06 2.44E-11 2.79E-03 8.25E-08 1.72E-03	1.20E-05 9.13E-07 8.43E-07 6.22E-03 4.63E-02 4.04E-07 2.13E-04 5.85E-10 6.69E-02 1.98E-06 4.12E-02	3.33E-04 3.08E-04 2.27E+00 1.69E+01 1.47E-04 7.78E-02 2.13E-07 2.44E+01 7.23E-04 1.50E+01	1.67E-07 1.54E-07 1.14E-03 8.45E-03 7.36E-08 3.89E-05 1.07E-10 1.22E-02 3.61E-07 7.51E-03	3.80E-08 3.51E-08 2.59E-04 1.93E-03 1.68E-08 8.88E-06 2.44E-11 2.79E-03 8.25E-08 1.72E-03	8.43E-07 6.22E-03 4.63E-02 4.04E-07 2.13E-04 5.85E-10 6.69E-02 1.98E-06 4.12E-02	3.33E-04 3.08E-04 2.27E+00 1.69E+01 1.47E-04 7.78E-02 2.13E-07 2.44E+01 7.23E-04 1.50E+01	1.54E-07 1.14E-03 8.45E-03 7.36E-08 3.89E-05 1.07E-10 1.22E-02 3.61E-07 7.51E-03
	Ethylbenzene Ethylbenzene Fluorene Fluorene Formaldehyde Hexane Indenc(1,2,3-cd)pyrene Naphthalene OCDD Pentane Phenamathrene Propane Pyrene Pyrene	H H/T H/T H/T H H H H	5.00E-07 3.80E-08 3.51E-08 2.59E-04 1.93E-03 1.68E-08 8.88E-06 2.44E-11 2.79E-03 8.25E-08 1.72E-03 3.34E-08	1.20E-05 9.13E-07 8.43E-07 6.22E-03 4.63E-02 4.04E-07 2.13E-04 5.85E-10 6.69E-02 1.98E-06 4.12E-02 8.01E-07	3.33E-04 3.08E-04 2.27E+00 1.69E+01 1.47E-04 7.78E-02 2.13E-07 2.44E+01 7.23E-04 1.50E+01 2.93E-04	1.67E-07 1.54E-07 1.14E-03 8.45E-03 7.36E-08 3.89E-05 1.07E-10 1.22E-02 3.61E-07 7.51E-03 1.46E-07	3.80E-08 3.51E-08 2.59E-04 1.93E-03 1.68E-08 8.88E-06 2.44E-11 2.79E-03 8.25E-08 1.72E-03 3.34E-08	8.43E-07 6.22E-03 4.63E-02 4.04E-07 2.13E-04 5.85E-10 6.69E-02 1.98E-06 4.12E-02 8.01E-07	3.33E-04 3.08E-04 2.27E+00 1.69E+01 1.47E-04 7.78E-02 2.13E-07 2.44E+01 7.23E-04 1.50E+01 2.93E-04	1.54E-07 1.14E-03 8.45E-03 7.36E-08 3.89E-05 1.07E-10 1.22E-02 3.61E-07 7.51E-03 1.46E-07
	Ethylbenzene Ethylbenzene Fluorente Formaldehyde Hexane Indeno(1,2,3-cd)pyrene Naphthalene OCDD Pentane Phenanathrene Propane Pyrene Toluene Ocup	H H/T H/T H/T H H	5.00E-07 3.80E-08 3.51E-08 2.59E-04 1.93E-03 1.68E-08 8.88E-06 2.44E-11 2.79E-03 8.25E-08 1.72E-03 3.34E-08 4.87E-05	1.20E-05 9.13E-07 8.43E-07 6.22E-03 4.63E-02 4.04E-07 2.13E-04 5.85E-10 6.69E-02 1.98E-06 4.12E-02 8.01E-07 1.17E-03	3.33E-04 3.08E-04 2.27E+00 1.69E+01 1.47E-04 7.78E-02 2.13E-07 2.44E+01 7.23E-04 1.50E+01 2.93E-04 4.27E-01	1.67E-07 1.54E-07 1.14E-03 8.45E-03 7.36E-08 3.89E-05 1.07E-10 1.22E-02 3.61E-07 7.51E-03 1.46E-07 2.13E-04	3.80E-08 3.51E-08 2.59E-04 1.93E-03 1.68E-08 8.88E-06 2.44E-11 2.79E-03 8.25E-08 1.72E-03 3.34E-08 4.87E-05	8.43E-07 6.22E-03 4.63E-02 4.04E-07 2.13E-04 5.85E-10 6.69E-02 1.98E-06 4.12E-02 8.01E-07 1.17E-03	3.33E-04 3.08E-04 2.27E+00 1.69E+01 1.47E-04 7.78E-02 2.13E-07 2.44E+01 7.23E-04 1.50E+01 2.93E-04 4.27E-01	1.54E-07 1.14E-03 8.45E-03 7.36E-08 3.89E-05 1.07E-10 1.22E-02 3.61E-07 7.51E-03 1.46E-07 2.13E-04
••	Ethylbenzene Ethylbenzene Fluorene Formaldehyde Hexane Indeno(1,2,3-cd)pyrene Naphthalene OCDD Pentane Phenanaltrene Propane Pyrene Toluene 1,1,1-Trichloroethane	H H/T H/T H/T H H H H H/T	5.00E-07 3.80E-08 3.51E-08 2.59E-04 1.93E-03 1.68E-08 8.88E-06 2.44E-11 2.79E-03 8.25E-08 1.72E-03 3.34E-08 4.87E-05 1.85E-06	1.20E-05 9.13E-07 8.43E-07 8.43E-07 4.63E-02 4.04E-07 2.13E-04 5.85E-10 6.69E-02 1.98E-06 4.12E-02 8.01E-07 1.17E-03 4.45E-05	3.33E-04 3.08E-04 2.27E+00 1.69E+01 1.47E-04 7.78E-02 2.13E-07 2.44E+01 7.23E-04 1.50E+01 2.93E-04 4.27E-01 1.62E-02	1.67E-07 1.54E-07 1.14E-03 8.45E-03 7.36E-08 3.89E-05 1.07E-10 1.22E-02 3.61E-07 7.51E-03 1.46E-07 2.13E-04 8.12E-06	3.80E-08 3.51E-08 2.59E-04 1.93E-03 1.68E-08 8.88E-06 2.44E-11 2.79E-03 8.25E-08 1.72E-03 3.34E-08 4.87E-05 1.85E-06	8.43E-07 6.22E-03 4.63E-02 2.13E-04 5.85E-10 6.69E-02 1.98E-06 4.12E-02 8.01E-07 1.17E-03 4.45E-05	3.33E-04 3.08E-04 2.27E+00 1.69E+01 1.47E-04 7.78E-02 2.13E-07 2.44E+01 7.23E-04 1.50E+01 2.93E-04 4.27E-01 1.62E-02	1.54E-07 1.14E-03 8.45E-03 7.36E-08 3.89E-05 1.07E-10 1.22E-02 3.61E-07 7.51E-03 1.46E-07
	Ethylbenzene Ethylbenzene Fluorene Fluorene Fluorene Hexane Indenc(1,2,3-cd)pyrene Naphthalene OCDD Pentane Phenanathrene Propane Pyrene Toluene 1,1,1-Trichloroethane Xylene	H H/T H/T H/T H H H H	5.00E-07 3.80E-08 3.51E-08 2.59E-04 1.93E-03 1.68E-08 8.88E-06 2.44E-11 2.79E-03 8.25E-08 1.72E-03 3.34E-08 4.87E-05	1.20E-05 9.13E-07 8.43E-07 6.22E-03 4.63E-02 4.04E-07 2.13E-04 5.85E-10 6.69E-02 1.98E-06 4.12E-02 8.01E-07 1.17E-03	3.33E-04 3.08E-04 2.27E+00 1.69E+01 1.47E-04 7.78E-02 2.13E-07 2.44E+01 7.23E-04 1.50E+01 2.93E-04 4.27E-01	1.67E-07 1.54E-07 1.14E-03 8.45E-03 7.36E-08 3.89E-05 1.07E-10 1.22E-02 3.61E-07 7.51E-03 1.46E-07 2.13E-04	3.80E-08 3.51E-08 2.59E-04 1.93E-03 1.68E-08 8.88E-06 2.44E-11 2.79E-03 8.25E-08 1.72E-03 3.34E-08 4.87E-05	8.43E-07 6.22E-03 4.63E-02 4.04E-07 2.13E-04 5.85E-10 6.69E-02 1.98E-06 4.12E-02 8.01E-07 1.17E-03	3.33E-04 3.08E-04 2.27E+00 1.69E+01 1.47E-04 7.78E-02 2.13E-07 2.44E+01 7.23E-04 1.50E+01 2.93E-04 4.27E-01	1.54E-07 1.14E-03 8.45E-03 7.36E-08 3.89E-05 1.07E-10 1.22E-02 3.61E-07 7.51E-03 1.46E-07 2.13E-04 8.12E-06
	Ethylbenzene Ethylbenzene Fluorene Formaldehyde Hexane Indeno(1,2,3-cd)pyrene Naphthalene OCDD Pentane Phenanaltrene Propane Pyrene Toluene 1,1,1-Trichloroethane	H H/T H/T H/T H H H H/T H/T	5.00E-07 3.80E-08 3.51E-08 2.59E-04 1.93E-03 1.68E-08 8.88E-06 2.44E-11 2.79E-03 8.25E-08 1.72E-03 3.34E-08 4.87E-05 1.85E-06 8.56E-07	1.20E-05 9.13E-07 8.43E-07 6.22E-03 4.63E-02 4.04E-07 2.13E-04 5.85E-10 6.69E-02 1.98E-06 4.12E-02 8.01E-07 1.17E-03 4.45E-05 2.06E-05	3.33E-04 3.08E-04 2.27E+00 1.69E+01 1.47E-04 7.78E-02 2.13E-07 2.44E+01 7.23E-04 1.50E+01 2.93E-04 4.27E-01 1.62E-02 7.50E-03	1.67E-07 1.54E-07 1.14E-03 8.45E-03 7.36E-08 3.89E-05 1.07E-10 1.22E-02 3.61E-07 7.51E-03 1.46E-07 2.13E-04 8.12E-06 3.75E-06	3.80E-08 3.51E-08 2.59E-04 1.93E-03 1.68E-08 8.88E-06 2.44E-11 2.79E-03 8.25E-08 1.72E-03 3.34E-08 4.87E-05 1.85E-06 8.56E-07	8.43E-07 6.22E-03 4.63E-02 4.04E-07 2.13E-04 5.85E-10 6.69E-02 1.98E-06 4.12E-02 8.01E-07 1.17E-03 4.45E-05 2.06E-05	3.33E-04 3.08E-04 2.27E+00 1.69E+01 1.47E-04 7.78E-02 2.13E-07 2.44E+01 7.23E-04 1.50E+01 2.93E-04 4.27E-01 1.62E-02 7.50E-03	1.54E-07 1.14E-03 8.45E-03 7.36E-08 3.89E-05 1.07E-10 1.22E-02 3.61E-07 7.51E-03 1.46E-07 7.51E-03 1.46E-07 2.13E-04 8.12E-06 3.75E-06
	Ethylbenzene Ethylbenzene Fluorantiene Fluorantiene Formaldehyde Hexane Indeno[1,2,3-cd)pyrene Indeno[1,2,3-cd)pyrene Pentane Phentane Phentane Phentane Propane Pyrene Toluene I,1,1-Trichloroethane Xylene Arsenie	H H/T H/T H/T H H H H H/T H/T H/T H/T	5.00E-07 3.80E-08 3.51E-08 2.59E-04 1.93E-03 1.68E-08 8.88E-06 2.44E-11 2.79E-03 8.25E-08 1.72E-03 3.34E-08 4.87E-05 1.85E-06 8.56E-07 4.40E-06	1.20E-05 9.13E-07 8.43E-07 6.22E-03 4.63E-02 4.04E-07 2.13E-04 5.85E-10 6.69E-02 1.98E-06 4.12E-02 8.01E-07 1.17E-03 4.45E-05 2.06E-05	3.33E-04 3.08E-04 2.27E+00 1.69E+01 1.47E-04 7.78E-02 2.13E-07 2.44E+01 7.23E-04 1.50E+01 2.93E-04 4.27E-01 1.62E-02 7.50E-03 3.85E-02	1.67E-07 1.54E-07 1.14E-03 8.45E-03 7.36E-08 3.89E-05 1.07E-10 1.22E-02 3.61E-07 7.51E-03 1.46E-07 2.13E-04 8.12E-06 1.93E-05	3.80E-08 3.51E-08 2.59E-04 1.93E-03 1.68E-08 8.88E-06 2.44E-11 2.79E-03 8.25E-08 1.72E-03 3.34E-08 4.87E-05 1.85E-06 8.56E-07 4.40E-06 4.72E-06 3.30E-06	8.43E-07 6.22E-03 4.63E-02 4.04E-07 2.13E-04 5.85E-10 6.69E-02 1.98E-06 4.12E-02 8.01E-07 1.17E-03 4.45E-05 2.06E-05 1.06E-04 1.13E-04 7.92E-05	3.33E-04 3.08E-04 2.27E+00 1.69E+01 1.47E-04 7.78E-02 2.13E-07 2.44E+01 1.50E+01 2.93E-04 4.27E-01 1.62E-02 7.50E-03 3.85E-02 4.13E-02 2.89E-02	1.54E-07 1.14E-03 8.45E-03 7.36E-08 3.89E-05 1.07E-10 1.22E-02 3.61E-07 7.51E-03 1.46E-07 2.13E-04 8.12E-06 3.75E-06 1.93E-05 1.45E-05
•.	Ethylbenzene Ethylbenzene Fluoranthene Fluoranthene Formaldehyde Hexane Indeno(1,2,3-cd)pyrene Naphthalene OCDD Pentane Propane Pyrene Toluene I,1,1-Trichloroethane Xylene Arsenic Barium	H H/T H/T H/T H H H H/T H/T H/T	5.00E-07 3.80E-08 3.51E-08 2.59E-04 1.93E-03 1.68E-08 8.88E-06 2.44E-11 2.79E-03 3.34E-08 1.72E-03 3.34E-08 4.87E-05 1.85E-06 8.56E-07 4.40E-06 4.72E-06	1.20E-05 9.13E-07 6.22E-03 4.63E-02 4.04E-07 2.13E-04 5.85E-10 6.69E-02 1.98E-06 4.12E-02 8.01E-07 1.17E-03 4.45E-05 2.06E-05 1.06E-04 1.13E-04	3.33E-04 3.08E-04 2.27E+00 1.69E+01 1.47E-04 7.78E-02 2.13E-07 2.44E+01 7.23E-04 1.50E+01 2.93E-04 4.27E-01 1.62E-02 7.50E-03 3.85E-02 4.13E-02	1.67E-07 1.54E-07 1.14E-03 8.45E-03 7.36E-08 3.89E-05 1.07E-10 1.22E-02 3.61E-07 7.51E-03 1.46E-07 2.13E-04 8.12E-06 3.75E-06 1.93E-05 2.07E-05	3.80E-08 3.51E-08 2.59E-04 1.93E-03 1.68E-08 8.88E-06 2.44E-11 2.79E-03 8.25E-08 1.72E-03 3.34E-08 4.87E-05 1.85E-06 8.56E-07 4.40E-06 4.72E-06	8.43E-07 6.22E-03 4.63E-02 4.04E-07 2.13E-04 5.85E-10 6.69E-02 1.98E-06 4.12E-02 8.01E-07 1.17E-03 4.45E-05 2.06E-05 1.06E-04 1.13E-04	3.33E-04 3.08E-04 2.27E+00 1.69E+01 1.47E-04 2.13E-07 2.44E+01 7.23E-04 1.50E+01 2.93E-04 4.27E-01 1.62E-02 7.50E-03 3.85E-02 4.13E-02	1.54E-07 1.14E-03 8.45E-03 7.36E-08 3.89E-05 1.07E-10 1.22E-02 3.61E-07 7.51E-03 1.46E-07 2.13E-04 8.12E-06 3.75E-06 3.75E-06 2.07E-05

Carolina Sunrock

Appendix A Emission Calculations Page 2 of 6

.

File:TAP summary 2016-12-05 Sheet:Emissions Summary

EMISSION CALCULATIONS Emissions Summary

Carolina Sunrock Prospect Hill

			Uncontrolled Potential Emissions					Controlled Potential Emissions			
0. N	Pollutant	HAP/T AP	(lb/hr)	in a s	(lbs/yr)	(tons/yr)	(lb/hr)	(lbs/dav)	(lbs/yr)	(tons/yr)	
		AF.		(lbs/day)							
	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	
1	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	н	1.65E-05	3.96E-04	1.45E-01	7.23E-05	1.65E-05	3.96E-04	1.45E-01	7.23E-0	
1	Vanadium	 	2,47E-06	5,92E-05	2.16E-02	1.08E-05	2,47E-06	5.92E-05	2.16E-02	1.08E-0	
	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	
	PM		1.19E+02	2.85E+03	1.04E+06	520.64	6.39E+00	1.53E+02	5.59E+04	27.97	
	РМ-10	ļ	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	
	\$O2		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-0	
	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-0	
	Antimony unlisted compounds	Н	4.50E-05	1.08E-03	3.94E-01	1.97E-04	4.50E-05	1.08E-03	4.50E-02	2.25E-0	
	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-0-	
· [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-0	
	Bénzo(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-0	
ſ	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-0	
F	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-0	
P	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-0	
	Chromium unlisted empds (add w/chrom acid to get CRC	H I	1,26E-03	3.03E-02	1.11E+01	5,53E-03	1.26E-03	3,03E-02	1.26E+00	6.31E-0	
7	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-0	
7	Cobalt unlisted compounds	Н	6.50E-06	1.56E-04	5.69E-02	2.85E-05	6.50E-06	1.56E-04	6.50E-03	3.25E-0	
	Cumene	Н	1.14E-03	2.74E-02	1.00E+01	5,01E-03	1,14E-03	2.74E-02	1.14E+00	5.72E-0	
	Ethyl benzene	н	6.41E-02	1.54E+00	5.61E+02	2.81E-01	6.41E-02	1.54E+00	6.41E+01	3.20E-0	
1	Ethyl chloride (chloroethane)	Н	2.18E-06	5.24E-05	1.91E-02	9.56E-06	2.18E-06	5.24E-05	2.18E-03	1.09E-0	
· • •	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-0	
l. I	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-1	
	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-0	
	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-0	
	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-0	
ា	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-0	
	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	
17	Mercury, vapor	Н/Т	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	Н	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	н	1,56E-04	3.74E-03	1.37E+00	6.83E-04	1.56E-04	3.74E-03	1,56E-01	7.80E-0	
	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-0	
	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-0	
	Methylene chloride	н/т	8.23E-06	1.97E-04	7.21E-02	3.60E-05	8.23E-06	1.97E-04	8.23E-03	4.11E-00	
	Napthalene	н	1.65E-01	3.95E+00	1.44E+03	7.21E-01	1.65E-01	3.95E+00	1.65E+02	8.24E-0	
	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-0.	
	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-0	
		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-0-	
		н	8.72E-03	2.09E-01	7.64E+01	3,82E-02	7.47E-03	1,79E-01	1.11E+01	5.56E-0	
		н	2.20E-01	5.28E+00	1.93E+03	9,64E-01	2.20E-01	5,28E+00	2.20E+02	1.10E-0	
		Н	3,25E-02	7.80E-01	2.85E+02	1.42E-01	3.25E-02	7.80E-01	3.25E+01	1.63E-0	
		Ĥ	4.00E-02	9.60E-01	3.50E+02	1.75E-01	4.00E-02	9.60E-01	4.00E+01	2.00E-0	
	Selenium compounds	H H	1.82E-04	4.36E-03	1.59E+00	7.96E-04	9.22E-05	2.21E-03	1.29E-01	6.43E-0	
		H/T	2.40E-04	4.30E-03 5.77E-03	2.11E+00	1.05E-04	9.22E-03 2.40E-04	5.77E-03	2,40E-01	1.20E-0	
		H/T	5.25E-11	1.26E-09	4.60E-07	2,30E-10	2.40E-04 5.25E-11	1.26E-09	5.25E-08	2.63E-1	
	Tolucne		7.29E-01				7.29E-01	1.26E-09 1.75E+01	7.30E+02	2.03E-1 3.65E-0	
· []	TOTAGING		0.00E+00	1.75E+01 0.00E+00	6.39E+03	3.19E+00			0.00E+02		
- 1	Friehlereethulene			0.008400 1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.006+00	0.00E+0	
	Trichloroethylene	H/T T			1 105 01	6 035 06	1.255.05	2 245 61		(7/E 0	
	Trichlorofluoromethane (CFC 111)	Ť	1.35E-05	3.24E-04	1.18E-01	5.92E-05	1.35E-05	3.24E-04	1.35E-02		
	Trichlorofluoromethane (CFC 111) Trimethylpentane, 2,2,4-	T H	1.35E-05 1.00E-02	3.24E-04 2.41E-01	8.78E+01	4.39E-02	1.00E-02	2.41E-01	1.35E-02 1.00E+01	6.76E-06 5.01E-03	
	Trichlorofluoromethane (CFC 111)	Ť	1.35E-05	3.24E-04					1.35E-02		

* 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.

Appendix A **Emission Calculations** Page 3 of 6

Hot Mix Asphalt Ac Act Ber Ber Ber Ber Ber Ber Cac Cac Cac Cac Cac Cac Cac Cac Cac Cac	olikitani	(Uh/hr) 325E-01 530E-01 1.40E-04 9.90E-02 4.41E-05 0.00E+00 1.03E-04 6.50E-01 1.03E-04 6.52E-04 1.13E-04 7.97E-01 3.25E-10 2.35E-10 2.35E-10 3.25E-10 3.25E-10 3.25E-10 3.25E-10 3.25E-10 3.25E-10 3.25E-10 3.25E-10 3.25E-11 3.25E-10 3.25E-11 3.25E-12 3.25E-12 3.25E-12 3.25E-12 3.25E-12 3.25E-12 3.25E-12 3.25E-12 3.25E-12 3	(Briday) 7.80E+60 1.56E-01 3.36E-03 2.38E+60 2.38E+60 2.38E+60 2.36E+60 2.40E+60 1.40E-02 2.70E-03 1.40E-02 2.70E-03 1.26E+60 3.28E+01 4.62E+62 2.88E+01 4.62E+62 2.88E+01 4.62E+62 2.88E+01 1.61E+01 1.97E+64 0.00E+700 0.24E+62 2.41E+62 5.77E+703 1.26E+03 3.28E+01 1.45E+00 0.00E+00 1.26E+04 1.26E+03 3.26E+04 1.26E+03 3.36E+03 1.45E+04 1.09E+04 1.20E+05 3.36E+03 1.45E+04 2.06E+07 3.37E+08 3.37E+08 3.37E+08	(bb/r) 1.325Fe/02 6.50Fe/00 1.40E-01 9.50E+01 1.40E-01 9.50E+01 1.40E-01 9.50E+01 1.41E-03 0.00E+02 1.325E-01 1.325E-01 2.325E-07 3.25E-07 1.32E-01 1.32E-01 1.32E-02				Ubbr 2 Second Sec		
and Asphail Tank Heater S-5 Arg	arolein arosenia erasco provene erasco prov	6.502-03 1.40E-04 1.40E-04 1.40E-04 1.02E-04 1.0	1.56E-01 3.36E-03 3.36E-03 2.38E+00 1.06E-04 0.00E+00 2.46E-03 1.49E-02 2.70E-03 1.49E-02 2.70E-03 1.49E-02 3.28E-01 1.26E+00 3.28E-01 1.26E+00 3.28E-01 1.26E+00 3.28E-01 1.26E+00 1.26E+00 2.288E-01 1.26E+00 1.26E+00 1.26E+00 1.26E+00 1.26E+00 1.26E+00 1.26E+00 1.26E+00 1.26E+00 1.26E+00 1.26E+00 1.26E+00 1.26E+00 1.26E+00 1.26E+00 1.26E+00 1.26E+00 3.28E-01 1.26E+00 3.28E+01 3.28E+01 1.26E+00 3.28E+01 1.26E+00 3.28E+01 1.26E+00 3.28E+01 1.26E+00 3.28E+01 1.26E+00 3.28E+01 1.26E+00 3.28E+01 1.26E+00 3.28E+01 1.26E+00 3.28E+01 1.26E+00 3.28E+01 1.26E+00 3.28E+01 3.26E+00 3.28E+01 3.26E+00 3.28E+01 3.26E+00 3.28E+01 3.26E+00 3.28E+01 3.26E+00 3.28E+01 3.26E+00 3.28E+01 3.26E+00 3.28E+01 3.26E+00 3.28E+01 3.26E+00 3.37E+00 3.	6 50F+00 1.40E-01 9.50E+01 4.41E-03 0.40E+04 9.50E+01 1.03E-01 6.23E-01 1.03E-01 6.23E-01 1.32E+07 2.32E+07 2.32E+07 2.32E+07 2.32E+07 2.32E+07 2.32E+07 2.32E+07 1.37E+01 1.37E+01 1.37E+01 1.37E+01 1.37E+01 1.37E+01 1.37E+01 1.37E+01 1.37E+01 1.37E+01 1.37E+01 1.37E+01 1.37E+02 2.40E+01 3.37E+02 1.35E+						
harrele Batch Plant Arr Ber Ber Ber Ber Cax Cax Stal Por Her Her Hy Nata Mag Net Stal Stal Por Her Per Ph Per Ph Per Ph Per Ph Per Pr Syy Tet Cax Mag Net Syy Tet Cax Mag Net Sys Stal Por Her Per Per Ph Per Per Ph Per Per Ph Per Per Per Syy Tet Cax Mag Net Sys Stal Net Sys Stal Net Sys Stal Net Sys Stal Net Sys Stal Net Sys Stal Net Sys Stal Net Sys Stal Net Sys Stal Net Sys Stal Stal Net Sys Stal Stal Stal Stal Stal Stal Stal Stal	remic utilisted empds (comp. of ASC) enzene enzelopyrene enzelopyrene enzelopyrene enzelopyrene atroa disalfote ablue Caronate compounds as Chrome (VI) ormakelyde eschlorodibenzo-p-dioxin 1,2,3,6,7,8 exane, p- ghogen Chloride (hydrochloric acid) ydrogen Sullide anganese utilisted compounds ercury, vapor ethyl ethyl kerone ethyl ethyl ethyl kerone ethyl ethyl kerone ethyl ethyl kerone ethyl ethyl kerone ethyl ethyl kerone ethyl ethyl kerone ethyl ethyl ethyl kerone ethyl ethyl ethyl kerone ethyl ethyl ethyl kerone ethyl ethyl ethyl ethyl kerone etholore ethyl ethyl ethyl ethyl ethyl ethyl ethyl ethyl ethyl ethore etholore ethyl ethyl ethyl ethyl ethyl ethyl ethyl ethyl ethyl ethyl ethyl ethyl ethyl ethyl ethyl ethore etholore ethyl	1.40E-04 9.90E-02 9.90E-02 4.41E-06 0.00E-04 6.215E-04 1.03E-04 7.977E-01 2.397E-01 2.397E-01 2.397E-01 2.397E-01 2.397E-01 2.397E-01 2.397E-01 2.397E-01 2.397E-01 2.397E-02 1.377E-02 1.377E-02 1.377E-02 1.377E-02 1.377E-02 1.377E-02 1.377E-02 1.377E-02 1.377E-02 1.377E-02 1.377E-02 1.377E-02 1.377E-02 1.377E-02 1.377E-02 1.377E-02 1.377E-02 1.377E-02 1.357E-02 1.377E-02 1.	336E-03 2.38E+00 2.38E+00 0.00E+00 2.46E+03 1.49E-02 2.46E+03 1.49E-02 2.70E+03 1.49E+01 2.70E+03 1.28E+01 2.28E+01 2.28E+01 2.28E+01 2.28E+01 2.28E+01 2.28E+01 2.28E+01 2.28E+01 2.28E+01 1.56E+02 2.28E+01 1.52E+02 2.28E+01 1.52E+02 2.28E+01 1.52E+02 2.28E+01 1.52E+02 2.28E+01 1.52E+02 2.41E+02 3.26E+04 1.52E+03 2.24E+04 3.26E+04 1.52E+05 3.26E+04 1.52E+05 3.26E+04 1.52E+05 3.26E+04 1.52E+05 3.26E+04 1.52E+05 3.26E+04 1.52E+05 3.26E+04 1.52E+05 3.26E+04 1.52E+05 3.26E+04 1.52E+05 3.26E+04 1.52E+05 3.26E+04 1.52E+05 3.26E+04 1.52E+05 3.26E+04 1.52E+05 3.26E+04 1.52E+05 3.26E+05 3.27	1.40E-01 9.90E+01 4.41E-03 4.41E-03 4.41E-03 0.00E+00 1.03E-01 1.32E-01 1.32E-01 1.32E-01 1.32E-01 1.32E+01 1.32E+01 1.32E+01 1.32E+01 1.32E+01 1.32E+01 1.32E+01 1.32E+01 5.25E+01 1.32E+01 5.25E+01 5.25E+01 3.97E+02 4.38E+03 1.39F+02 5.22E+01 5.5E+04 1.39F+02 5.22E+01 5.5E+04 1.39F+02 5.22E+01 5.5E+04 1.39F+02 5.22E+01 5.5E+04 1.39F+02 5.22E+01 5.5E+04 1.39F+02 5.22E+01 5.5E+04 1.39F+02 5.22E+01 5.5E+04 1.39F+02 5.22E+01 5.5E+04 1.39F+02 5.22E+01 5.5E+04 1.39F+02 5.22E+01 5.5E+04 1.39F+02 5.22E+01 5.5E+04 1.39F+02 5.22E+01 5.5E+04 1.39F+02 5.22E+01 5.5E+04 1.39F+02 5.22E+01 5.5E+04 1.39F+02 5.22E+01 5.5F+04 1.39F+02 5.22E+01 1.39F+02 5.22E+01 1.39F+02 5.22E+01 1.39F+02 5.22E+01 1.39F+02 5.22E+01 1.39F+02 5.22E+01 1.39F+02 5.22E+01 1.39F+02 5.22E+01 1.39F+02 5.22E+01 1.39F+02 5.22E+01 1.39F+02 5.22E+01 1.39F+02 5.22E+01 1.39F+02 5.22E+01 1.39F+02 5.22E+01 1.39F+02 5.24E+01 5.22E+01 1.39F+02 5.22E+01 1.39F+02 5.22E+01 1.39F+02 5.22E+01 1.39F+02 5.22E+01 1.39F+02 5.22E+01 1.39F+02 5.22E+01 1.39F+02 5.22E+01 1.39F+02 5.22E+01 1.39F+02 5.22E+01 1.39F+02 5.22E+01 1.39F+02 5.22E+01 1.39F+02 5.22E+01 5.22E+02 5.22E+01 5.22E+02 5.22E+01 5.22E+02 5.22E+01 5.22E+02 5.22E+01 5.22E+02 5.22E+01 5.22E+020						
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iS-4 Aer Arr Ben Ben Dic For Tolo Trive Xyl Ays Ber Cold Solo Mar Men Nid Asphalt Tank Heater Sc5 Acr Ber Ber Ber Ber Ber Ber	nunonia nuzene euzene endorobenzene smalkehyde sman, n- lvare ene smie unlisted compds (comp. of ASC) sylliam metal (urreacted)	2.11E-08 3.74E-03 2.46E-06 1.40E-09 1.40E-06 2.83E-04 2.11E-03 5.31E-05 9.34E-07 4.80E-06 3.60E-06	5.05E-07 8.98E-02 5.89E-05 3.37E-08 3.37E-05 6.79E-03 5.05E-02 1.28E-03 2.24E-05	1.84E-04 3.28E+01 2.15E-02 1.23E-05 1.23E-02 2.48E+00 1.84E+01						
Ben Ben Dic Foro Tolo Xsyl Arsy Ber Ber Gad Solo Mar Mer Nici Asolo Solo Mar Mer Nici Solo Solo Solo Mar Mar Mer Ber Ber Ber Ber Ber Ber Ber Ber Ber B	nzere nzeo(a)pyrenc chlorobenzere mmklethyle Xane, n- bluene and autisted coupds (comp. of ASC) medium metal (urreacted) metal (urreacted)	2.46E-06 1.40E-09 1.40E-06 2.83E-04 2.11E-03 5.31E-05 9.34E-07 4.80E-06 3.60E-06	5.89E-05 3.37E-08 3.37E-05 6.79E-03 5.05E-02 1.28E-03 2.24E-05	2.15E-02 1.23E-05 1.23E-02 2.48E+00 1.84E+01						
Ben Dia For Ifer Toli Xyf Arss Ber Cad Soli Mar Mid Asphalt Tank Heater Sc5 Arn Ber Ber Ber Ber Ber	nuc(s)pyrene sidorobenzene smallchyde sano, n- livene elene senia utilisted cnupds (comp. of ASC) myfilium metal (urreacted) dmium metal (urreacted)	1.40E-09 1.40E-06 2.83E-04 2.11E-03 5.31E-05 9.34E-07 4.80E-06 3.60E-06	3.37E-08 3.37E-05 6.79E-03 5.05E-02 1.28E-03 2.24E-05	1.23E-05 1.23E-02 2.48E+00 1.84E+01						
Dic Forn Toil Xsyi Arsy Cad Soli Mar Mer Niid Asphalt Tank Heater S-5 Acr Arm Ber Ber Ber Ber	eklorobenzene maklehyde sane, n- ylaen gene senie unlisted cmpds (comp. of ASC) myllium metal (urreacted) myllium metal (urreacted)	1.40E-06 2.83E-04 2.11E-03 5.31E-05 9.34E-07 4.80E-06 3.60E-06	3.37E-05 6.79E-03 5.05E-02 1.28E-03 2.24E-05	1.23E-02 2.48E+00 1.84E+01						
Foon Hest Tot Tot With Ber Cad Soli Mar Mer Nici avid Asphalt Tank Heater Sc-5 Acr Arm Ber Ber Ber Ber	mmklehyde szner, n- vitere stere senie utilisted empds (comp. of ASC) ryfilium metal (urreacted) dmirum metal (elemental urreacted)	2.83E-04 2.11E-03 5.31E-05 9.34E-07 4.80E-06 3.60E-06	6.79E-03 5.05E-02 1.28E-03 2.24E-05	2.48E+00 1.84E+01						
ifes Toth Xyl Ass Ber Cad Solo Mar Mer Nici avid Asphalt Tank Heater Sc-5 Acc Acc Acc Acc Acc Acc Acc Acc Acc Ac	zane, n- slucre iene senie uulisted empds (comp. of ASC) ryllium metal (unreacted) dmium metal (elementsl unreacted)	2.11E-03 5.31E-05 9.34E-07 4.80E-06 3.60E-06	5.05E-02 1.28E-03 2.24E-05	1.84E+01						
Toù Xiyi Ars Ber Cid Solo Mar Mer Nid Asphall Tank Heater Sc-5 Acc Arn Ben Ber Ber	vluene vlene senie unlisted empds (comp. of ASC) ryllium metal (unreacted) dwium metal (elemental unreacted)	5.31E-05 9.34E-07 4.80E-06 3.60E-06	1.28E-03 2.24E-05							1000
Xyi Ars Ber Cad Soli Mar Mar Nici iquid Asphali Tank Heater Acc Acc Arm Ber Ber Ber	viene senie unlisted empds (comp. of ASC) ryllium metal (unreacted) kdmium metal (elemental unreacted)	9.34E-07 4.80E-06 3.60E-06	2.24E-05	4.002-01				1		
Ars Ber Cad Soli Mar Mid Nid Asphalt Tank Heater S-5 Acr Arn Ber Ber Ber	senie unlisted compds (comp. of ASC) cryllium metal (unreacted) admium metal (elemental unreacted)	4.80E-06 3.60E-06		8.18E-03	1. Co.C. 20		1	I		1
Ber Cad Soli Mar Nial Auguid Asphalt Tank Heater Sc-5 Arm Bern Bern Bern	eryllium metal (unreacted) admium metal (elemental unreacted)	3.60E-06		4.20E-02						1
Gad Soli Mar Mar Nici iquid Asphali Tank Heater Ace SS-5 Acr Arm Ben Ben Ben Ben	dmium metal (elemental unreacted)	3.60E-06	8.64E-05	3.15E-02						
Soli Mar Mar Nidi Asphalt Tank Heater Acce So Acr Arm Ben Ben Ben			8.64E-05	3.15E-02				1000		
Mar Mer Nid iquid Asphalt Tank Heater Acc SS-5 Acr Arm Ben Ben Ben		3.60E-06	8.64E-05	3.15E-02		•	12 R.C.	City design	1.4.4.	1000
Mer Nid Aquid Asphalt Tank Heater Ace ES-5 Acr Ann Ben Ben Ben	anganese unlisted compounds	7.20E-06	1.73E-04	6.31E-02		<u>či – 1</u> .	S Isley		1	
lquid Asphalt Tank Heater Acc ES-5 Acr Ben Ben Ben	ercury, vapor	3.60E-06	8.64E-05	3.15E-02	25.200	/ *				
2S-5 Acr Am Ben Ben	ckel metal	3.60E-06	8.64E-05	3.15E-02						
Am Ben Ben	zetaldehyde	1.63E-08	3.91E-07	1.43E-04						
Ben Ben	rolein	1.93E-08	4.63E-07	1.69E-04						42
Ben	nmonia	3.43E-03	8.23E-02	3.01E+01		<u> </u>			1111116	<u> </u>
	inzene	2.25E-06	5.40E-05	1.97E-02		1.1.22	120000		10.20	
11.76	nzo(a)pyrene	1.29E-09	3.09E-08	1.13E-05		<u></u>				÷
	chlorobenzene	1.29E-06 2.59E-04	3.09E-05 6.22E-03	1.13E-02 2.27E+00						
	xane, n-	1.93E-03	4.63E-02	1.69E+01						
	luene	4.87E-05	1.17E-03	4.27E-01						
	dene	8.56E-07	2.06E-05	7.50E-03	1			· · · · ·		
	senic unlisted empds (comp. of ASC)	4.40E-06	1.06E-04	3.85E-02					14.2	
	ryllium metal (unreacted)	3.30E-06	7.92E-05	2.89E-02	31				al al	1. 1.
Cad	dmium metai (elemental unreacted)	3.30E-06	7.92E-05	2.89E-02						
Solu	luble Chromate compounds as Chrome (VI)	3.30E-06	7.92E-05	2.89E-02	10 12 15 JULY	· · · · · ési: · ·	7.024.0 ₀ 0		100 C	
	anganese unlisted compounds	6.60E-06	1.58E-04	5.78E-02						
	ercury, vapor	3.30E-06	7.92E-05	2.89E-02			V. 10			
	ckel metal	3.30E-06	7.92E-05	2.89E-02			<u> () () () () () () () () () () () () () </u>			1
	ætaldehyde	3.25E-01	7.80E+00	3.25E+02	. 28,43		·	No	 	
	rolcin	6.50E-03	1.56E-01	6.50E+00	0.08			No	<u> </u>	1
	nmonia	7.17E-03 2.69E-09	1.72E-01	6.28E+01 2.36E-05	2.84		3.044	No	ŀ · · ·	No
	nzo(a)pyrene chlorobenzene	2.69E-09 2.69E-06	6.46E-08 6.46E-05	2.36E-05 2.36E-02	69.5	ha di se	3.044	No	ŀ	1 NO
	maidehyde	7.97E-00	1.91E+01	8.02E+02	0.16			Yei	l	+
	manenyoe	2.43E-01	5.84E+00	2.75E+02	0.10	46.3		[]	No	<u> </u>
	enol	1.01E-03	2.41E-02	1.01E+00	1.00			No	F	
	ITCHC	2.40E-04	5.77E-03	2.40E-01	11.16			No	Ĺ.	
	ichlorofluoromethane (CFC 111)	1.35E-05	3.24E-04	1.35E-02	589.66			No		
Met	etivi chloroform	1.20E-02	2.88E-01	1.20E+01	257.98	505.4		No	No	
Met	ethyl ethyl ketone	6.70E-03	1.61E-01	6.70E+00		155.8			No	
	luene	7.29E-01	1.75E+01	7.30E+02	58.97	197.96		No	No	1
	lene	6.04E-02	1.45E+00	6.04E+01	68.44	113.7		No	No	1
	ethylene chloride	8.23E-06	1.97E-04	8.23E-03	1.79		2213.752	No	<u> </u>	No
	luble Chromate compounds as Chrome (VI)	2.78E-04	6.66E-03	1.56E+00	I	2.6E-02		$ \longrightarrow $	No	<u> </u>
	xane, n-	2.43E-01	5.84E+00	2.75E+02		46.3		┢──┥	No	
	anganese unlisted compounds	2.69E-03	6.45E-02	8.61E+00		1.3		\vdash	No	
	ercury, vapor	6.57E-04	1.58E-02	7.10E-01		2.5E-02			No	i
	ckel metal	1.59E-02	3.83E-01	1.75E+01		0.3		⊢	Yes	
	rbon disultide	6.23E-04	1.49E-02	6.23E-01		7.8		ļ	No	
Tetr	trachlorodibenzo-p-dioxin, 2,3,7,8-	5.25E-11	1.26E-09	5.25E-08	1 ·		2.767E-04			No
Ars	senic unlisted empds (comp. of ASC)	2.15E-04	5.16E-03	7.97E-01			0.194			Ye
Ben	nzene -	9.90E-02	2.38E+00	9.91E+01			11.069			Ye
Ben	пдо(а)рутепе	4.41E-06	1.06E-04	4.41E-03			3.044			No
Hyd		1.37E-02	3.28E-01	1.37E+01		5.1			No	
	drogen Sulfide	1.14E-05	2.74E-04	1.00E-01			0.378			No
	ryllium metal (unreacted)			1.000-01			0.507			No
		1.10E-04	2.64E-03	1.67E-01			0,007			No
	ryllium metal (unreacted) dmium metal (elemental unreacted)							No		
	ryllium metal (unreacted)	1.10E-04	2.64E-03	1.67E-01	0.74			1 10 1		1

Per 15A NCAC 2Q.0711(a) (vertically oriented emission release points)
 Chromic acid (VI) (component of soICR6 and CRC) from Concrete Batch and HMA emissions are counted towards the 'Soluble chromate compounds as Chrome (VI) total

EMISSION CALCULATIONS

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Carolina Sunrock

ULATIONS	
Asphalt Cement Heater IES-4	
1.2 MMBtu/hr heater for asphalt cement	
Heater HCS-70 Heater	
	1.2 MMBtu/hr heater for asphalt cement

Heater 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 MMBtw/103 gal	
Sulfur Content in No. 2 Fuel Oil =	0.5 %	
·		

	Maximum Heat Input Rating	A	Usage for Natural	Maximum Fuel Oil Usage for Natural Gas (10 ² 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 (Ib'yr) = Emission Factor (Ib'MMBitu) * Potential Fuel Usage (10gsl/yr) * Heating Value for No. 2 Fuel Oil (140 MMBitu'lógal) No. 2 Fuel Oil Emissions (tpy) = Emissions (Ib'yr) / (2000 lb/ton)

	Unconfrolled Emission Factor from NG		Emission	s from NG		Uttcontrolled Emission Factor from No. 2 Fuel Oil		Emissions from	No. 2 furt oil		Max Total Emissions from NG & No. 2	Max Total Emissions from NG &
	Combustion		1444.4 1910.000			Combustion (lb/10	20131020	N.C.S.S.S.S.	1.20 1. 12	2002000	fuel oil firing	No. 2 fuel a
Pollulant	(h/mmfr)	(lb/hr)	(lb/day)	(lb/yt)	<u>((†))</u>	(al)) ²	(lb/hr)	(lb/day)	(b/yr)	(tpy)	(ІЬ/ут)	, 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 SO ₂	7.6	8.89E-03 7.02E-04	2.13E-01 1.68E-02	7.79E+01 6.15E+00	3.89E-02 3.07E-03	1.241	1.06E-02 6.09E-01	2.55E-01 1.46E+01	9.32E+01 5.33E+03	4.66E-02 2.67E+00	9.32E+01 5.33E+03	4.66E-02 2.67E+00
NOx	100	1.17E-01	2.81E+00	1.02E+03	5.12E-01	20						7.51E-01
VOCs	5.500			5.64E+01	2.82E-02		1.71E-01	4.11E+00	1.50E+03	7.51E-01	1.50E+03 5.64E+01	
CO	<u> </u>	6.43E-03 9.82E-02	1.54E-01 2.36E+00	8.61E+02	4.30E-02	0.556	4.77E-03 4.29E-02	1.14E-01 1.03E+00	4.17E+01 3.75E+02	2.09E-02 1.88E-01	8.61E+02	2.82E-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	2.40E-05	2.81E-08 2.11E-09	5.05E-08	2.40E-04	9.22E-09		0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.46E-04	9.22E-07
.12-Dimethylbenz(a)anathracene	1.60E-05	1.87E-08	4.49E-07	1.64E-03	8.20E-08		0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.64E-03	9.22E-09 8.20E-08
Acenaphthene	1.80E-06	2.11E-09	5.05E-08	1.84E-05	9.22E-08	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	2.332-01	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	II	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.30E-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	0.002+00	3.28E+01	9.22E-08 1.64E-02
Anthracene	2.40E-06	2.81E-09	6.74E-08	2,46E-05	1.04E-02	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	4.58E-08	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	4.176.77	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.23E-05	6.15E-09
Benzo(b)()uoranthene	1.80E-06	2.11E-09	5.05E-08	1.84E-05	9.22E-09	1.48E-06	1.27E-08	3.04E-07	L.HE-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	2.201-00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.84E-05	9.22E-09
Butanc	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	1.205-03	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
Нехаре	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-Trichloroethane		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
Cobeli	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	2.601-04	3.04E-07	7.30E-06	2.66E-03	1.33E-06	4.20F-04	3.601-06	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	0.001:+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
Vanadjum	2.30E-03	2.69E-06	6.46E-05	2.36E-02	1.18E-05		0.001:+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-12, Compilation of Air Pullutant Ensistion Factors Vol. 1 - Stationary Sources USEPA, 5th ed. Section 1.4, 791 - Actellidehyle, annoula, actobrin are from VORTRE database. - AP - 21; Compilation of Air Pullutant Ensistion Factors Vol. 1 - Stationary Sources USEPA, 5th ed. Section 1.3, 998

Qorvo US, Inc.

Appendix A Emission Calculations Page 5 of 6 Carolina Sunrock Prospect Hill Plant

EMISSION CALCULATION	ons
Sources:	Heater for Liquid Asphalt Tank IES-5

Description	1.1 MMBtu/hr heater for I Heater Direct Heater	iquid asphalt tank	
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 %	

NO Emissions (lb/yr) = Emission Factor (lb/MMscf) = Potential Fuel Usage (MMscf/yr) NG Emissions (lpy) = Emissions (lb/yr) / (2000 lb/ton)

No. 2 Fuel Emissions (Ib'yr) = Emission Factor (Ib/MMBhs) * Potential Fuel Usage (Id gal/yr) * Henting Value for No. 2 Fuel Oil (140 MMBhu/Idgal) No. 2 Fuel Oil Emissions (Ipy) = Emissions (Ib'yr)/ (2000 Ib'lon)

	Uncontrolled Emission Factor		<u>.</u>	5 NG		Uncontrolled Emission Factor from No. 2 Fael Oil					Max Total Envisions from	
Pollutani	from NG Combustion (D/mmft ²) ¹	(lb/hr)	Emission (lb/day)	s from NG (lb/yr)	:(tpy)	Combustion (1b/10 ² gal) ²	(ib/hr)	Emissions from (lb/day)	No. 2 fuel ail (lb/yr)	(фу)	NG & No. 2 fuel oil firing (Ib/yr)	from NG & No. 2 fuel of 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
,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	8.712-09
Acctaldehyde	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	4.0-IE-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)perviene	1.20E-06	1.93E-09	3.09E-08	1.13E-05	5.64E-09	2.26E-06	1,78E-08 0.00E+00	4.26E-07	1.56E-04 0.00E+00	7.78E-08	1.56E-04	7.78E-08
Benzo(k)fluoranthene Butane	2.1	2.25E-03	4.63E-08 5.40E-02	1.69E-05 1.97E+01	8.45E-09 9.86E-03		0.00E+00	0.00E+00 0.00E+00	0.00E+00	0.00E+00 0.00E+00	1.69E-05 1.97E+01	8.45E-09 9.86E-03
Chrysene	1.80E-06	1.93E-09	4.63E-08		9.86E-03 8.45E-09	2.205.04	1.87E-08	4.49E-07	1.64E-04		1.97E+01	9.80E-03 8.19E-08
Dibenzo(a,h)anthracene	1.20E-06	1.29E-09	3.09E-08	1.69E-05 1.13E-05	5.64E-09	2.38E-06 1.67E-06	1.31E-08	3.15E-07	1.04E-04	8.19E-08 5.75E-08	1.15E-04	5.75E-08
Dichlorobenzene	1.20E-03	1.29E-06	3.09E-05	1.13E-03	5.64E-06	1.072-00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.13E-04	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	2.1	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	1.3 E-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
Нехале	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
Penlane	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
Phenanathrene	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
Tolucae	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 Arsenic	2.00E-04	0.00E+00 2.14E-07	0.00E+00 5.15E-06	0.00E+00 1.88E-03	0.00E+00 9.39E-07	1.09E-04 5.60E-04	8.56E-07 4.40E-06	2.06E-05	7.50E-03 3.85E-02	3.75E-06 1.93E-05	7.50E-03 3.85E-02	3.75E-06 1.93E-05
Banium	4.40E-03	4.72E-06	5.15E-06	4.13E-03	2.07E-05	2.000		0.00E+00	0.00E+00	0.00E+00	3.83E-02 4.13E-02	2.07E-05
Beryllium	1.20E-05	1.29E-08	3.09E-07	4.13E-02		4.20E-04	3.30E-06	7.92E-05	2.89E-02	1.45E-05	4.13E-02 2.89E-02	1.45E-05
Cedmium	1.10E-03	1.18E-06	2.83E-05	1.03E-02	5.17E-06	4206-04	3.30E-06	7.92E-05	2.89E-02	1.45E-05	2.89E-02 2.89E-02	1.45E-05
Chromium (as chromic acid)	1.406-03	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
Leed	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

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 AP-42 Compilation of Air Politant Emission Factors Vol. 1 - Stationary Sources USEPA, Shi ed. Section 1.3, 998

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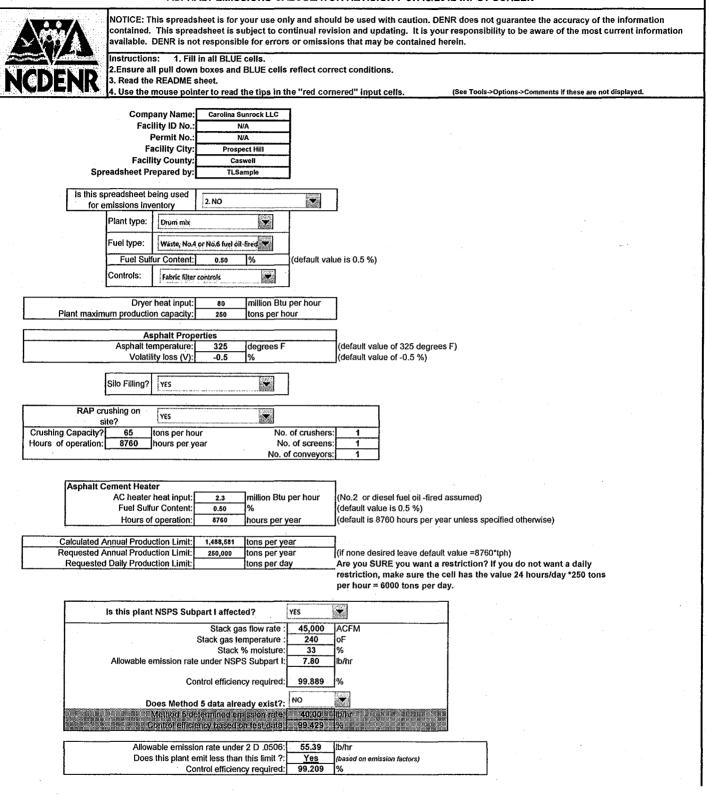
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Appendix A sion Calcula Page 6 of 6

Carolina Sunrock Prospect Hill Plant

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



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Dryer Emissions										
Criteria Pollutants										
	Uncontrolled	Controlled]		<u> </u>	Title V, Potential Emiss	ions (tov)	PSD Poler	ntial Emissions,	
	Emission Factor (Ib/ton)	Emission Factor		l emission rate p/hr)	controlled emission rate (lb/hr)	(no controls, 8760 hour operation)		(tpy) (with	controls, 8760 (ear operation)	Synthetic Minor, Potential Emissions (with all operation restrictions)
Pollutant		(lb/ton)		-						
Condensible PM (or PM ₁₀) Filterable PM	0.0654 28	0.0194		3.35 000	4.85					
Filterable PM10	6.4	0.0039		600	0.975					
Total PM	28	0.033		000	8.25	55.4		1.	36.1	4.1
Total PM10 SQ2	6.5 0.0837	0.023		625).93	5.75 20.93	29.0			25.2 1.69	2.9
302 CO	0.1300	0.130		2.5	32.5	142.4	· · · · · ·		42.4	16.3
NOx	0.0550	0.055	13	3.75	13.75	60.2		e	60.2	6.9
VOC HAPs, TOTAL	0.0320	0.032		8	<u> </u>	35.0			35.0 1.0	4.0
1A-3, 101AL		0.010			2.5	1 11.0			11.0	1
Silo Filling plus Loa	d Out Emiss	ions, Crite	ria Pollutar	nts						
	Emission					1				
	Factor,					Title V, Potential Emiss (no controls, 8760 hour			tial Emissions, hours per year	Synthetic Minor, Potential Emissions
Pollutant	combined (lb/ton)				emission rate (lb/hr)	operation)			ration)	(with all operation restrictions)
Total PM	1.11E-03				2.77E-01	1.2			1.2	0.1
со	2.53E-03				6.32E-01	2.8			2.8	0.3
VOC HAPs, TOTAL	1.61E-02 2.74E-04				4.02E+00 6.85E-02	17.6			7.6	2.0
HAPS, TOTAL	2.742-04			L. D.	0.032-02	0.3		L	0.0	0.0
Rap Crusher Emissi	ons									
	Emission							1		· · · · · · · · · · · · · · · · · · ·
	Factor, all sources					Title V, Potential Emiss			tial Emissions,	Synthetic Minor, Potential Emissions
	combined (lb/ton)				emission rate (lb/hr)	(no controls, 8760 hour operation)	s per year		hours per year ration)	(with all operation restrictions)
Pollutant Total PM					2.17E+00	9.5			ə.5	1.1
Total PM10		in in the state			7.93E-01	3.5			3.5	0.4
•										
Asphalt Cement Hea	ter Emissio	าร								
	Uncontrolled			: · · ·						
	Emission					Title V, Potential Emissi (no controls, 8760 hours			tial Emissions, hours per year	Synthetic Minor, Potential Emissions (
Dellistant	Factor (Ib/MMBtu)				emission rate (ib/hr)	operation)	, per year	ope	ration)	(with all operation restrictions)
Pollutant Total PM	0.0235714				5.42E-02	0.2			0.2	0.2
Total PM10	0.0235714				5.42E-02	0.2).2	0.2
SO2	0.5071429				1.17E+00	5.1			5.1	5.1
CO NOX	0.0357143				8.21E-02 3.29E-01	0.4).4	0.4
Voc	0.0024286				5.59E-03	0.0).0	0.0
Facility-wide Criteria	Pollutant E	missions S	Summary	1		I				·····
					Controlled Emission Rate,	Title V, Potential Emissi			tiał Emissions,	Synthetic Minor, Potential Emissions (
					lb/hr	(no controls, 8760 hours operation)	s per year		hours per year ration)	(with all operation restrictions)
Pollutant					1.050101	66.4			7.4	5.6
					1.05E+01 6.60E+00	66.4			7.1 0.1	3.6
SO2					2.21E+01	96.8			6.8	15.6
		AND			3.32E+01	145.5			15.5	16.9
. NOx VOC					1.41E+01 1.20E+01	<u>61.7</u> 52.7			1.7 2.7	<u> </u>
HAPS, TOTAL					2.57E+00	11.3			1.3	1.3
- 1				and a second sec						
Facility-wide Toxic A	ir Pollutants	s Summary	. –							
TAP	1	CAS No.	Action		TAP	·····	CAS No.	Action	ו	
	aldehyde (TH)	75070	NOTE 1	-1		Mercury, vapor (TH)	7439976	NOTE 2	NOTE	clude TAP in TPER stipulation.
	Acrolein (TH)	107028	NOTE 1		N	lethyl ethyl ketone (TH)	78933	NOTE 1		cude TAP IN TPER supulation.
Arsenic unlisted cmpds (comp.		ASC-other	NOTE 3		N	Nethylene chloride (TH)	75092	NOTE 1	NOTE 2: In	clude TAP in TPER stipulation
	Benzene (TH) (a)pyrene (T)	71432 50328	NOTE 3 NOTE 1		Perchloroethvlene //o	Nickei metal (TH) Irachloroethylene) (TH)	7440020 127184	NOTE 2 NOTE 1		ion restrictions.
Beryllium metal (u		7440417	NOTE 1		, stansiocarpiene (le	Phenol (TH)	108952		NOTE 3: M	odeling Required. See "Toxic
Cadmium metal (elemental u		7440439	NOTE 2		Soluble Chromate Compou		7738945	NOTE 1		s" worksheet.
	disulfide (TH)	75150	NOTE 1			Styrene (TH)	100425	NOTE 1		
	aldehyde (TH)	50000 57653857	NOTE 3 NOTE 1		Tetrachlorodibenzo	p-dioxin, 2,3,7,8- (TH)	1746016	NOTE 1 NOTE 1	1	
Hexachlorodibenzo-p-dioxin Hexachlorodibenzo-p-dioxin	1,2,3,6,7,8 (1) exane, n- (TH)	57653857 110543	NOTE 1			Toluene (TH) Trichloroethylene (TH)	108883 79016	NOTE 1		
	en Sulfide (T)	7783064	NOTE 1			nethane (CFC 111) (T)	75694	NOTE 1	1	
Managanasa unlisted s	ompounds (T)	MNC-other	NOTE 1				1330207	NOTE 1	1	
	ioroform (TH)	71556	NOTE 1							

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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.

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.

SOU	ROFIEAC	II ITY / USER IN	PUTSUMM	ARY/EROM	INPLIT SCRE	ENI		
				ARAPATRACOII/	Mr. 67 SCIL	FACILITY IE		N/A
COMPANY:	Carolin	a Sunrock	LLC			PERMIT NU		N/A
NSPS affe	cted 250 tr	oh Waste, No.4	or No 6 fuel o	nil-fired Drun	n mix asphalt	FACILITY C		Prospect Hill
		eat input, w/silof				FACILITY C		Caswell
		T					1	
Annual Production Limit: 250,000	ton/year	Daily Produ	iction Limit:		0	ton/day		
SPREADSHEET PREPARED BY: TLSample							-	
		<u> </u>						
	CRITER	The second s		IONS INFOR				
		ACTUAL EN			POTENTIAL	1		
AIR POLLUTANT EMITTED		(AFTER CONTRO		<u> </u>	NTROLS / LIMITS)	(AFTER CONTR		
PARTICUL ATE MATTER (DA)	····	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 (PM10)		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	1990 - 2000 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 -	61.66		8.31	
		33.21	16.93		145.48		16.93	
VOLATILE ORGANIC COMPOUNDS (VOC)		12.03 2.57	6.04 1.28		52.69 11.25		6.04 1.28	
ARGEST HAP (formaldehvde)		0.80	0.40		3.49		0.40	
				Nobec ⁺	0.43		0.40	
τολ	(IC/HAZA	RDOUS AIR PC	DLLUTANTE	MISSIONS	NFORMATIO	N	a se	
				· · · ·				EMISSION FACTOR
	CAS	ACTUAL EM			POTENTIAL			(lb/ton asphalt produced
TOXIC / HAZARDOUS AIR POLLUTANT	Number	(AFTER CONTRO Ib/hr	ls/lmits)	(BEFORE CO	Ib/yr	(AFTER CONTR	Ib/yr	with Fabric filter controls
Acetaidehyde (TH)	75070	3.25E-01	3.25E+02	3.25E-01	2847.00	3.25E-01		1.3E-03
Acrolein (TH)	107028	6.50E-03	6.50E+02	6.50E-03	2847.00	6.50E-03	3.25E+02 6.50E+00	2.6E-05
Antimony unlisted compounds (H)		4.50E-05	4.50E-02	4.50E-05		4.50E-05	4.50E-02	1.8E-07
Arsenic unlisted cmpds (comp. of ASC) (TH)		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		1.13E-04	1.13E-01	4.5E-07
Cobalt unlisted compounds (H)	COC-other	6.50E-06	6.50E-03	6.50E-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) Formaldehyde (TH)	75003	2.18E-06	2.18E-03	2.18E-06	0.02	2.18E-06	2.18E-03	8.7E-09 3.2E-03
Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8 (T)	57653857	7.97E-01 3.25E-10	7.97E+02 3.25E-07	7.97E-01 3.25E-10	6981.17 0.00	7.97E-01 3.25E-10	7.97E+02 3.25E-07	1.3E-12
Hexaden of California Competition (17) 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-01	5.25E+02	5.25E-01	459.90	5.25E-01	5.25E+02	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 108952	8.01E-05	8.01E-02	8.01E-05	0.70	8.01E-05	8.01E-02	3.2E-07 4.0E-06
Phenol (TH)		1.01E-03 7.00E-03	1.01E+00 7.00E+00	1.01E-03 7.00E-03	8.81 61.32	1.01E-03 7.00E-03	1.01E+00 7.00E+00	4.0E-06 2.8E-05
Phosphonie Matal Vallow or Mihito (Li)		7.000-03	1.000+00	2.20E-01	1927.20	2.20E-01	2.20E+00	8.8E-04
Phosphorus Metal, Yellow or White (H) Polycyclic Organic Matter (H)	7723140 POM		2 205102		1041.20	2.200-01	2.200702	1.3E-04
Polycyclic Organic Matter (H)	POM	2.20E-01	2.20E+02 3.25E+01		284 70	3 255-02	3 255-101	
Polycyclic Organic Matter (H) Propionaldehyde (H)	POM 123386	2.20E-01 3.25E-02	3.25E+01	3.25E-02	284.70	3.25E-02	3.25E+01	
Polycyclic Organic Matter (H) Propionaldehyde (H) Quinone (H)	POM 123386 106514	2.20E-01 3.25E-02 4.00E-02	3.25E+01 4.00E+01	3.25E-02 4.00E-02	350.40	4.00E-02	4.00E+01	1.6E-04
Polycyclic Organic Matter (H) Propionaldehyde (H) Quinone (H) Selenium compounds (H)	POM 123386 106514 SEC	2.20E-01 3.25E-02 4.00E-02 8.75E-05	3.25E+01 4.00E+01 8.75E-02	3.25E-02 4.00E-02 8.75E-05	350.40 0.77	4.00E-02 8.75E-05	4.00E+01 8.75E-02	1.6E-04 3.5E-07
Polycyclic Organic Matter (H) Propionaldehyde (H) Quinone (H) Selenium compounds (H) Styrene (TH)	POM 123386 106514 SEC 100425	2.20E-01 3.25E-02 4.00E-02 8.75E-05 2.40E-04	3.25E+01 4.00E+01 8.75E-02 2.40E-01	3.25E-02 4.00E-02 8.75E-05 2.40E-04	350.40 0.77 2.11	4.00E-02 8.75E-05 2.40E-04	4.00E+01 8.75E-02 2.40E-01	1.6E-04 3.5E-07 9.6E-07
Polycyclic Organic Matter (H) Propionaldehyde (H) Quinone (H) Selenium compounds (H)	POM 123386 106514 SEC	2.20E-01 3.25E-02 4.00E-02 8.75E-05	3.25E+01 4.00E+01 8.75E-02	3.25E-02 4.00E-02 8.75E-05	350.40 0.77	4.00E-02 8.75E-05	4.00E+01 8.75E-02	1.6E-04 3.5E-07
Polycyclic Organic Matter (H) Propionaldehyde (H) Quinone (H) Selenium compounds (H) Styrene (TH) Tetrachlorodibenzo-p-dioxin, 2,3,7,8- (TH)	POM 123386 106514 SEC 100425 1746016	2.20E-01 3.25E-02 4.00E-02 8.75E-05 2.40E-04 5.25E-11	3.25E+01 4.00E+01 8.75E-02 2.40E-01 5.25E-08	3.25E-02 4.00E-02 8.75E-05 2.40E-04 5.25E-11	350.40 0.77 2.11 0.00	4.00E-02 8.75E-05 2.40E-04 5.25E-11	4.00E+01 8.75E-02 2.40E-01 5.25E-08	1.6E-04 3.5E-07 9.6E-07 2.1E-13
Polycyclic Organic Matter (H) Propionaldehyde (H) Quinone (H) Selenium compounds (H) Styrene (TH) Tetrachlorodibenzo-p-dioxin, 2,3,7,8 (TH) Toluene (TH)	POM 123386 106514 SEC 100425 1746016 108883	2.20E-01 3.25E-02 4.00E-02 8.75E-05 2.40E-04 5.25E-11 7.29E-01	3.25E+01 4.00E+01 8.75E-02 2.40E-01 5.25E-08 7.29E+02	3.25E-02 4.00E-02 8.75E-05 2.40E-04 5.25E-11 7.29E-01	350.40 0.77 2.11 0.00 6386.67	4.00E-02 8.75E-05 2.40E-04 5.25E-11 7.29E-01	4.00E+01 8.75E-02 2.40E-01 5.25E-08 7.29E+02	1.6E-04 3.5E-07 9.6E-07 2.1E-13 2.9E-03
Polycyclic Organic Matter (H) Propionaldehyde (H) Quinone (H) Selenium compounds (H) Styrene (TH) Tetrachlorodibenzo-p-dioxin, 2,3,7,8- (TH) Toluene (TH) Trichloroethylene (TH)	POM 123386 106514 SEC 100425 1746016 108883 79016	2.20E-01 3.25E-02 4.00E-02 8.75E-05 2.40E-04 5.25E-11 7.29E-01 0.00E+00	3.25E+01 4.00E+01 8.75E-02 2.40E-01 5.25E-08 7.29E+02 0.00E+00	3.25E-02 4.00E-02 8.75E-05 2.40E-04 5.25E-11 7.29E-01 0.00E+00	350.40 0.77 2.11 0.00 6386.67 0.00	4.00E-02 8.75E-05 2.40E-04 5.25E-11 7.29E-01 0.00E+00	4.00E+01 8.75E-02 2.40E-01 5.25E-08 7.29E+02 0.00E+00	1.6E-04 3.5E-07 9.6E-07 2.1E-13 2.9E-03 0.0E+00
Polycyclic Organic Matter (H) Propionaldehyde (H) Quinone (H) Selenium compounds (H) Styrene (H) Tetrachlorodibenzo-p-dioxin, 2,3,7,8 (TH) Toluene (TH) Trichloroethylene (TH) Trichloroethylene (CFC 111) (T)	POM 123386 106514 SEC 100425 1746016 108883 79016 75694	2.20E-01 3.25E-02 4.00E-02 8.75E-05 2.40E-04 5.25E-11 7.29E-01 0.00E+00 1.35E-05	3.25E+01 4.00E+01 8.75E-02 2.40E-01 5.25E-08 7.29E+02 0.00E+00 1.35E-02	3.25E-02 4.00E-02 8.75E-05 2.40E-04 5.25E-11 7.29E-01 0.00E+00 1.35E-05	350.40 0.77 2.11 0.00 6386.67 0.00 0.12	4.00E-02 8.75E-05 2.40E-04 5.25E-11 7.29E-01 0.00E+00 1.35E-05	4.00E+01 8.75E-02 2.40E-01 5.25E-08 7.29E+02 0.00E+00 1.35E-02	1.6E-04 3.5E-07 9.6E-07 2.1E-13 2.9E-03 0.0E+00 5.4E-08

TOXIC AIR /	nd limitatio		of an annua		RMITTING PURPOSES)	EMISSION FACTOR (Ib/ton asphalt produced with Fabric filter controls
TOXIC AIR POLLUTANT	CAS Num.	lb/hr	lb/day	lb/yr	Modeling Required?	with Fabric Inter controls
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	
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Policiani	CAS No.	emissions from diver	emission from banding	TPER	Unita	TPER U	_	Controlled Emission Factor (loton)	Controlled Emission Rate (Exhour)	Emission factor (lotion)	Emission Rate (Ib/hv)	Emission factor (Ib/ton)	Embasion Rate (Ibrhr)	Emission Factor (Eviton)	Emission Rate (Itahour)	Controlled Emission Factor (Briton)	Controlled Emission Rate (Ibhour)	Controlled Emission Rate (Ib/day)	Controlled Emission Rate (Iblycar)	Controlled w/Limitations Emission Rate (Ib/day)	Controlled w/Lknitations Emission Rate (Eviyear)	Controlled ER greater than TPER	Controlled witumizations ER greater then TPER 7	Comments
Acetakiehyde (TH)	75070	yes	00	6.8	Rofty I	ANION/REGIS	ohiole	1,30E-03	3.25E-01	070000000000000000000000000000000000000	NAME OF TAXABLE PARTY	Internation	net many texas in		Collins of the	1.30E-03	3.25E-01	7.80E+00	2.85E+03	0.00E+00	3.25E+02	No	COLOR DOCTOR BON	NOTE (
Acrotein (TH)	107028	yes	ñ	0.02	bhy	1 1 1 1		2.60E-05	6.50E-03					有这种感情		2.606-05	6.50E-03	1.565-01	5.69E+01	0.00E+00	6.50E+00	No		NOTE 1
Formaldehyde (TH)	60000	755	105	0.94	ib/iv	Science of a	100	3,10E-03	7.76E41	8.41E-05	2.10E-42	1865-06	1.16E-64	8.176F-05		1.145-03	7.07E-01	1.516+01	6.946+63	0.005-00	7.47E+02	Yes		NOTE \$
Phenol (TH)	106952		143	0.24	B/W			mage shield	antis a second and a second	0.00E+00	0.00E+00	4.925-06	1.01E-03	4.02E-08	1.01E-03	4.026-06	1.01E-03	2.41E-02	8.812+00	0.00E+00	1.01E+00	No		NOTE 1
Styrene (TH)	100425	60		2.7	D/br			1181 1 61616		6.56E-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	2004/00/201	NOTE 1
Trichlorofuoromethane (CPC 111) (T)	75694	80	yes	140	15/hr	18981011		Live L. Per		0.00E+00	0.00€+00	5.41E-08	1.356-05	6.41E-08	1.355-05	5.41E-05	1.35E-05	3.24E-04	1.16E-01	0.0000+000	1.356-02	No		NOTE 1
Methyl chlorolorm (TH)	71556	783	yes	64	ID:TV	250	biday	1.80E-05	1.20E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.50E-05	1.20E-02	2.88E-01	1.05E+02	0.00E+00	1.20E+01	No	No	NOTE 1
Methyl ethyl kelone (TH)	78933	yes	yes	22.4	10/hr		ekday	2.005-05	5.00E-03	4.75E-05	1.19E-03	2.046-06	5.09E-04	6.79E-06	1.70E-03	2.64E-05	6.70E-03	1.61E-01	5.67E+01	0.00E+00	6.70E+00	No	No	NOTE 1
Tolvene (TH)	108883	yes	yes	14,4	10 hr		bAtay	2.90E-03	7.25E-01	7.66E-06	1.89E-03	8.73E-06	2.18E-03	1.63E-05		2.92E-03	7.29E-01	1:75E+01	6.39E+03	0.00E+00	7.29E+02	Ho	No	NOTE 1
Xylene (TH)	1330207	yes	yes	16,4	lb/hr		tivday :	2.00E-04	5.00E-02	2.44E-05	6.09E-03	1.716-05	4.26E-03	4.14E-05	1.04E-02	2.41E-04	6.04E-02	1.45E+00	5.29E+02	0.00€+00	6.04E+01	No	No	NOTE 1
Methylene chioride (TH)	76092	no	901	0.39	Ref.	1600 1	biyear		的目的間に設	3.29E-06	8.21E-06	0.00E+00	0.00E+00	3.29E-08	8.23E-05	3.29E-06	6.23E-06	1.97E-04	7.21E-02	0.00€+00	8.73E-03	No	No	NOTE 1
Soluble Chromate compounds as Chrome (VI) (TH)			00	0.013	lo/day	12.4.5		4 506-07	1,13E-04		(s) chairs	語語語を開始		ALL STATES AND ALL STATES	enteliendenni	4.50E-07	1.13E-04	2.70E-03	9.86E-01	0.00E+00	1.136-01	No	No	NOTE 1
Heaton, or (TH)	110543	yes.	yes	23	Riday		12120	9.36E-04	2.35E-01	1.22E-05	3.05E-03	6.24E-06	1.56E-03	1.84E-05	4.61E-03	9.57E-04	2.39E-01	6.74E+00	2.10E+03	0.00E+00	2.395+02	No	No	NOTE 1
Wanganese unlisted compounds (T)		r yes	no	0.63	biday		dit ilit.	7.70E-06	1.93E-03		distants of Apres	建筑的新闻				7.70E-05	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	biday		御殿:	2.40E-06	6.60E-04 1.60E-02	A CONSTRUCTION OF						2.00E-06 6.30E-05	0.50E-04 1.68E-02	1.66E-02 3.78E-01	6.60E+00	0.00E+00	6.50E-01 1.59E+01	Yes Yes	No	NOTE 2
Nickel motal (TH)	7440020 75150	yes	no	0.13	lbiday		71.55	6.30E-05	1.08E-02	1059-15.00 Jul			and supported		6.23E-04		6.23E-04		1.30E+02	0.00E+00	8.23E-01		No	NOTE 2
Cerbon disuffide (TH) Tetrachloroditenzo-p-dioxin 2.3.7.6- (TH)	1746015		Yes		ib/day				5.25E-11	1.95E-08	4,876-04	5.41E-07	1.355-04	2.49E-06	6.23E-04	2.49E-08 2.10E-13	6.23E-04 6.25E-11	1.49E-02 1.26E-09	5.455+00	0.00E+00 0.00E+00	5.25E-08	No	No	NOTE 1 NOTE 1
Arrenic unlived ampis (comp. of ASC) (14)		yes	no 50	0.0002	Rolyn Rolyn		123	2.10E-13	1.40E-04				THIS OF SUPER	And Salis And		210E-13 \$40E-07	1.40E-04	3.346-03	4.60E-07	0.00E+00	1.406-02	Yes	Yes	NOTE 3
Benzene (TH)	71432	yes yes		8.1	tolyr			3.905-04	5.26E-02	3,100 - 04	8.76E-04	2.162-08	8.41E C4	1052-01	1.528-03	1.1KE-04	1.40E-07	2.365+00	9.67E+02	0.00E+00	8.905-01	Yes	Yes	NOTE 3
Benzo(a)pyrene (T)	50328	yes	yes	2.2	60yr	Sec.		9.80E-09	2.45E-06	D.00E+00	0.00E+00	7.84E-09	1.96E-06	7.84E-09		1.76E-08	4.41E-05	1.058-04	3.85E-02	0.0000+00	4.41E-03	No	No	NOTE 1
Hydrogen Scalide (1)	7783064	yes	745	17	R/day			5.15E-05	1.30E-02	1.45E-05	3.66E-04	1.466-05	3.655-04	2.92E-06		5.47E-05	1.37E-02	3.288-01	1.20E+02	0.00E+00	1.376+01	No	No	NOTE 1
Bendium metal (unracted) (TH)	7440417	103		0.26	and a start	HARE NO	í KH	0.00E+00	0.00E+00	Strate 1 (July 1 and	a and a second second	ilika ishihilisin	athinki kilin	istatea talitatei Kirkiun be	NAMES OF TAXABLE PARTY.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.0000+00	0.00E+00	No	140	NOTE 1
Cadmium metal felemental unreacted) (TH)	7440439		60	0.37	ibber	200 X.M		4 10E-07	1.03E-01		ist in press					4.10E-07	1.03E-04	2.46E-03	6.96E-01	0.00E+00	1.93E-01	Yes	Ko	NOTE 2
Herachlorodibento-p-dioxin 1,2,3,6,7,8 (1)	57653857	yes	10	0.0051	D-M	Enco inc.	いていていていていていていていた。	1.305-12	3.25E-10				1.310.01	HARMAN		1.30E-12	3,25E-10	7.80E-09	2.65E-06	0.00E+00	3.25E-07	No	No	NOTE 1
Hydrogen Chloride (hydrochloric acid) (TH)	647010	yes	no	0.18	D/Y	12:20 11:1		2.10E-04	5.25E-02	Watan ta		CPR Present	d nutice 🖓			2.10E-04	5.25E-02	1.26E+00	4.60E+02	0.00€+00	5,25E+01	No		NOTE 1
Perchloroethylene (tetrachloroethylene) (TH)		no	Yes	13000	D/y	SCALES &	d R	folder state		0.00E+00	0.00E+00	3.20E-07	8.01E-05	3.20E-07	8.018-05	3.206-07	8.01E-05	1.92E-03	7.01E-01	0.00€+00	8.01E-02	No	No	NOTE 1
Trichtoroethylene (TH)	79016	no	762	4000	Refer			S PAR		0.00E+00	0.00E+00	0.00€+00	0.00E+03	0.00E+00	0.0000+000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	No	No .	NOTE 1
Napthalene (H)	91203	785	yes	and a start of the	1 Million Ballion	INCOLUMN D	2120233	6.50E-04	1.63E-01	4.62E-06	1.16E-03	4.266-06	1.07E-03	8.88E-06	2.226-03	6.59E-04	1.65E-01	3.95E+00	1.44E+03	0.00E+00	1,65E+02	Lupublishing	LOWING LOWIT CALL	COLUMN SACULTIC
Phosphorus Metal, Yellow or White (H)	7723140	pes.	no		124.25	CINERU AND	OF THE	2.80E-05	7.00E-03	REPORT	NORT DESCRIPTION OF BOARD	HEALTHON FRANCES	INSING DURING L	160 Million Marchan		2,806-05	7.00E-03	1.68E-01	6.13E+01	0.00E+00	7.00E+00	The second second	CORLECTION REPORT	King and the second
Polycyclic Organic Matter (H)	POM	745	no				9.08	8.805-04	2.20E-01							8.80E-04	2.20E-01	5.28E+00	1.93E+03	0.00E+00	2.20E+02			(including in the
Propionaldehyde (H)	123355	yes	no		Heal A.	- 1		1.30E-04	3.25E-02							1.30E-04	3.25E-02	7.60E-01	2.85E+02	0.00E+00	3.25E+01	102 222	alla statistica	(1 1 1 1 1
Quinone (H)	106614	yes	no		5.000 M 12			1.60E-04	4.00E-02			land toxet it.	Resident	Second Call		1.60E-04	4.00E-02	9.60E-01	3.505+02	0.00E+00	4,00E+01			
Selenium compounds (H)	SEC	i.ee	no				翻翻	3.50E-07	8.75E-05					机设计		3.50E-07	8.75E-05	2.10E-03	7.67E-01	0.006+00	8.75E-02			
Trimethylpentane, 2,2,4- (H)	540841	Aaa	As.		ILCON DO	4214		4.00E-05	1.00E-02	3.76E-08	9.44E-06	7.49E-08	1.87E-05	1.13E-07		4.01E-05	1.00E-02	2.41E-01	8.76E+01	0.00E+00	1.00E+01	HERE	HISTOLY I'F	
Antimory unlisted compounds (H)	SBC-other		10					1.80E-07	4,50E-05					188.CE 1. R.		1.608-07	4.50E-05	1.06E-03	3.94E-01	0.00E+00	4.50E-02]		國際的設計
Chromium unlisted cmpds (add withrom acid to get CRC) (H)			no A0	Inclusion State				5.056-06	1.26E-03 6.50E-06		e me li i			STREET SOL		5.05E-06 2.60E-08	1.26E-03 6.50E-08	3.03E-02 1.56E-04	1.11E+01	0.00E+00	1.26E+00 6.50E-03		h Blaith an	and the second
Cobalt unlisted compounds (H)	100414		700					2.60E-08	6.00E-06	4.636-06	1.16E-03	IGE ST CHIEF COLORS		NUESS (UNIT)	4.07E-03	2.60E-08	6.50E-08 6.41E-02	1.56E-04	5.69E-02		6.412+01		Later Real	Spints with
Ethyl benzene (H) Lead unisted compounds (H)	PBC-other	yes yes	yes				調査	2.40E-04	6.00E-02 3,75E-03		1,165-03	1.16E-05	2.91E-03	1.63E-05		1.50E-05	8.41E-02 3.75E-03	1.54E+00 9.00E-02	5.61E+02 3.29E+01	0.00E+00 0.00E+00	3 75E+00			,
Lead Unitated compounds (H) Methyl bromide (H)	74839	749	Yes		illinia.			1.50E-05	50-301.6	5.97E-07					2.498-04	9,965-07	3./SE-03	9.00E-02 6.98E-03	3.29E+01 2.18E+00	0.00E+00	2.49E-01	THE ST	13 C B B B B B B B B B B B B B B B B B B	
Cumene (H)	96828	10	yes yes					MARK SHE		5.97E-07 0.00E+00	1.49E-04 0.00E+00	3.99E-07 4.57E-06	9.95E-05 1.14E-03	9.96E-07 4.57E-05	1.146-03	4.57E-06	2.49E-04 1.14E-03	2.74E-02	2.18E+00 1.00E+01	0.00E+00 . 0.00E+00	1,146+00		ENS ZOID THE	(B) (C) (A) (A)
Ethyl chiaride (chiaroethane) (H)	75003	10	Y#3	24				COMPANY OF C		0.00E+00	0.002+00	8,73E-09	2.18E-06	8.735-09	2.16E-05	8.73E-09	2,15E-06	5.248-05	1,915-02	0.000+00	2.16E-03			1927 30 5
Methyl chloride (20	74873	no	703	122	150.55				i. King Con	0.00E+00	0.000 +000	6.24E-07	1.56E-04	6.24E-07	1.566-04	6.24E-07	1.56E-04	3.74E-03	1.37E+00	0.00E+00	1.566-01	AND LOUGH		an i se
Xylene, o- (H)	95475	no	yes							6.95E-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	0.00€+00	2.57E+00			
HAPS TOTAL				-				1.00E-02	2.50E+00	1.87E-04	4.66E-02	8.666-05	2.17E-02	2,746-04	6.856-02	1.03E-02	2.57E+00	6.16E+01	2.25E+04	0.00E+00	2.57E+03			And the second second second

nts the emission rate c odeling determinations.

Asphalt cement heater heat input sulfur content Assumptions:

2.3 MMBtu/hr 0.50 %S

Fired with distillate oil (No.2 or diesel)Emission factors taken from AP-42 section 1.3Heating value140MMBtu/ 1000 gallons

Pollutant	factors		factors
•	(lb/1000 gallon)		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

RAP crusher							
maximum capacity	65	tph					
hours of operation	8760	hours					
	emission fa	actors (dry)	emissions		emissions		
	(lb/ton)	(lb/ton)	(lb/hr)	(lb/hr)	ton/yr	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	
	1	total	2.17	0.79	9.51	3.47	

combined EF 0.0334 0.0122

Emissions summary from Silo Filling and Loadout operations

			1 Factors	Potential		Emission factors
		(lb/ton)	(lb/ton)	(lb/hr)	(lb/hr)	(lb/ton)
		Silo Filling	Load out	Silo Filling	Load out	
		SCC-3-05-	SCC-3-05-	SCC-3-05-	SCC-3-05-	Silo Filling plus Load
D-Wit-st	CAS	002-13	002-14	002-13	002-14	Out
Pollutant	Nos.					
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
chloroethylene (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:	
Requested Annual Production Limit:	
Requested Daily Production Limit:	

Hydrogen Sulfide

7783064

tons per hour tons per year tons per day

250 250,000 0

V		5%				
t		5 oF				
	78	5 oR				
Table 11.1-14						
Predictive Emission Factor	or Equations	for Load out and allo				
Filling Operations	orequations	for Load-out and slip				
Fining Operations			· · · · · · · · · · · · · · · · · · ·			
source	pollutant	EF (lb/ton)				
	Total PI		7			
Load out SCC-3-05-	Organic PM					
002-14	то					
	CC					
	Total PN	A 0.000585889)	1.1.1		
Silo Filling SCC-3-05-	Organic PM	A 0.000253889)			
002-13	TO	0.012186685	5			
	CC	0.001179981				
				and the second second		
Table 11.1-15						
Speciation Profiles for Lo			El de la Colorada de			
Emissions - Organic PM I	based Compo	ounds				
		Spec. profile for Load-out	Spec. profile for Silo filling			
		and yard emissions	and asphalt storage tank			
			emissions			
		% Compound / Organic	% Compound / Organic			
		PM	PM	24 002/001/02/07/02/02/02/02/02/02	loadout emission factors	Silo filling emission
					(lb/ton)	factors (lb/ton)
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
	HAPs TOTAL		11.4		2.02176E-05	2.89434E-05
Phenol (TH)	108952	1.18	0		4.02306E-06	0
				and the second second		
Table 11.1-16						
Speciation Profiles for Loa						
		mpounds				
Speciation Profiles for Loa		mpounds Spec. profile for Load-	Spec. profile for Silo			
Speciation Profiles for Loa		mpounds				
Speciation Profiles for Loa		mpounds Spec. profile for Load-	Spec. profile for Silo			Cile filling and a
Speciation Profiles for Loa		mpounds Spec. profile for Load- out and yard emissions	Spec. profile for Silo filling and asphalt		loadout emission factors	
Speciation Profiles for Loa Emissions - Organic Volai		mpounds Spec. profile for Load- out and yard emissions % Compound / TOC	Spec. profile for Silo filling and asphalt % Compound / TOC		(lb/ton)	factors (lb/ton)
Speciation Profiles for Loa Emissions - Organic Volai VOC	tile based Co	mpounds Spec. profile for Load- out and yard emissions % Compound / TOC 94	Spec. profile for Silo filling and asphalt % Compound / TOC 100		(lb/ton) 0.003909411	factors (lb/ton) 0.012186685
Speciation Profiles for Loc Emissions - Organic Volat VOC Benzene (TH)	tile based Co 71432	mpounds Spec. profile for Load- out and yard emissions % Compound / TOC 94 0.052	Spec. profile for Silo filling and asphalt % Compound / TOC 100 0.032		(lb/ton) 0.003909411 2.16265E-06	factors (lb/ton) 0.012186685 3.89974E-06
Speciation Profiles for Los Emissions - Organic Volai VOC Benzene (TH) Methyl bromide (H)	tile based Co 71432 74839	mpounds Spec. profile for Load- out and yard emissions % Compound / TOC 94 0.052 0.0096	Spec. profile for Silo filling and asphalt % Compound / TOC 100 0.032 0.0049		(lb/ton) 0.003909411 2.16265E-06 3.99259E-07	factors (lb/ton) 0.012186685 3.89974E-06 5.97148E-07
Speciation Profiles for Loa Emissions - Organic Volat VOC Benzene (TH) Methyl bromide (H) Methyl ethyl ketone (TH)	71432 74839 78933	mpounds Spec. profile for Load- out and yard emissions % Compound / TOC 94 0,052 0,0096 0.049	Spec. profile for Silo filling and asphalt % Compound / TOC 100 0.032 0.0049 0.039		(lb/ton) 0.003909411 2.16265E-06 3.99259E-07 2.03788E-06	factors (lb/ton) 0.012186685 3.89974E-06 5.97148E-07 4.75281E-06
Speciation Profiles for Loa Emissions - Organic Volat VOC Benzene (TH) Methyl bromide (H) Methyl athyl ketone (TH) Carbon disuffide (TH)	71432 74839 78933 75150	mpounds Spec. profile for Load- out and yard emissions % Compound / TOC 94 0.052 0.0096 0.049 0.013	Spec. profile for Silo filling and asphalt % Compound / TOC 100 0.032 0.0049 0.039 0.016		(lb/ton) 0.003909411 2.16265E-06 3.99259E-07 2.03788E-06 5.40663E-07	factors (lb/ton) 0.012186685 3.89974E-06 5.97148E-07 4.75281E-06 1.94987E-06
Speciation Profiles for Loc Emissions - Organic Volat VOC Benzene (TH) Methyl bromide (H) Methyl ethyl ketone (TH) Carbon disulfde (TH) Curnene (H)	71432 74839 76933 75150 98828	mpounds Spec. profile for Load- out and yard emissions % Compound / TOC 94 0.052 0.0096 0.049 0.013 0.11	Spec. profile for Silo filling and asphalt % Compound / TOC 100 0.032 0.0049 0.039 0.016 0		(lb/ton) 0.003909411 2.16265E-06 3.99259E-07 2.03788E-06 5.40663E-07 4.57484E-06	factors (lb/ton) 0.012186685 3.89974E-06 5.97148E-07 4.75281E-06 1.94987E-06 0
Speciation Profiles for Loc Emissions - Organic Volat VOC Benzene (TH) Methyl bromide (H) Methyl ethyl ketone (TH) Carbon disulfide (TH) Cumene (H) Ethyl benzene (H)	71432 74839 78933 75150 98828 100414	mpounds Spec. profile for Load- out and yard emissions % Compound / TOC 94 0.052 0.0096 0.049 0.013 0.11 0.28	Spec. profile for Silo filling and asphalt % Compound / TOC 100 0.032 0.0049 0.039 0.016		(lb/ton) 0.003909411 2.16265E-06 3.99259E-07 2.03788E-06 5.40663E-07 4.57484E-06 1.16451E-05	factors (lb/ton) 0.012186685 3.89974E-06 5.97148E-07 4.75281E-06 1.94987E-06 0 4.63094E-06
Speciation Profiles for Los Emissions - Organic Volai VOC Benzene (TH) Methyl bromide (H) Methyl bromide (H) Carbon disulfide (TH) Carbon disulfide (TH) Ethyl benzene (H) Ethyl benzene (H)	71432 74639 78933 75150 98828 100414 75003	mpounds Spec. profile for Load- out and yard emissions % Compound / TOC 94 0.052 0.0096 0.049 0.013 0.11 0.28 0.00021	Spec. profile for Silo filling and asphalt % Compound / TOC 100 0.032 0.0049 0.039 0.016 0 0.038		(Ib/ton) 0.003909411 2.16265E-06 3.99259E-07 2.03788E-06 5.40663E-07 4.57484E-06 1.16451E-05 8.73379E-09	factors (lb/ton) 0.012186685 3.89974E-06 5.97148E-07 4.75281E-06 1.94987E-06 0 4.63094E-06 0
Speciation Profiles for Loa Emissions - Organic Volat VOC Benzene (TH) Methyl bromide (H) Garbon disulfide (TH) Curnene (H) Ethyl chloride (chloroethane) (H) Ethyl chloride (chloroethane) (TH)	71432 74839 78933 75150 98828 100414 75003 50000	mpounds Spec. profile for Load- out and yard emissions % Compound / TOC 94 0.052 0.0096 0.049 0.013 0.11 0.28 0.00021 0.0021 0.088	Spec. profile for Silo filling and asphalt % Compound / TOC 100 0.032 0.0049 0.039 0.016 0 0.038 0.038		(lb/ton) 0.003909411 2.16265E-06 3.99259E-07 2.03788E-06 5.40663E-07 4.57484E-06 1.16451E-05 8.73379E-09 3.65987E-06	factors (lb/ton) 0.012186685 3.89974E-06 5.97148E-07 4.75281E-06 1.94987E-06 0 4.63094E-06 0 8.40881E-05
Speciation Profiles for Loz Emissions - Organic Volat VOC Benzene (TH) Methyl bromide (H) Carbon disulfde (TH) Cumene (H) Ethyl benzene (H) Ethyl benzene (H) Formaldehyde (TH) Hexane, n- (TH)	71432 74839 78933 75150 98828 100414 75003 50000 110543	mpounds Spec. profile for Load- out and yard emissions % Compound / TOC 94 0.052 0.0096 0.049 0.013 0.11 0.28 0.00021 0.088 0.15	Spec. profile for Silo filling and asphalt % Compound / TOC 100 0.032 0.0049 0.039 0.016 0 0.038		(Ib/ton) 0.003909411 2.16265E-06 3.99259E-07 2.03788E-06 5.40663E-07 4.57484E-06 1.16451E-05 8.73379E-09 3.65987E-06 6.23842E-06	factors (lb/ton) 0.012186685 3.89974E-06 5.97148E-07 4.75281E-06 1.94987E-06 0 4.63094E-06 0 8.40881E-05 1.21867E-05
Speciation Profiles for Loc Emissions - Organic Volat VOC Benzene (TH) Methyl bromide (H) Methyl ethyl ketone (TH) Carbon disuifde (TH) Ethyl benzene (H) Ethyl benzene (H) Formaldehyde (TH) Hexane, n- (TH) Methyl chloride (H)	71432 74839 78933 75150 98828 100414 75003 50000 110543 74873	mpounds Spec. profile for Load- out and yard emissions % Compound / TOC 94 0.052 0.0096 0.049 0.013 0.11 0.28 0.00021 0.088 0.15 0.15 0.015	Spec. profile for Silo filling and asphalt % Compound / TOC 100 0.032 0.0049 0.039 0.016 0 0.038 0.038 0.69 0.1		(lb/ton) 0.003909411 2.16265E-06 3.99259E-07 2.03788E-06 5.40663E-07 4.57484E-06 1.16451E-05 8.73379E-09 3.65987E-06 6.23842E-06 6.23842E-07	factors (lb/ton) 0.012186685 3.89974E-06 5.97148E-07 4.75281E-06 0 4.63094E-06 0 8.40881E-05 1.21867E-05 0
Speciation Profiles for Loc Emissions - Organic Volat VOC Benzene (TH) Methyl bromide (H) Methyl athyl ketone (TH) Carbon disuffide (TH) Cumene (H) Ethyl benzene (H) Ethyl benzene (H) Formaldehydd (TH) Hexane, n- (TH) Methyl chloride (rH)	71432 74839 78933 75150 98828 100414 75003 50000 110543 74873 71556	mpounds Spec. profile for Load- out and yard emissions % Compound / TOC 94 0.052 0.0096 0.049 0.013 0.11 0.28 0.00021 0.088 0.15 0.015 0.015 0	Spec. profile for Silo filling and asphalt % Compound / TOC 100 0.032 0.0049 0.039 0.016 0 0.038 0.69 0.1 0		(Ib/ton) 0.003909411 2.16265E-06 3.99259E-07 2.03788E-06 5.40663E-07 4.57484E-06 1.16451E-05 8.73379E-09 3.65987E-06 6.23842E-06 6.23842E-07 0	factors (lb/ton) 0.012186685 3.89974E-06 5.97148E-07 4.75281E-06 0 4.63094E-06 0 8.40881E-05 1.21867E-05 0 0
Speciation Profiles for Los Emissions - Organic Volai VOC Benzene (TH) Methyl bromide (H) Methyl bromide (H) Carbon disulfide (TH) Carbon disulfide (TH) Ethyl benzene (H) Ethyl benzene (H) Hyn benzene (H) Hothyl chloride (chloroethane) (H) Hothyl chloride (H) Methyl chlorider (TH) Methyl chlorider (TH)	71432 74839 78933 75150 98828 100414 75003 50000 110543 74873 71556 75092	mpounds Spec. profile for Load- out and yard emissions % Compound / TOC 94 0.052 0.0096 0.049 0.013 0.11 0.28 0.00021 0.088 0.15 0.015 0.015 0 0	Spec. profile for Silo filling and asphalt % Compound / TOC 0.032 0.0049 0.039 0.016 0 0.038 0.69 0.1 0 0.00027		(lb/ton) 0.003909411 2.16265E-06 3.99259E-07 2.03788E-06 5.40663E-07 4.57484E-06 1.16451E-05 8.73379E-09 3.65987E-06 6.23842E-06 6.23842E-07 0 0	factors (lb/ton) 0.012186685 3.89974E-06 5.97148E-07 4.75281E-06 0 4.63094E-06 0 8.40881E-05 1.21867E-05 0
Speciation Profiles for Los Emissions - Organic Volai VOC Benzene (TH) Methyl bromide (H) Methyl bromide (H) Carbon disulfide (TH) Carbon disulfide (TH) Ethyl benzene (H) Ethyl benzene (H) Hyn benzene (H) Hothyl chloride (chloroethane) (H) Hothyl chloride (H) Methyl chlorider (TH) Methyl chlorider (TH)	71432 74839 78933 75150 98828 100414 75003 50000 110543 74873 71556	mpounds Spec. profile for Load- out and yard emissions % Compound / TOC 94 0.052 0.0096 0.049 0.013 0.11 0.28 0.00021 0.088 0.15 0.015 0 0.015 0 0.0077	Spec. profile for Silo filling and asphalt % Compound / TOC 100 0.032 0.0049 0.039 0.016 0 0.038 0.69 0.1 0 0.00027 0		(Ib/ton) 0.003909411 2.16265E-06 3.99259E-07 2.03788E-06 5.40663E-07 4.57484E-06 1.16451E-05 8.73379E-09 3.65987E-06 6.23842E-06 6.23842E-07 0 0 3.20239E-07	factors (lb/ton) 0.012186685 3.89974E-06 5.97148E-07 4.75281E-06 1.94987E-06 0 4.63094E-06 0 8.40881E-05 1.21867E-05 0 0 3.29041E-08 0
Speciation Profiles for Los Emissions - Organic Volai VOC Benzene (TH) Methyl bromide (H) Methyl bromide (H) Carbon disulfide (TH) Carbon disulfide (TH) Ethyl benzene (H) Ethyl benzene (H) Hormaldehyde (TH) Hexane, n- (TH) Methyl chlorider (H) Methyl chloridorm (TH)	71432 74839 78933 75150 98828 100414 75003 50000 110543 74873 71556 75092	mpounds Spec. profile for Load- out and yard emissions % Compound / TOC 94 0.052 0.0096 0.049 0.013 0.11 0.28 0.00021 0.088 0.15 0.015 0 0.015 0 0.0077 0.0073	Spec. profile for Silo filling and asphalt % Compound / TOC 0.032 0.0049 0.039 0.016 0 0.038 0.69 0.1 0 0.00027 0 0.00027 0 0.00054		(Ib/ton) 0.003909411 2.16265E-06 3.99259E-07 2.03788E-06 5.40663E-07 4.57484E-06 1.16451E-05 8.73379E-09 3.65987E-06 6.23842E-06 6.23842E-07 0 0 3.20239E-07 3.03603E-07	factors (ib/ton) 0.012186685 3.89974E-06 5.97148E-07 4.75281E-06 1.94987E-06 0 4.63094E-06 0 8.40881E-05 1.21867E-05 0 0 3.29041E-08 0 6.58081E-07
Speciation Profiles for Loz Emissions - Organic Volat VOC Benzene (TH) Methyl bromide (H) Methyl ethyl ketone (TH) Carbon disulfde (TH) Ethyl cholde (chloroethane) (H) Ethyl chlorde (chloroethane) (H) Formaldehyde (TH) Methyl chlorder (H) Methyl chlorder (H) Methyl enclorder (TH)	71432 74839 78933 75150 98828 100414 75003 50000 110543 74873 71556 75092 127184	mpounds Spec. profile for Load- out and yard emissions % Compound / TOC 94 0.052 0.0096 0.049 0.013 0.11 0.28 0.00021 0.088 0.15 0.015 0.015 0 0 0 0.0077 0.0073 0.21	Spec. profile for Silo filling and asphalt % Compound / TOC 0.032 0.0049 0.039 0.016 0 0.038 0.69 0.1 0 0.00027 0 0.00054 0.062		(Ib/ton) 0.003909411 2.16265E-06 3.99259E-07 2.03788E-06 5.40663E-07 4.57484E-06 1.16451E-05 8.73379E-09 3.65987E-06 6.23842E-06 6.23842E-07 0 0 3.20239E-07	factors (lb/ton) 0.012186685 3.89974E-06 5.97148E-07 4.75281E-06 1.94987E-06 0 4.63094E-06 0 8.40881E-05 1.21867E-05 0 3.29041E-08 0 6.58081E-07 7.55574E-06
Speciation Profiles for Loz Emissions - Organic Volai Benzene (TH) Methyl bromide (H) Methyl ethyl ketone (TH) Carbon disulfide (TH) Carbon disulfide (TH) Ethyl chloride (chloroethane) (H) Ethyl chloride (chloroethane) Hexane, n- (TH) Methyl chloride (TH) Methyl chloride (TH) Methyl enkorde (TH)	71432 74839 78933 75150 98828 100414 75003 50000 110543 74873 71556 75092 127184 100425	mpounds Spec. profile for Load- out and yard emissions % Compound / TOC 94 0.052 0.0096 0.049 0.013 0.11 0.28 0.00021 0.088 0.15 0.015 0.015 0 0 0 0.0077 0.0073 0.21 0	Spec. profile for Silo filling and asphalt % Compound / TOC 0.032 0.0049 0.039 0.016 0 0.038 0.69 0.1 0 0.00027 0 0.00054 0.062 0		(Ib/ton) 0.003909411 2.16265E-06 3.99259E-07 2.03788E-06 5.40663E-07 4.57484E-06 1.16451E-05 8.73379E-09 3.65987E-06 6.23842E-06 6.23842E-07 0 0 3.20239E-07 3.03603E-07	factors (lb/ton) 0.012186685 3.89974E-06 5.97148E-07 4.75281E-06 1.94987E-06 0 4.63094E-06 0 8.40881E-05 1.21867E-05 0 0 3.29041E-08 0 6.58081E-07 7.55574E-06 0
Speciation Profiles for Loc Emissions - Organic Vola Benzene (TH) Methyl bromide (H) Methyl thyl kone (TH) Carbon disulfide (TH) Carbon disulfide (TH) Carbon disulfide (TH) Ethyl benzene (H) Ethyl benzene (H) Ethyl benzene (H) Hexane, n- (TH) Methyl chloroform (TH) Methyl chloroform (TH) Methyl chloroform (TH) Methylene chloidde (TH) rchloroethylene (tetrachloroethylene) (TH)	tile based Co 71432 74839 78933 75150 98828 100414 75003 50000 110543 74573 71556 75092 127184 100425 108883	mpounds Spec. profile for Load- out and yard emissions % Compound / TOC 94 0.052 0.0096 0.049 0.013 0.11 0.28 0.00021 0.088 0.15 0.015 0.015 0 0 0 0.0077 0.0073 0.21	Spec. profile for Silo filling and asphalt % Compound / TOC 0.032 0.0049 0.039 0.016 0 0.038 0.69 0.1 0 0.00027 0 0.00054 0.062		(Ib/ton) 0.003909411 2.16265E-06 3.99259E-07 2.03788E-06 5.40663E-07 4.57484E-06 1.16451E-05 8.73379E-09 3.65987E-06 6.23842E-07 0 3.20239E-07 3.03603E-07 8.73379E-06	factors (lb/ton) 0.012186685 3.89974E-06 5.97148E-07 4.75281E-06 1.94987E-06 0 4.63094E-06 0 8.40881E-05 1.21867E-05 0 3.29041E-08 0 6.58081E-07 7.55574E-06
Speciation Profiles for Loz Emissions - Organic Volat VOC Benzene (TH) Methyl tormide (H) Methyl thyl ketone (TH) Carbon disulfide (TH) Carbon disulfide (TH) Carbon disulfide (TH) Ethyl chloride (chloroethane) (H) Ethyl chloride (chloroethane) (H) Hexane, n- (TH) Methyl chloride(TH) Methyl chloroform (TH) Methyl chlorote (TH) rchloroethylene) (TH) Styrene (TH) Toluene (TH)	71432 74639 78933 75150 98828 100414 75003 50000 110543 74873 71556 75092 127184 100425 108883 79016	mpounds Spec. profile for Load- out and yard emissions % Compound / TOC 94 0.052 0.0096 0.049 0.013 0.11 0.28 0.00021 0.088 0.15 0.015 0.015 0 0 0 0.0077 0.0073 0.21 0	Spec. profile for Silo filling and asphalt % Compound / TOC 0.032 0.0049 0.039 0.016 0 0.038 0.69 0.1 0 0.00027 0 0.00054 0.062 0		(Ib/ton) 0.003909411 2.16265E-06 3.99259E-07 2.03788E-06 5.40663E-07 4.57484E-06 1.16451E-05 8.73379E-09 3.65987E-06 6.23842E-06 6.23842E-07 0 0 3.20239E-07 3.03603E-07 8.73379E-06 0	factors (lb/ton) 0.012186685 3.89974E-06 5.97148E-07 4.75281E-06 1.94987E-06 0 4.63094E-06 0 8.40881E-05 1.21867E-05 0 0 3.29041E-08 0 6.58081E-07 7.55574E-06 0
Speciation Profiles for Loz Emissions - Organic Volat Benzene (TH) Methyl bromide (H) Methyl ketone (TH) Carbon disulfide (TH) Carbon disulfide (TH) Ethyl benzene (H) Ethyl benzene (H) Ethyl chloride (chloroethane) (H) Formaldehyde (TH) Hexane, n- (TH) Methyl chloroform (TH) Methyl chloroform (TH) Methylene chloride (TH) roluene (TH) Trichloroethylene (TH) Trichloroethylene (TH)	71432 74839 78933 75150 98828 100414 75003 50000 110543 74873 71556 75092 127184 100425 108883 79016 75694	mpounds Spec. profile for Load- out and yard emissions % Compound / TOC 94 0.052 0.0096 0.049 0.013 0.11 0.28 0.00021 0.088 0.15 0.0015 0 0 0 0.0077 0.0073 0.21 0 0 0.0013	Spec. profile for Silo filling and asphalt % Compound / TOC 0.032 0.0049 0.039 0.016 0 0.038 0.69 0.1 0 0.00027 0 0.0054 0.062 0 0		(Ib/ton) 0.003909411 2.16265E-06 3.99259E-07 2.03788E-06 5.40663E-07 4.57484E-06 1.16451E-05 8.73379E-09 3.65987E-06 6.23842E-06 6.23842E-07 0 0 3.20239E-07 3.03603E-07 8.73379E-06 0 5.40663E-08	factors (ib/ton) 0.012186685 3.89974E-06 5.97148E-07 4.75281E-06 1.94987E-06 0 4.63094E-06 0 8.40881E-05 1.21867E-05 0 0 3.29041E-08 0 6.58081E-07 7.55574E-06 0 0 0
Speciation Profiles for Loz Emissions - Organic Volat Benzene (TH) Methyl bromide (H) Methyl ethyl ketone (TH) Carbon disulfide (TH) Carbon disulfide (chloroethnae) (H) Ethyl chloride (chloroethnae) (H) Ethyl chloride (chloroethnae) (TH) Hexane, n- (TH) Methyl chloride (TH) Methyl chloride (TH) Methyl chloride (TH) Methyl chloride (TH) Trichloroethylene (TH) Trichloroethylene (TH) Trichloroethylene (TH) Trichloroethylene (TH) Trichloroethylene (TH)	71432 74839 78933 75150 98828 100414 75003 50000 110543 74873 74873 71556 75092 127184 100425 108883 79016 75694 540841	mpounds Spec. profile for Load- out and yard emissions % Compound / TOC 94 0.052 0.0096 0.049 0.013 0.11 0.28 0.00021 0.088 0.15 0.015 0 0 0.0077 0.0073 0.21 0 0 0.0073 0.21 0 0.0013 0.0013 0.0018	Spec. profile for Silo filling and asphalt % Compound / TOC 100 0.032 0.0049 0.039 0.016 0 0.038 0.69 0.1 0 0.00027 0 0.00054 0.0054 0.062 0 0 0.00031		(Ib/ton) 0.003909411 2.16265E-06 3.99259E-07 2.03788E-06 5.40663E-07 4.57484E-06 1.16451E-05 8.73379E-09 3.65987E-06 6.23842E-07 0 0 3.20239E-07 3.03603E-07 8.73379E-06 0 5.40663E-08 7.48611E-08	factors (ib/ton) 0.012186685 3.89974E-06 5.97148E-07 4.75281E-06 1.94987E-06 0 4.63094E-06 0 8.40881E-05 1.21867E-05 0 0 3.29041E-08 0 6.58081E-07 7.55574E-06 0 0 3.77787E-08
Speciation Profiles for Loc Emissions - Organic Vola Benzene (TH) Methyl bromide (H) Methyl ethyl ketone (TH) Carbon disuffde (TH) Carbon disuffde (TH) Ethyl benzene (H) Ethyl benzene (H) Ethyl benzene (H) Ethyl benzene (H) Formaldehyde (TH) Hexane, n- (TH) Methyl chlorofer (TH) Methyl chlorofer (TH) Methyl chlorofer (TH) Methylene chloride (TH) Chloroethylene (TH) Trichloroethylene (TH) Trichlorofluroromethane (CFC 111) (T) Trimethylpentane, 2,2,4- (H) Xylene (TH)	tile based Co 71432 74839 78933 75150 98828 100414 75003 50000 110543 74873 71556 75092 127184 100425 108883 79016 75694 540841 1330207	mpounds Spec. profile for Load- out and yard emissions % Compound / TOC 94 0.052 0.0096 0.049 0.013 0.11 0.28 0.00021 0.088 0.15 0.015 0.015 0 0 0.0077 0.0073 0.21 0 0.0013 0.0077 0.0077 0.0073 0.21 0.0013 0.0013 0.0013 0.0013 0.0077 0.0073 0.21 0.0013 0.0013 0.0077 0.0073 0.21 0.0013 0.0013 0.0077 0.0073 0.21 0.0013 0.0013 0.0077 0.0073 0.21 0.0013 0.0073 0.21 0.0013 0.0013 0.0073 0.21 0.0013 0.0013 0.0073 0.21 0.0013 0.0013 0.0073 0.21 0.0013 0.0013 0.0073 0.0013 0.0013 0.0013 0.0073 0.21 0.0013 0.0010	Spec. profile for Silo filling and asphalt % Compound / TOC 100 0.032 0.0049 0.039 0.016 0 0.038 0.69 0.1 0 0.00027 0 0 0.00027 0 0 0.00054 0.0054 0.0054 0.00031 0.2		(Ib/ton) 0.003909411 2.16265E-06 3.99259E-07 2.03788E-06 5.40663E-07 4.57484E-06 1.16451E-05 8.73379E-09 3.655987E-06 6.23842E-06 6.23842E-07 0 0 3.20239E-07 3.03603E-07 8.73379E-06 0 5.40663E-08 7.48611E-08 1.70517E-05	factors (ib/ton) 0.012186685 3.89974E-06 5.97148E-07 4.75281E-06 1.94987E-06 0 4.63094E-06 0 8.40881E-05 1.21867E-05 0 0 3.29041E-08 0 6.58081E-07 7.55574E-06 0 0 3.77787E-08 2.43734E-05

 loadout emission factors
 Silo filling emission factors (lb/ton)

 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 ourrent as of	FATCH BATCH	BATCH	DRVM	DRUM	DRUN	CH122	(.HU.W	CRIM	C-Film	CRUM
KEY: Metals in Red Dente in Cram.	Dryer, hut screens and mores Netural ges or No.		New rol and first door with	No.2 fuel of-fired dryer with	Weste of fired dryer with	france converse of the	free of the series of first	FUE OF HEAD GIVE	House gas a propose-fred	No.2 fuel of, waster of, their 🖁
All blue cells on this sheet are linked to other cells. Correct original cell	(with Sabrie Aller) Inter with fetri	screens and motor with labric	tebric filer	tabric Nier	Noric Alter	978 ×31256 text	age anations	uncontrolled	drywr with Subine Sizer	of No.5 Ket of Jost dryer with Notes filer
All black cells are original cells		iller	<u> </u>	· · · · ·						
	ECC 3-05-002-45, -45, -47 SOC 3-05-002-4	-45 SOC 3-05-002-47	SCC 3-05-002-55, -56, -57	SOC 3-05-002-58, -59, -60	SCC 3-05-002-81, -82, -63	852, 343-40452, 40, 40, 40, 40, 40, 40, 40, 40, 40, 40	800 \$0303232 40 -84 - 81 42 -03	SCC 3-05-002-55, -50 -90	SCC 346-002-55, -96, -57	900 3 06 002 58, -(0, -90, - 61, -62, -63
	Table 11.1-11 Table 11.1-	Tebio 11.1-9	acte 11.1-10	Table 11,1-10	Tecie 11.1-10	150.0115-0	1846 1: 1: 1:	Tat/a 11.1-12	Totale 11,1-12	Table 15, 1-12
	METALO				1	రచునిన	0480-3	METALS	METALS	WE 14L8
T H Acataldehyde (TH) 75070	0.00032	0.00032		100 A 100 A 100 A	0.0013		S. S		a a company and	en ander ander statistik 🛛
T H Actual (TH) 10/028	0.0002	e outer	SE		0.00026		}			
H Andmany urdiated compounds (H) \$80-other			0.00000018	0.00000018	0.00000018				0.50603018	a.cccoret 🚺
T H Advent unitable compounds (component of ASC) (TH) ASC-other T H Benzene (TH) 71432	0.0000048 0.0000004	0.0000046	0.0000076	0.00000056	0.00000056			0.900013	0 COURCES	2:000063
I H DOLUMI(H) 1442								TANDA TANA SADARANA	CONTRACTOR DO 100000000000000000000000000000000000	an a
T should als Bento(a)prene (T) 50328	3.105-10	1 3.10E-10	9.805-09	9.80E-09	8.806-09	***************************************	CARGE PRODUCTION TO STATE OF A DEC	1		
T If Bacyburn metal (Urrencied) (TH) 7440417	0.00000015 0.0000001	0.00000015	8 O	0	· •			0	2	o 🙀
T H County make (demental unsteador) (TH) 7440430 H Onumkon units of omposited on point (add w/dman. add its per CPC) (II) CRC-other	0.0000061 0.0000006	0.00000061	0.00000041	0.00000041	0.00000041			0.000047 0.000024	0.00003041	0.0000041 0.0000505
T H Oriente Add (VI) (comparent of SolO66 and CRC) (TH) 173(945)	0.00000042 0.00000042 0.00000042		0.00000505	0.00000045	0.00000505			6102.624	63000345	500000045
H Cobel Unlined tomptunds (H) COC other			0.00000076	0.00000025	0.000000026			0 000015	0.003050026	0.001010075
H Eftyl benzene (H) 100414	0.0022	0.0022	0.00024	0.00024	0.00024		1			
T H Formeldehyde (TH) 50000 T Hexachlorodbengo p.dixin 1,2,3,8,7,8 (T) 57653857	0.00074	0.00074	0.0031	0.0031 1.3E-12	0.0031 1.36-12	130.0				
T H Hentine, a- (TH) 110543		1	0.00092	0.00022	0.00092				1	
Present of the second		11	Citer Contraction			R		1.1.1.1.1.1.1.1.1.1.1	ALC: NO. OF ALC: NO.	
T Hydrogen sulide (T) 7783064 H Lesed unikaled comparunds (H) FBC-ather	0.0000518	0.0000518 0.00000059	0 0000518	0.0000518 0.000015	0.0000518			0 (0054	0.00003057	0 (000 15
T H Mangarese unlated compounds (T) MNC-other	0.0000069 0.0000069	0.0000059	0.0000077	0.0000077	0.0000077			0,00095	0.0000077	0.0000077
T H Marcury, vapor (TH) 7439976	0 0000041 0.00000041	0.00000041	0.0000024	0.000026	0 0000026				0.00000074	0.0000016
1 H Metry chloroform (TH) 71555 1 H Metry alty factors (TH) 78533		1	4.805-05	4.80E-05	4.80E-05					
K Neothalane (H) 91203	3,606-05	3,606-05	9,005-05	6.50E-04	6.50E-04			1		
T H HADDO	0.00003 0.000003	0.000003	0 000063	0.000063	0.000053			0 0017	0.000093	0.000083
H Phosphann Meter, Yellow or Wolfe (H) 7723110 H Palyonolic Organic Mather (H) FOM	0.00011	0.00023	0.000026	0.000026	0.000026	1.34.45	1.0.0 F <p< td=""><td>0 (10:2</td><td>0 5000728</td><td>9 205/128</td></p<>	0 (10:2	0 5000728	9 205/128
H Propional de India (11) Font		0.0023	00019	*.******	0.00013	1000		1		
H Quinone (H) 106514	0.00027	0.00027			0.00018		l I			
H Seismin concounts(H) EEC T H Tetrachtorodbenzo-p-davin, 2.3.7.# (TH) 1740016	0.00000049 0.00000049	0.00000049	0 00000035	0 00000035 2 1E-13	0.00000005 2.1E-13	2850			0.05003035	n programs
T H Tokene (TH) 106683	0,001	0.001	0.00015	0.0029	0.0029					
H 7rtmethybectere. 2.2.4 (H) 540641			4.006-05	4.006-05	4,006-05					88
т н Хуване (TH) 1330207	0.0027	0.0027	8.0002	0.0002	0.0002	1.000	0000000000000000000			
Ruma	0.0077212	0.00784128	2 martine and a second state of the second		NAMES OF A DESCRIPTION OF	A	AND	1000 - 1000 (1000 (1000)		
Non-PAH HAPs. TOTAL	0.0075	0.0075	0.0051	0.0078	0.0095					
PAH HAPK TOTAL HAPK TOTAL	0.00011	0.00073	0.00019	0.00088	0.00068					
HANK IVIAL	0.00/6	0.0077	0.0053	0.0087						1 N N N N N N N N N N N N N N N N N N N
Total PCOD		1		7,906-11	7.90E-11	1.533-1	2.8:35 Or			
Total PCOF				4.006-11	4.00E-11	80,211	16(500	1	1	
Nul PCOD/PCDF	I k	1	80	1 205-10	1.20E-10	1205-10	3⊧€i+C		l l	1000

Table 11.1-1 PM Emission Factors for Bate	:h Mix H	IMAPs			t-	TOTAL		
dryer, hot screens, mixer SCC 3-05-002-45, -46, -47		filterable PM	filterable PM10	inorganic condensible PM	organic condensible PM	condensible	total PM	total PM10
uncontrolled fabric filter venturi or wet scrubber		32 0.025 0.12	4.5 0.0098 0.12	0.013 0.013 0.013	0.0041	0.0171	32 0.042 0.14	4.5 0.027 0.14
Table 11.1-3 PM Emission Factors for Drur dryer, hot screens, mixer SCC 3-05-002-05, -55 to -63	n Mix H	MAPs filterable PM	filterable PM10	inorganic condensible PM	organic condensible PM	TOTAL condensible PM	total PM	total PM10
uncontrolled fabric filter venturi or wet scrubber		28 0.014 0.026	6.4 0.0039 0.026	0.0074 0.0074 0.0074	0.012	0.0194	28 0.033 0.045	6.5 0.023 0.045
Table 11.1-5 and 6 Emission Factors for CO, CO								
Natural gas fired dryer, hot screens and mixer	<u>CO</u> 0.4	<u>CO2</u> 37	NOx 0.025	SO2	VOC 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 a	ind SO2 from	n Drum Mix	HMAPs				

		co	CO2	NOx	SO2	VOC	HCL	Ĺ
	Natural gas fired dryer	0.13	33	0.026		0.032	ND	
SC	C 3-05-002-55, -56, -57	0.13	. 33	0.026		0.032	NU	80
	No.2 fuel oil-fired dryer	0.40		0.055		0.032	AUD.	186
SC	C 3-05-002-58, -59, -60	0.13	33	0.055		0.032	ND	Ň
	Waste oil-fired dryer			0.055				192
SC	C 3-05-002-61, -62, -63	0.13	33	0.055		0.032	0.00021	08
	Coal-fired dryer,	ND		10		AND 11 10 10 10 10 10 10 10 10 10 10 10 10	ar 20 xaar dad Geyeg	1454.5
SC	C 3-05-002-98	ND	33	ND			1	

plant types 1. Batch mix 2. Drum mix 1 2 fuel type 1.Natural gas-fired 2. No.2 fuel oil-fired 3. Waste or No.6 fuel oil-fired 1

- 3

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

from Chap	ter 1.3, AP-42, Fuel (Dil Combustion, revised 09/	96, Table 1.3.1
	over 100 mmBtu/hr	under 100 mmBtu/hr	-
No.6, No.5	5 157	157	
ing 2	157	142	

natural gas HV 2020 mmBtu/million scf emissionNG combustion EF 0.6 lb SO2/ million scf	Plant maximum production capacity: Dryer heat input Fuel Sulfur Content	250 80 0.5	tons per hour million Btu per hour %

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

		EF (lb/ton)
3	fuei type	· · ·
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 suffur up to a maximum (as SO2) of 0.1 lb/ton of product is expected to be retained in product.

plant types	SCCs	SO emission factor (Ib/1000 gallons)/ %S	SO emission factor (Ib/mmBtu)	SO emission rate (tb/hr)	SO emission rate (ib/ion asphalt produced)	50% of fuel bound suffur (as SO2, lb/ton)	less than 0.1 ib/ton?	Corrected SO emission rate (Ib/ton asphalt produced)
1. Batch mix, natural gas-fired, no controls			0.000588235	0.047	0.0002	0.0001	9.41176E-05	0.0001
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			0.000568235	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
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		157 453 457	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	0.0697	0.089714286	0.0897
15. Drum mix, No.2 fuel oil-fired, venturi or wet scrubber controls		157	0.560714288	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	1	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.

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.

> TBD TBD

Prospect Hill

Caswell

120

Aimee Andrews

1,051,200

1,051,200 (yd³/year)

Carolina Sunrock LLC

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

General Facility Information

COMPANY NAME:

FACILITY ID NUMBER:

PERMIT NUMBER

FACILITY CITY:

FACILITY COUNTY:

SPREADSHEET PREPARED BY:

General Facility Information

MAXIMUM HOURLY THROUGHPUT AT TRUCK LOAD OUT

ACTUAL ANNUAL PRODUCTION

MAXIMUM ANNUAL PRODUCTION*

*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

Material Composition Information

Cement Supplement Coarse Aggregate

Sand Water Total

PERCENT OF ANNUAL LOADOUT THROUGH TRUCK MIX PERCENT OF ANNUAL LOADOUT THROUGH CENTRAL MIX

IS THERE A CONTROL DEVICE ON THE TRUCK MIX? IS THERE A CONTROL DEVICE ON THE CENTRAL MIX?

Facility Emissions Control Information

2 (1=No, 2=Yes)	
1 (1=No, 2=Yes)	

(% by volume)

(% by volume)

(yd³/hour)

(yd³/year)

	Typical NC Comp.*
448 lbs	410 lbs
148 lbs	120 lbs
1980 lbs	1884 lbs
1440 lbs	1443 lbs
140 lbs	167 lbs
4156 lbs	4024 lbs

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

ŝ,	15A NCAC 2D	.0515 "Particulate	s from Miscellaneous	Industrial Processes"

	Cement Silo	<u>Flyash silo</u>	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	ibs/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 v	eigh 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.

³Allowable emission rate should be calculated to 3 significant digits.

⁴Default 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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TBD

TBD

120

1051200

Caswell

Prospect Hill

Aimee Andrews

Carolina Sunrock LLC

(yd³/hour)

(yd³/year)

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

General Facility Information COMPANY NAME: FACILITY ID NUMBER: PERMIT NUMBER FACILITY CITY: FACILITY COUNTY: SPREADSHEET PREPARED BY:

General Facility Information

MAXIMUM HOURLY THROUGHPUT AT TRUCK LOAD OUT ACTUAL ANNUAL PRODUCTION

Facility Production Information

PERCENT OF ANNUAL LOADOUT THROUGH TRUCK MIX PERCENT OF ANNUAL LOADOUT THROUGH CENTRAL MIX

Facility Emissions Control Information

IS THERE A CONTROL DEVICE ON THE TRUCK MIX? IS THERE A CONTROL DEVICE ON THE CENTRAL MIX?

Material Composition Information

Cement Supplement Coarse Aggregate Sand Water Total
 100
 (% by volume)

 0
 (% by volume)

2 (1=No, 2=Yes) 1 (1=No, 2=Yes)

		Typical NC Comp.*
448	lbs	410 lbs
148	lbs	120 lbs
1980	lbs	1884 lbs
1440	lbs	1443 lbs
140	lbs	167 lbs
4156	lbs	4024 lbs

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

PARTICULATE EMISSIONS		ACTUAL E	MISSIONS	POTENTIAL EMISSIONS				
FARIIGULATE	LINISSIONS	(AFTER CONT	ROLS / LIMITS)	(BEFORE CONT	ROLS / LIMITS)	(AFTER CONTROLS / LIMITS)		
	Pollutant	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	
ruck mix*	PM	1.001	4.386	52.210	228.678	1.001	4.38	
	PM10	0.375	1.645	14.912	65.314	0.375	1.64	
central mix*	PM	0.000	0.000	0.000	0.000	0.000	0.00	
	PM10	0.000	0.000	0.000	0.000	0.000	0.00	
cement silo	PM	0.027	0.117	19.622	85.946	0.027	0.11	
	PM10	0.009	0.040	12.634	55.335	0.009	0.04	
suppl. Silo	PM	0.079	0.346	27.883	122.128	0.079	0.34	
	PM10	0.044	0.191	9.768	42.784	0.044	0.19	
weigh hopper**	PM	0.985	4.314	0.985	4.314	0.985	4.31	
[sand & aggr.]	PM10	0.575	2.517	0.575	2.517	0.575	2.51	
sand & aggr.	PM	3.003	13.155	3.003	13.155	3.003	13.15	
	PM10	1.433	6.275	1.433	6.275	1.433	6.27	
TOTAL PM	PM	5.095	22.318	103,704	454.222	5.095	22.31	
TOTAL PM10	PM10	2.435	10.667	39.321	172.225	2.435	10.66	
Ttle V Potential	PM10		1				0.231	

CONCRETE	BATCH PLA	REVISION); October 15,	2015				
	information contr aware of the mos contained herein	lined. This spr t current inform	eadsheet is subje nation available. I	ct to continua DENR is not re	l revision and u sponsible for e	loes not guarantee th pdating. It is your res rrors or omissions tha	ponsibility to be	
<u> </u>	XIC / HAZARDO		ويستخلفون والأكلي وبجديه	SIONS INFO				4
POLLUTANT	CAS NUMBER		EMISSIONS	 		NTIAL EMSSIONS	·····	4
<u> </u>	-{		TROLS / LIMITS)		TROLS / LIMITS)	(AFTER CONTR		4
Annual III French Commenced (TU)	ACC OTUED	lb/hr	lb/yr	Ib/hr	lb/yr	lb/hr	lb/yr	4
Arsenic Unlisted Compounds (TH)	ASC-OTHER	6.59E-05	5.77E-01	2.49E-03	2.18E+01	6.59E-05	5.77E-01	4
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	4
Chromic Acid (TH)	7738-94-5	1.58E-04	1.39E+00	4.25E-04	3.73E+00	1.58E-04	1.39E+00	4
Lead Unlisted Compounds (H)	PBC-OTHER	5.96E-05	5.22E-01	1.32E-03	1.16E+01	5,96E-05	5.22E-01	4 .
Manganese Unlisted compounds (TH)	MNC-OTHER	7.49E-04	6.56E+00	7.67E-03	6.72E+01	7.49E-04	6.56E+00	4
Nickel metal (TH)	7440-02-0	1.92E-04	1.68E+00	9.19E-04	8.05E+00	1.92E-04	1.68E+00	1
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	1
Highest HAP Manganese		7.49E-04	6.56E+00	7.67E-03	6.72E+01	7.49E-04	6.56E+00	1
TOXIC AIR	POLLUTANT EI	MISSIONS IN	FORMATION	FOR PERM	TTING PURF	OSES)	- 1975 - 1985 - 1987 - 1986 - 1986 - 1986 - 1986 - 1986 - 1986 - 1986 - 1986 - 1986 - 1986 - 1986 - 1986 - 1986 - 1986 - 1986	
(Daily calculations are based on maximum ho daily emisions based on actual op		operating at 24	hours per day. If	over the TPER	R, the faciltiy sh			
POLLUTANT	CAS NUMBER		b/hr	lb	/day	lb/y	/٢	
Arsenic Unlisted Compounds (TH)	ASC-OTHER					0.57		0.053
	7440 44 7				2			0.00

POLLOTANI	CAS NUMBER	10/11	ho/day	itwyr	IPER
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	a da anti-	0.13 lb/day

DC:D

CONCRETE BATCH PLANT EMISSIONS CALCULATOR - TAP CALCULATIONS REVISION D; October 15, 2015

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	(AFTER CONTROLS /				ACTUAL E	15	ARSENIC EMISSION
II. II. Car		IROLS/LIMITS)	(BEFORE CON	ROLS / LIMITS)	(AFTER CONTR		
lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	Pollutant	Source
-05 4.98E-0	5.69E-05	2.13E+01	2.43E-03	4.98E-01	5.69E-05	Arsenic	truck mix
+00 0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	Arsenic	central mix
-07 9.98E-04	1.14E-07	3.96E-01	4.52E-05	9.98E-04	1.14E-07	Arsenic	cement silo
-06 7.78E-02	8.88E-06	7.78E-02	8.88E-06	7.78E-02	8.88E-06	Arsenic	supplement silo*
-05 5.77E-0	6.59E-05	2.18E+01	2.49E-03	5.77E-01	6.59E-05	Arsenic	TOTAL
8E	8.8	7.78E-02	8.88E-06	7.78E-02 5.77E-01	8.88E-06	Arsenic	cement silo supplement silo* TOTAL

BERYLLIUM EMISSI	ONS	ACTUAL E	MISSIONS		POTENTIAL	EMISSIONS		
		(AFTER CONTR	OLS / LIMITS)	(BEFORE CONT	ROLS / LIMITS)	(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	ε 0.28 lb/yr)			·····		

CADMIUM EMISSIO	NS	ACTUAL E	MISSIONS		POTENTIA	L EMISSIONS	
· · ·		(AFTER CONTR	OLS / LIMITS)	(BEFORE CONT	ROLS / LIMITS)	(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

CHROMIUM EMISSIO	ONS	ACTUAL E	MISSIONS		POTENTIA	EMISSIONS	
		(AFTER CONTR	ROLS / LIMITS)	(BEFORE CONT	ROLS / LIMITS)	(AFTER CONTROLS /	LIMITS)
Source	Pollutant	lb/hr	ib/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
entral 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

CONCRETE BATCH PLANT EMISSIONS CALCULATOR - TAP CALCULATIONS REVISION D; October 15, 2015

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.

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

MANGANESE EMISS	SIONS	ACTUAL E	MISSIONS		POTENTIAI	_ EMISSIONS		
		(AFTER CONTRO	OLS / LIMITS)	(BEFORE CONT	(ROLS / LIMITS)	(AFTER CONTROLS / LIMITS)		
Source	Pollutant	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	
truck mix	Manganese	7.44E-04	6.52E+00	2.19E-03	1.92E+01	7.44E-04	6.52E+0	
central mix	Manganese	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+0	
cement silo	Manganese	3.14E-06	2.75E-02	5.48E-03	4.80E+01	3.14E-06	2.75E-0	
supplement silo*	Manganese	2.27E-06	1.99E-02	2.27E-06	1.99E-02	2.27E-06	1.99E-0	
TOTAL			6.56E+00	7.67E-03	6.72E+01	7.49E-04	6.56E+0	

(Manganese TPER: 0.63 lb/day)

NICKEL EMISSIONS		ACTUAL E	MISSIONS		POTENTIA	L EMISSIONS	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	
		(AFTER CONTR	OLS / LIMITS)	(BEFORE CONT	ROLS / LIMITS)	(AFTER CONTROLS / LIMITS)		
Source	Pollutant	lb/hr	lb/yr	lb/hr	ib/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 EMIS	SSIONS	ACTUAL E	MISSIONS		POTENTIA	L EMISSIONS	
		(AFTER CONTR	OLS / LIMITS)	(BEFORE CONT	ROLS / LIMITS)	(AFTER CONTROLS /	LIMITS)
Source	Pollutant	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
truck mix	Phosphorus	4.40E-04	3.85E+00	1.37E-03	1.20E+01	4.40E-04	3.85E+00
central mix	Phosphorus	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
cement silo	Phosphorus	-	-	3.17E-04	2.78E+00	-	-
supplement silo*	Phosphorus	3.14E-05	2.75E-01	3.14E-05	2.75E-01	3.14E-05	2.75E-01
TOTAL	Phosphorus 4.71E-04 4.13E+00		4.13E+00	1.72E-03	1.51E+01	4.71E-04	4.13E+00

SELENIUM EMISSIC	NS	ACTUAL EI	VISSIONS		POTENTIA	L EMISSIONS		
		(AFTER CONTR	OLS / LIMITS)	(BEFORE CONT	ROLS / LIMITS)	(AFTER CONTROLS / LIMITS)		
Source	Pollutant	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	
truck mix	Selenium	4.04E-06	3.54E-02	9.37E-05	8.21E-01	4.04E-06	3.54E-02	
central mix	Selenium	-		-	-	-	-	
cement silo	Selenium		-	-	-	-	-	
supplement silo*	Selenium	6.43E-07	5.63E-03	6.43E-07	5.63E-03	6.43E-07	5.63E-03	
TOTAL	Selenium	4.68E-06	4.10E-02	9.43E-05	8.26E-01	4.68E-06	4.10E-02	

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1	EMISSION FACTOR SUMMAI	RY FOR R	EADY-MIXED CONCI	RETE BAT	CH FACILITIES											
3	Emission Source Description	PM Emiss	ion Factors	PM Emis	sion Factors	Arsenic E	mission Factors	References						1		
4	Cement Silo without controls	0.73	lb/ton cement	0.47	lb/ton cement	1.68E-06	ib/ton cement	w/ Feb2011), 7	ce of Air Quality Plan able 11.12-2 (PM/P	P.M 10) & T	able 11.12-8	(As)				ς.
5	Cement Silo with controls	0.00099		0.00034	lb/ton cement	4.24E-09	lb/ton cement	w/ Feb2011), 1	ce of Air Quality Plan Table 11.12-2 (PM/P	PM 10) & T	able 11.12-8	(As)				
6	Suppl Silo without controls	3.14	Ib/ton suppl	1.1	lb/ton suppl	No Data	•	w/ Feb2011), 1	ce of Air Quality Plan able 11, 12-2 (PM/P	PM 10)						
7	Suppl Silo with controls	0.0089	lb/ton suppl	0.0049	lo/ton suppl	0.000001	lb/ton suppl	w/ Feb2011), 1	ce of Air Quality Plan able 11.12-2 (PM/P	PM 10) & T	able 11.12-8	(As)	•			
8	Weigh Hopper without controls	0.0048	ib/ton aggr+sand	0.0028	lb/ton aggr+sand	No Data			ce of Air Quality Plan able 11.12-2 (PM/P		d Standards. 1	AP-42; Chapler	r 11.12 (June 2	006		
9	Weigh Hopper with controls	No Data	-	No Data	-	No Data	-	-								
10	Truck Mix without controls	1.46	Ib/ton cement+suppl	0.417	lb/ton cement+suppl	6.80E-05	lb/ton cement+suppl	Overcash (NC	Emission Factors fo DAQ, Director) to Se	ection Ch	viets/Regional	Supervisors. J	lune 8, 2005.			
11	Truck Mix with controls	0.028	lb/ton cement+suppl	0.0105	lb/ton cement+suppl	1.59E-06	lb/ton cement+suppl	Overcash (NC	Emission Factors fo DAQ, Director) to S	lection Ch	lefs/Regional	Supervisors. J	lune 8, 2005.			
12	Central Mix without controls	0.683	lb/ton cement+suppl	0,181	Ib/ton cement+supp!	2.80E-05	lb/ton cement+suppl	Overcash (NC	Emission Factors fo DAQ, Director) to Se	ection Ch	viets/Regional	Supervisors.	lune 8, 2005.			
13	Central Mix with controls	0.0212	Ib/ton cement+suppl	0.00577	Ib/ton cement+suppl	8.85E-07	lb/ton cement+suppl	w/Feb2011), T	te of Air Quality Plan able 11.12-2 (PM/P	M10) & T	able 11.12-8 (As)				
14	Sand Plant-Wide*	0.0063	lb/ton sand	0.00297	lb/ton sand	No Data	-	w/ Feb2011) T	be of Air Quality Plat able 11.12-2 (PM/P	PM 10)				1		
15	Aggr Plant-Wide*	0.0207	lb/ton aggr	0.0099	lb/ton aggr	No Data	•		able 11.12-2 (PM/P		i Standards, /	P-42; Chapter	11.12 (June 2	006		
16	*There are 3 emission points for sa	and transfer	and 3 emission points fe	or agor trans	fer plant-wide, so those	emission fa	ctors are multiplied by :	3 to get a play	t-wide emission	factor ((consistent	with Table 1	1.12-5			
17			Emission Factors		Emission Factors		Emission Factors		ion Factors		Reference					
18	Cement Silo without controls		ib/ton cement		Ib/ton cement		Ib/ton cement		lb/ton cement		U.S. EPA, OII		ty Planning and ble 11.12-8	d Standards.	AP-42; Cha	pler 11.12
19	Cement Silo with controls	4.86E-10	lb/ton cement	No Data	•	2.9E-08	lb/ton cement	1.09E-08	lb/ton cement	- 1	(June 2006 w	Feb2011), Tai				•
20	Suppl Silo without controls	No Data	-	No Data	•	No Data	•	No Data	-	1	(June 2006 w	Feb2011), Tal				
21	Suppl Sile with controls	9.04E-08	Ib/ton suppl	1.98E-08	lb/ton suppl	1.22E-06	lb/ton suppl	5.2E-07	lb/ton suppl		U.S. EPA, Off (June 2006 w	ice of Air Cuali Feb2011), Tal	ty Planning and ble 11,12-8	d Standards.	AP-42; Cha	pler 11.12
22	Weigh Hopper without controls	No Data	-	No Data	•	No Data		No Data	•		•					
23	Weigh Hopper with controls	No Data	-	No Data	-	No Data	•	No Data			-					
24	Truck Mix without controls	2.44E-07	lb/ton cement+suppl		lb/ton cement+suppl		lb/ton cement+suppl		lb/ton cement+s	· · · · ·	(June 2006 w/	Feb2011), Tal				
25	Truck Mix with controls	1.04E-07	ib/ton cement+suppl	9.06E-09	ib/ton cement+suppl	4.10E-06	Ib/ton cement+suppl	1.53E-06	lb/ton cement+s	Jubbi [(June 2006 w/	Feb2011), Tal				
26	Central Mix without controls	No Data	·	1.18E-08	lb/ton cement+suppl	1.42E-06	Ib/ton cement+suppl	3.82E-07	lb/ton cement+s		(June 2006 w/	Feb2011), Tal				
27	Central Mix with controls	No Data	-	7.10E-10	lb/ton cement+suppt	1.27E-07	lb/ton cement+suppl	3.66E-08	lb/ton cement+s			Feb2011), Tal	ty Planning and ble 11.12-8	d Standards.	AP-42; Cha	pler 11.12
28	Sand & Aggr Plant-Wide	No Data	·	No Data	-	No Data	•	No Data	•							
29 30													· .			
31	Emission Source Description	Manganes	e Emission Factors	Nickel Eml	ssion Factors	Phosphore	ous Emission Factors	Selenium E	mission Factor		References					
32	Cement Silo without controls		Ib/ton cement		lb/ton cement		lb/ton cement	No Data	-		(June 2006 w/	Feb2011), Tat				
33	Cement Silo with controls	1.17E-07	Ib/ton cement	4.18E-08	lb/ton cement	No Data	-	No Data	-		U.S. EPA, Off (June 2006 w/	ce of Air Qualit Feb2011), Tat	ly Planning and de 11.12-8	Standards.	AP-42; Cha	pter 11.12
34	Suppl Silo without controls	No Data		No Data	•	No Data	-	No Data	-							
35	Suppl Silo with controls		lb/ton suppl		ib/ton suppl		lb/ton suppl		lb/ton suppl		U.S. EPA, Off (June 2006 w/	ce of Air Qualit Feb2011), Tat	ly Planning and ble 11,12-8	Standards.	AP-42; Cha	pter 11.12
	Weigh Hopper without controls	' No Data	•	No Data	-	No Data	-	No Data	-		•					
	Weigh Hopper with controls	No Data		No Data	-	No Data		No Data	•	1.1	-					
38	Truck Mix without controls		Ib/ton cement+suppl		ib/ton cement+suppl		lb/ton cement+suppl		lb/ton cement+s	····· {	(June 2006 w/	Feb2011), Tat				
39	Truck Mix with controls	2.08E-05	Ib/ton cement+suppl	4.78E-06	ib/ton cement+suppl	1.23E-05	ib/ton cement+suppl	1.13E-07	lb/ton cement+s	uppl	U.S. EPA, Off (June 2005 w/	ce of Air Qualit Feb2011), Tak	y Planning and de 11.12-8	Standards.	AP-42; Cha	pter 11.12
	Central Mix without controls	6.12E-05	Ib/ton cement+suppl	3.28E-06	ib/ton cement+suppl	2.02E-05	lb/ton cement+suppl	No Data	•		U.S. EPA, Off		y Planning and	Standards.	AP-42, Cha	pler 11.12
41	Central Mix with controls	3.78E-06	lb/ton cement+suppl	2.48E-07	lb/ton cement+suppl	1.20E-06	ib/ton cement+suppl	No Data	-		U.S. EPA, Offi (June 2006 w/	ce of Air Qualit Feb2011), Tab	y Planning and de 11.12-8	Standards.	AP-42; Cha	pter 11.12
42	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	Consultant (if applicable): Trinity Consultants
	1 Copley Parkway
Facility ID: TBD	Suite 205
	Morrisville, NC 27560
Address: 4266 Wrenn Rd.	
Prospect Hill, NC 27314	
Contact Name: Scott Martino	Contact Name: Jonathan Hill
Phone Number: 984-202-4761	Phone Number: 919-462-9693
Email: smartino@thesunrockgroup.com	Email: jhill@trinityconsultants.com

GENERAL

Description of New Source or Source / Process Modification: provide a short description of the new or modified	X
source(s) and a brief discussion of how this change affects facility production or process operation.	
Source / Pollutant Identification: provide a table of the affected pollutants, by source, which identifies the source	X
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).	
Pollutant Emission Rate Calculations: indicate how the pollutant emission rates were derived (e.g., AP-42, mass	X
balance, etc.) and where applicable, provide the calculations.	_ • _ • •
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	X
pollutants) boundaries. The diagram should also include a scale, true north indicator, and the UTM or	
latitude/longitude of at least one point.	
Certified Plat or Signed Survey: a certified plat (map) from the County Register of Deeds or a signed survey must	SS
be submitted to validate property boundaries modeled.	
Topographic Map: A topographic map covering approximately 5km around the facility must be submitted. The	X
facility boundaries should be annotated on the map as accurately as possible.	
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.	

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.	
Source / Source emission parameters: Provide a table listing the sources modeled and the applicable source emission parameters. See NC Form 3 – Appendix A.	
Merged Sources: Identify merged sources and show all appropriate calculations. See Section 3.3	
GEP Analysis: See Section 3.2 and NC Form 1 – Appendix A	
Terrain : Indicate the terrain modeled: simple (Section 4.4), and complex (Section 4.5 and NC Form 4 – Appendix A). If complex terrain is within 5 kilometers of the facility, complex terrain must be evaluated. Simple terrain must include terrain elevations if any terrain is greater than the stack base of any source modeled.	
Simple: Complex:	
Meteorology: Refer to Section 4.1 for AERSCREEN inputs.	
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.	
Modeling Results : For each affected pollutant, modeling results should be summarized, converted to the applicable averaging period (See Table 3), and presented in tabular format indicating compliance status with the applicable AAL, SIL, or NAAQS. See NC Form S5 – Appendix A.	
Modeling Files: Either electronic or hard copies of AERSCREEN output must be submitted.	

REFINED LEVEL MODELING

Model: The latest version of AERMOD should be used, and may be found at http://www.epa.gov/scram001/dispersion_prefrec.htm. The use of other refined models must be approved by NCDAQ prior to submitting the modeling report.	AERMOD v15181
Source / Source emission parameters: Provide a table listing the sources modeled and the applicable source	x
emission parameters. See NC Form 3 - Appendix A.	<u>А</u>
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	NA
placed in cavity susceptible areas. See Section 4.2 and 5.2.	
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.	·
Coordinate System: Specify the coordinate system used (e.g., NAD27, NAD83, etc.) to identify the source,	NAD83
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.	
Receptors: The receptor grid should be of sufficient size and resolution to identify the maximum pollutant impact.	Х
See Section 5.3.	

Meteorology: Indicate the AQAB, pre-processed, 5-year data set used in the modeling demonstration:	
(See Section 5.5 and Appendix B)	Х
_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).	
Modeling Results: For each affected pollutant and averaging period, modeling results should be summarized and	X
presented in tabular format indicating compliance status with the applicable AAL, SIL or NAAQS. See NC Form	
R5 - Appendix A.	
Modeling Files: Submit input and output files for AERMOD. Also include BPIP-Prime files, AERMAP files,	X
DEM files, and any AERMET input and output files, including raw meteorological data.	

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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	n 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 <u>www.envhelp.org/sb</u>

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

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

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

- 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

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

Aimee Andrews

From: Sent: To: Subject: Catesby Denison <cdenison@caswellcountync.gov> Friday, March 10, 2017 11:58 AM Aimee Andrews 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: <u>aandrews@trinityconsultants.com</u>

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NC Department of Environmental Quality Received

JUN 2 3 2017

Winston-Salem Regional Office

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

la 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 atriciaCheck

(Signature of person making affidavit) Sworn to and subscribed before me, this 24th day of May ,2017 Notary Public

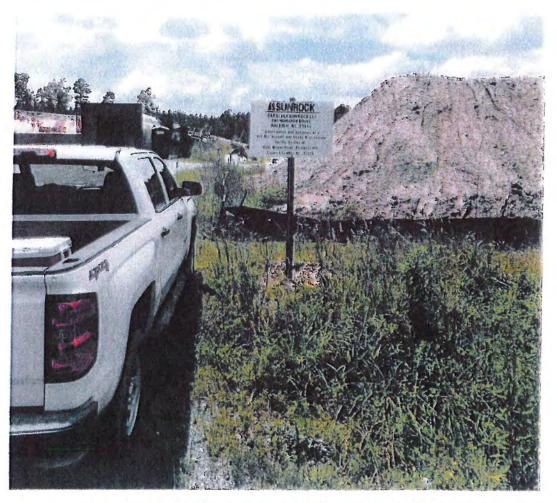


Prospect Hill Facility



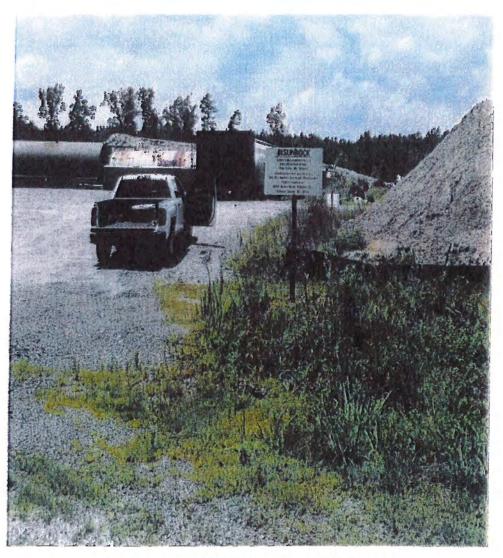
View of approximate sign location, located approximately 10' off of the road Right-of-Way





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





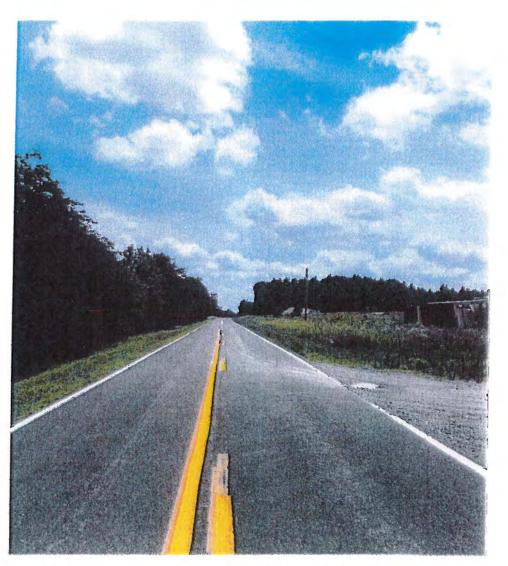
View of posted sign from centerline of Wrenn Road.





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





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

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

NC Department of Environmental Quality Received

APR 12 2017

Zoning Consistency Determination

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Winston-Salem Regional Office

Facility Name	acility Name Carolina Sunrock LLC – Prospect Hill Facility					
Facility Street Address	4266 Wrenn Road					
Facility City						
Description of Process						
SIC Code/NAICS						
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	e air permit application (draft or final) AND					
There are no applicable zoni	ng and subdivision ordinances for this facility at this time					
The proposed operation IS	consistent with applicable zoning and subdivision ordinances					
(please include a copy of	NOT consistent with applicable zoning and subdivision ordinances of the rules in the package sent to the air quality office) of further information and can not be made at this time					
other: <u>mereisno</u>	stirther information and can not be made at this time applicable zoning or <u>dinance</u> <u>meproposed</u> operation is with applicable subdi	consistent vision ordina				
Agency	Caswell County, NZ	M				
Name of Designated Official	Catesby Denison					
Title of Designated Official	Planning Director					
Signature	MelliSanson					
Date	04/12/2017					
Places forward t	a the mailing address listed shows and the size quality office					

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 <u>www.envhelp.org/sb</u>

From:
Sent:
To:
Subject:

Scott Martino <smartino@thesunrockgroup.com> Monday, August 21, 2017 1:43 PM Hartsfield, Taylor 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
 taylor.hartsfield@ncdenr.gov

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



Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

From:	Scott Martino <smartino@thesunrockgroup.com></smartino@thesunrockgroup.com>
Sent:	Tuesday, July 11, 2017 2:54 PM
То:	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 III 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
 taylor.hartsfield@ncdenr.gov

From:Aimee Andrews <AAndrews@trinityconsultants.com>Sent:Wednesday, April 12, 2017 5:06 PMTo:Hartsfield, TaylorCc:Jonathan Hill; Scott MartinoSubject:Carolina Sunrock Modeling Update - Prospect HillAttachments: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!

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

1

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" <<u>taylor.hartsfield@ncdenr.gov</u>> 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

Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

From: Jonathan Hill [mailto:JHill@trinityconsultants.com] Sent: Tuesday, April 11, 2017 12:10 PM To: Hartsfield, Taylor <<u>taylor.hartsfield@ncdenr.gov</u>> Cc: Aimee Andrews <<u>AAndrews@trinityconsultants.com</u>> 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: <u>ihill@trinityconsultants.com</u>

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4. AIR DISPERSION MODELING ANALYSIS

Winston-Salem Regional Office

NC Department of Environmental Quality Received APR 1 2 2017

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.

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Figure 4-1. Map of Area Surrounding Carolina Sunrock

Carolina Sunrock US, Inc. Air Quality Permit Application

4-2

Trinity Consultants

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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.

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
HMASIL01	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
HMASIL03	Asphalt Silo 3 Vent	664,313.5	4,013,692.4	216.1
HMASIL04	Asphalt Silo 4 Vent	664,317.3	4,013,693.4	216.0
HMASIL05	Asphalt Silo 5 Vent	664,321.2	4,013,694.4	216.0

Table 4-1. Modeled Point Source Locations

Table 4-2. Modeled Volume Source Locations

Model ID	Description	UTM-E (m)	UTM-N (m)	Elevation (m)
HMAL01	Silo 1 Truck Loadout	664,305.7	4,013,690.5	216.0
HMAL02	Silo 2 Truck Loadout	664,309.6	4,013,691.5	216.1
HMAL03	Silo 3 Truck Loadout	664,313.5	4,013,692.4	216.1
HMAL04	Silo 4 Truck Loadout	664,317.3	4,013,693.4	216.0
HMAL05	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.

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
HMASIL03	18.29	298.15	0.01	0.30
HMASILO4	18.29	298.15	0.01	0.30
HMASIL05	18.29	298.15	0.01	0.30

 Table 4-3. Modeled Point Source Parameters

 Table 4-4. Modeled Volume Source Parameters

Model ID	Release Height (m)	Init. Lat. Dimension (K)	Init. Vert. Dimension (m/s)
HMAL01	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.

Carolina Sunrock US, Inc. Air Quality Permit Application

Modeled Emission Rates (g/s)								
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	1.14E-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			
HMASIL05	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			

Table 4-5. Modeled Emission Rates

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.

	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					
HMASIL01	-	5.12E+00	1.68E-02	-						
HMASILO2	-	5.12E+00	1.68E-02	-	-					
HMASILO3	-	5.12E+00	1.68E-02	-						
HMASIL04	-	5.12E+00	1.68E-02	-	-					
HMASIL05	- '	5.12E+00	1.68E-02	-	-					
HMAL01	-	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	-	-					
HMAL05	-	2.84E+00	7.32E-04	-	-					

Table 4-6. Requested Permit Limits

Carolina Sunrock US, Inc. Air Quality Permit Application

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.

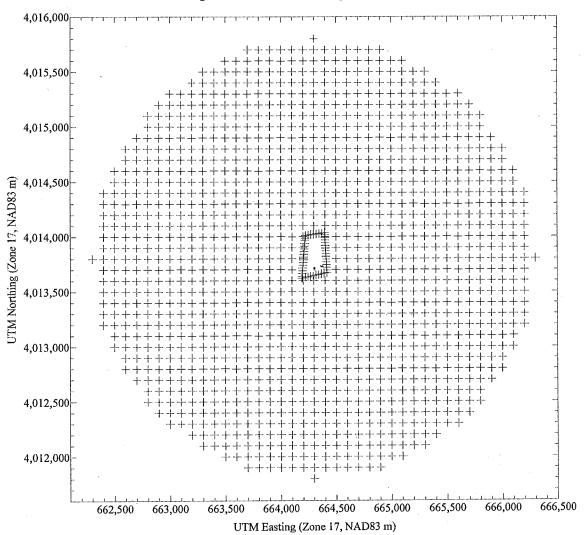
4.5. MODELED RECEPTORS

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.

Carolina Sunrock US, Inc. Air Quality Permit Application

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





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)

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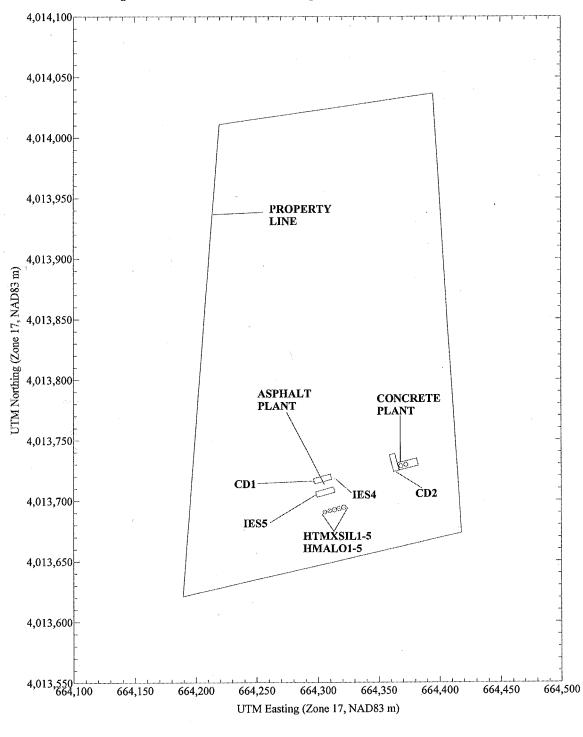


Figure 4-3. Carolina Sunrock Prospect Hill Modeled Site Layout

Carolina Sunrock US, Inc. Air Quality Permit Application

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.

				1	Max. Modeled		
Pollutant	Avg. Period	UTM-E (m)	UTM-N (m)	Date/Time or Year	lmpact (µg/m ³)	AAL (µg/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%

Table 4-7. TAP Modeling Results

Carolina Sunrock US, Inc. Air Quality Permit Application

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Winston-Salem

FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 192/01/07 ffice	NCDENR/	Divisio	n of Air Quality - Ap	plicatio	n for Air Peri	mit to C	Construc	t/Operate			B6
EMISSION SOURCE DESCR	IPTION:				EMISS	SION SC	OURCE I	DNO: HN	/IA-Silo	1	
HMA Drum Plant	- Hot Mix /	Asph	alt Silo 1		CONT	ROLD	EVICE ID	NO(S): N/	4		
OPERATING SCENARIO:	1		OF1		_ EMISS	SION PO	DINT(ST	ACK) ID NO(S):		
DESCRIBE IN DETAIL THE F	ROCESS (AT	TACH	FLOW DIAGRAM):						`		,
1. DRYING OF AGGR	REGATE (DRY	'ING D	RUM)						,		
2. Mixing of aggrega	te and rap wil	th lìqu	id asphalt (mixing d	lrum)							
3. Storage of final pr	oduct (silos)										
MATERIAL STORED:	Hot Mix Aspl	halt			DENSITY OF	MATE	RIAL (LB	/FT3):			
CAPACITY	CUBIC FEET				TONS:	150				······································	
DIMENSIONS (FEET)	HEIGHT:		DIAMETER:	(OR)	LENGTH:		WIDTH	10 не	IGHT:	65	
ANNUAL PRODUCT THRO	I	ONS)	ACTUAL:				ESIGN Ċ	APACITY:			
PNEUMATICALLY FI	LLED		MECHANIC	ALLY F	ILLED			FIL	LED FRO	M	
BLOWER		đ	SCREW CONVEYO	R			4	RAILCAR	÷		
d COMPRESSOR		୶	BELT CONVEYOR		MOTOR	HP:		TRUCK			
d OTHER:		Ó	BUCKET ELEVATO	R				STORAGE F			
		ø	OTHER:				Ø	OTHER: F	PLANT		
NO. FILL TUBES:											
MAXIMUM ACFM:											
MATERIAL IS FILLED TO:											
BY WHAT METHOD IS MATE	ERIAL UNI OA	DED F	ROM SILO? GRAV	ITY		******					******
	-							******			
MAXIMUM DESIGN FILLING	RATE OF MA	TERIA	L (TONS/HR):								
MAXIMUM DESIGN UNLOAD	DING RATE O	F MAT	ERIAL (TONS/HR):								
COMMENTS:											
OIL FILLE	D SEAL AT	г тоі	P OF SILO.								
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FORM B6 EMISSION SOURCE (STORAGE SILO/BINS)

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EMISSION SOURCE DESCR	EMISSION SOURCE ID NO: HMA-Silo2										
HMA Drum Plan	t - Hot Mix	Aspl			CONTROL DEVICE ID NO(S): N/A EMISSION POINT(STACK) ID NO(S):						
OPERATING SCENARIO:	1		OF1		[EMIS	SION P	OINT(ST	ACK) ID NO(8	s):		
DESCRIBE IN DETAIL THE I								i			
1. DRYING OF AGGI											
2. Mixing of aggrega			iid asphalt (mixing o	(munt							
3. Storage of final p	roduct (silos)										
MATERIAL STORED:	LLOAD BRING & ON										
CAPACITY	Hot Mix Asp CUBIC FEET				DENSITY OF TONS:	- MATE 150		3/r 13):			
DIMENSIONS (FEET)	HEIGHT:		DIAMETER:	(OR)	LENGTH:		WIDTH	10 HEIG		65	
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d BLOWER		đ	SCREW CONVEYO				đ	RAILCAR			
		đ	BELT CONVEYOR		MOTOR	HР·		TRUCK			
OTHER:			BUCKET ELEVATO	R	moron			STORAGE PI	F		
		ġ	OTHER:				M	OTHER: PL			
NO. FILL TUBES:							1,000		******	******************************	
MAXIMUM ACFM:											
MATERIAL IS FILLED TO:											
BY WHAT METHOD IS MATE	RIAL UNLOA	DED F	ROM SILO? GRAVI	TY							
								÷			
MAXIMUM DESIGN FILLING	RATE OF MA	TERIA	L (TONS/HR):								
MAXIMUM DESIGN UNLOAD	ING RATE OF		ERIAL (TONS/HR):					analasanashina adhashinantidaana			****
COMMENTS:					*****			*****			
OIL FILLE	D SEAL AT	TOP	OF SILO.								
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FORM B6 EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 12/01/01	NCDEND/DI	viola	on of Air Quality - Ap	·	n for Air I	Permit to C	Conetre	- / ict/Oner	ate		B6
I		vi510	n or An Quality - Ap	pricatio						03	
EMISSION SOURCE DESCR		EMISSION SOURCE ID NO: HMA-SII03 CONTROL DEVICE ID NO(S): N/A									
OPERATING SCENARIO:											
DESCRIBE IN DETAIL THE F	PROCESS (ATT	АСН	OF1			ISSION P					
1. DRYING OF AGGF				-							
2. Mixing of aggrega				rum)	,						
3. Storage of final pr	-			,							
	,										
MATERIAL STORED:	Hot Mix Aspha	ilt			DENSITY	OF MATE	RIAL (L	.B/FT3):			
CAPACITY	CUBIC FEET:				TONS:	200					
DIMENSIONS (FEET)	HEIGHT:		DIAMETER:	(OR)	LENGTH:		WIDTI	H: 12	HEIGHT:	60	
ANNUAL PRODUCT THRO	SUGHPUT (TON	IS)	ACTUAL:				ESIGN	CAPACI			
PNEUMATICALLY F	ILLED		MECHANIC	ALLY F	ILLED				FILLED F	ROM	
🕴 BLOWER		୶	SCREW CONVEYO	R			ø	RAILCA	AR		
COMPRESSOR		ą	BELT CONVEYOR		мото	or hp:	Ċ	TRUCK	K		
OTHER:			BUCKET ELEVATO	R			e	STORA	GE PILE		
		e	OTHER:				M	OTHE	R: PLANT		
NO. FILL TUBES:											
MAXIMUM ACFM:											
MATERIAL IS FILLED TO:											
		0 99565 66000004000									
BY WHAT METHOD IS MATE	ERIAL UNLOAD	ED F	ROM SILO? GRAVI	TY							
										<u>.</u>	
MAXIMUM DESIGN FILLING											
MAXIMUM DESIGN UNLOAD	ING RATE OF	MAT	ERIAL (TONS/HR):								
COMMENTS:											
OIL FILLE	D SEAL AT	TOF	OF SILO.								
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FORM B6 EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 12/01/01	NCDENR/	Divisio	on of Air Quality - Ap	oplicatio	on for Air Permit	to Con	struct/Ope	rate	B6				
EMISSION SOURCE DESCR	ÉMISSIO												
HMA Drun	CONTROL DEVICE ID NO(S): N/A												
OPERATING SCENARIO:	<u> </u>	I	OF1		EMISSION POINT(STACK) ID NO(S):								
DESCRIBE IN DETAIL THE F	PROCESS (AT	ТТАСН	FLOW DIAGRAM):					·					
1. DRYING OF AGGE	REGATE (DR	YING (DRUM)										
2. Mixing of aggrega	te and rap wi	ith liqu	id asphalt (mixing o	lrum)									
3. Storage of final pr	oduct (silos)												
·													
					r			*****	****				
MATERIAL STORED:	Hot Mix Asp		******		DENSITY OF MA		L (LB/FT3):	E ID NO: HMA-Silo4 ID NO(S): N/A ITACK) ID NO(S): B/FT3):					
CAPACITY	CUBIC FEET	:	r	I		200							
DIMENSIONS (FEET)	HEIGHT:	******	DIAMETER:	(OR)	LENGTH:		DTH: 12	*****					
ANNUAL PRODUCT THRC		ONS)	ACTUAL:			1 DESI							
PNEUMATICALLY FI	LLED	1 0	MECHANIC										
🖑 BLOWER		6	SCREW CONVEYO	R			۵						
		0	BELT CONVEYOR	_	MOTOR HP:	1	A						
🕑 OTHER:			BUCKET ELEVATO	R									
		ø	OTHER:	*****			I OTH	ER: PLANT					
NO. FILL TUBES:													
		J											
MATERIAL IS FILLED TO:													
BY WHAT METHOD IS MATE		nen e	POM SILO2 GRAVI	 TV		******							
			NOW DIED: GRAV										
1 .													
MAXIMUM DESIGN FILLING	RATE OF MA	TERIA	(TONS/HR):										
MAXIMUM DESIGN UNLOAD							*****	****					
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FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 12/01/01	NCDENR/D	Divísio	n of Air Quality - Ap	plicatio	n for Air Pern	nit to C	onstru	ct/Opera	ite	B6b	
EMISSION SOURCE DESCR	EMISS										
HMA Drum Plant		Asph	alt Silo 5		CONTROL DEVICE ID NO(S): N/A						
OPERATING SCENARIO:	·1		OF1		EMISSION POINT(STACK) ID NO(S):						
DESCRIBE IN DETAIL THE	PROCESS (AT	TACH	FLOW DIAGRAM):								
1. DRYING OF AGGI										. ·	
2. Mixing of aggrega				lrum)						•	
3. Storage of final p		•	•	·							
MATERIAL STORED:	Hot Mix Aspl	halt			DENSITY OF		RIAL (L	.B/FT3):			
CAPACITY	CUBIC FEET	:	r	r	TONS:	200	r				
DIMENSIONS (FEET)	HEIGHT:		DIAMETER:	(OR)	LENGTH:		WIDTI		HEIGHT: 60		
ANNUAL PRODUCT THR		ONS)	ACTUAL:			IUM DE	ESIGN	CAPACI			
PNEUMATICALLY F	ILLED		MECHANIC	ALLY F	ILLED		A		FILLED FROM		
🕴 BLOWER		ø	SCREW CONVEYO	R	r		l d	RAILCA			
d COMPRESSOR		ø	BELT CONVEYOR		· MOTOR I	HP:	ø	TRUCK			
🕈 OTHER:			BUCKET ELEVATO	R			, é		GE PILE		
		ε¢	OTHER:					OTHE	R: PLANT		
NO. FILL TUBES:											
MAXIMUM ACFM:											
MATERIAL IS FILLED TO:											

BY WHAT METHOD IS MAT	ERIAL UNLOA	DED F	ROM SILO? GRAV	ITY							
									л. ,		
					<u> </u>						
MAXIMUM DESIGN FILLING											
MAXIMUM DESIGN UNLOA	DING RATE O	F MAT	ERIAL (TONS/HR):								
COMMENTS:											
OIL FILLE	ED SEAL A	Γ ΤΟΙ	OF SILO.								

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From: Sent: To: Cc: Subject: Jones, Nancy Friday, September 08, 2017 9:26 AM Hartsfield, Taylor Murphy, Davis; Anderson, Tom 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 Division of Air Quality – WSRO North Carolina Department of Environmental Quality

336 776 9800 office

1

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

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



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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

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From: Hartsfield, Taylor [<u>mailto:taylor.hartsfield@ncdenr.gov</u>] Sent: Wednesday, September 06, 2017 4:15 PM To: Aimee Andrews <<u>AAndrews@trinityconsultants.com</u>> Cc: Jonathan Hill <<u>JHill@trinityconsultants.com</u>>; Scott Martino <<u>smartino@thesunrockgroup.com</u>> 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 \div 8.41E-05 lbs/ton (silo emission factor) = 199.7 ton/hr (lower limit would be in permit) 7.32E-04 lbs/hr \div 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:

- 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.
- 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

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



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From: Aimee Andrews [mailto:AAndrews@trinityconsultants.com]
Sent: Tuesday, September 05, 2017 10:52 AM
To: Hartsfield, Taylor <<u>taylor.hartsfield@ncdenr.gov</u>>
Cc: Jonathan Hill <<u>JHill@trinityconsultants.com</u>>; Scott Martino <<u>smartino@thesunrockgroup.com</u>>
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: <u>aandrews@trinityconsultants.com</u>

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From: Hartsfield, Taylor [mailto:taylor.hartsfield@ncdenr.gov]
Sent: Tuesday, September 05, 2017 9:33 AM
To: Aimee Andrews <<u>AAndrews@trinityconsultants.com</u>>
Cc: Jonathan Hill <<u>JHill@trinityconsultants.com</u>>; Scott Martino <<u>smartino@thesunrockgroup.com</u>>
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?

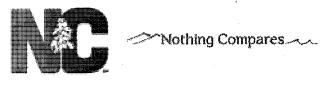
Thank you, Taylor

Taylor Hartsfield, EIT

Environmental Engineer 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



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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

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Office: 919-462-9693 x105 Email: <u>aandrews@trinityconsultants.com</u>

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From: Hartsfield, Taylor [mailto:taylor.hartsfield@ncdenr.gov] Sent: Tuesday, August 15, 2017 10:30 AM To: Aimee Andrews <<u>AAndrews@trinityconsultants.com</u>> Cc: Jonathan Hill <<u>JHill@trinityconsultants.com</u>>; Scott Martino <<u>smartino@thesunrockgroup.com</u>> 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** Environmental Engineer Division of Air Quality – WSRO North Carolina Department of Environmental Quality

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From: Aimee Andrews [mailto:AAndrews@trinityconsultants.com]
Sent: Monday, August 14, 2017 2:03 PM
To: Hartsfield, Taylor <<u>taylor.hartsfield@ncdenr.gov</u>>
Cc: Jonathan Hill <<u>JHill@trinityconsultants.com</u>>; Scott Martino <<u>smartino@thesunrockgroup.com</u>>
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: <u>aandrews@trinityconsultants.com</u>

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TrinityA Consultants

From: Hartsfield, Taylor [mailto:taylor.hartsfield@ncdenr.gov]
Sent: Monday, August 14, 2017 12:36 PM
To: Aimee Andrews <<u>AAndrews@trinityconsultants.com</u>>
Cc: Jonathan Hill <<u>JHill@trinityconsultants.com</u>>; Scott Martino <<u>smartino@thesunrockgroup.com</u>>
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 Division of Air Quality – WSRO North Carolina Department of Environmental Quality

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From:	Scott Martino <smai< th=""></smai<>
Sent:	Wednesday, Decem
То:	Hartsfield, Taylor
Subject:	[External] Carolina S
Attachments:	Prospect Hill Air Per

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

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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 Direct: 919.747-6336 Cell: 984.202.4761 Fax: 919.747.6305 www.thesunrockgroup.com Email: smartino@thesunrockgroup.com Carolina Sunrock LLC - Prospect Hill FacilityProspect Hill, Caswell County, North CarolinaFacility ID:1700015Permit 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

From:
Sent:
То:
Subject:
Attachments:

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

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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.

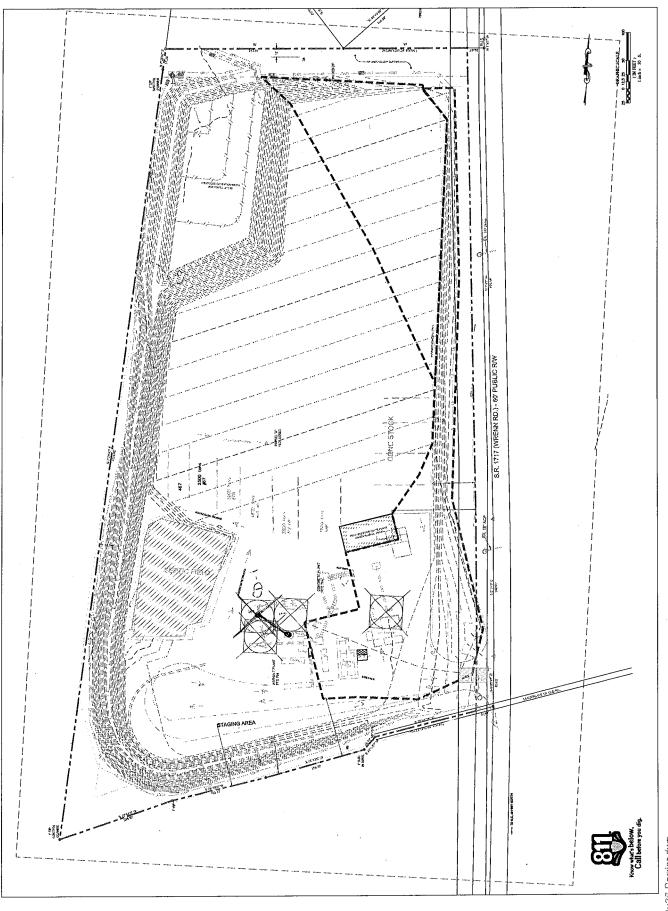
1

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

Thanks again

Scott

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Xref 24x36 Barder.dwa