



April 2, 2019

Tennessee Department of Environment and Conservation
Division of Air Pollution Control
Attn.: Ms. Michelle Walker Owenby
William R. Snodgrass Building
Tennessee Tower
312 Rosa Parks Avenue
15th Floor
Nashville, TN-37243
Air.pollution.control@tn.gov

Sub: Crusher Air Permit Applicability Study

Nashville Ready Mix, Middle Tennessee Area Facilities

Dear Ms. Owenby:

Nashville Ready Mix (NRM) operates several manufacturing facilities located throughout the Middle Tennessee area (Facility or Facilities). NRM plans to operate a temporary crusher to crush its excess concrete slabs. It is planned that the crusher will be used only for two-weeks per year at NRM's La Vergne, Tennessee plant. The same crusher will be used only for one-week per year at NRM's other locations. Accordingly, NRM retained the services of Environmental Compliance Consulting Services, LLC (ECCS) to assist NRM with the Facility's air permit applicability studies.

ECCS performed potential air emission calculations for the crusher assembly. ECCS also performed air emission calculations for the generator, which will provide power to the crusher. All emission calculations, and all completed APC forms are attached herewith. All emission calculations are based upon AP-42 emission factors.

Emitted Pollutants:

Particulate Matter (PM) will be the primary pollutant emitted. Generator emission will be minimal due to the limited hours of operation. It is our understanding that all potential emissions will be below the permitting threshold. Accordingly, we are anticipating that all such processes will work as "insignificant activities".

Ms. Michelle Walker Owenby
April 2, 2019

ECCS will continue to provide air compliance regulatory assistance to NRM. If you should have any questions regarding this air permit evaluation package, please do not hesitate to contact me at 615-337-6636 or by electronic mail at arup@envcompliancesvc.com.

Sincerely,

Environmental Compliance Consulting Services, LLC



Arup Bandyopadhyay
President

Enclosures



DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor, Nashville, TN 37243
Telephone: (615) 532-0554, Email: Air.Pollution.Control@TN.gov

APC 100

**NON-TITLE V PERMIT APPLICATION
FACILITY IDENTIFICATION**

Type or print and submit. Attach appropriate source description forms.			
SITE INFORMATION			
1. Organization's legal name and SOS control number [as registered with the TN Secretary of State (SOS)] Nashville Ready Mix			
2. Site name (if different from legal name) Nashville Ready Mix – Columbia Plant			
3. Is a construction permit application fee being submitted? Yes ☐ No ☒ (see instructions for appropriate fee to submit)			
4. Site address (St./Rd./Hwy.) 453 Theta Pike			County name Maury
City Columbia	Zip code 38401		5. NAICS or SIC code 3273
6. Site location (in lat. /long.)	Latitude N 35°39'0.54"	Longitude W -87°1'44.85"	
CONTACT INFORMATION (RESPONSIBLE PERSON)			
7. Responsible person/Authorized contact Richard Farmer			Phone number with area code 615-294-4672
Mailing address (St./Rd./Hwy.) 605 Cowan Street			Fax number with area code 615-256-2352
City Nashville	State TN	Zip code 37207	Email address rfarmer@nrm1987.com
CONTACT INFORMATION (TECHNICAL)			
8. Principal technical contact Ivan Minter			Phone number with area code 615-238-4013
Mailing address (St./Rd./Hwy.) 605 Cowan Street			Fax number with area code 615-256-2352
City Nashville	State TN	Zip code 37207	Email address iminter@nrm1987.com
CONTACT INFORMATION (BILLING)			
9. Billing contact Jennifer Meadows Thompson			Phone number with area code 615-256-2071
Mailing address (St./Rd./Hwy.) 605 Cowan Street			Fax number with area code 615-256-2352
City Nashville	State TN	Zip code 37207	Email address jmeadows@nrm1987.com

AIR CONTAMINANT SOURCE(S) INFORMATION

10. Description of air contaminant source(s) and Unique Source ID(s). List, identify, and briefly describe process emission sources, fuel burning installations, and incinerators that are contained in this application and include a Unique Source ID for each source. The Unique Source ID is a name/number/letter, which uniquely identifies the air contaminant source(s), like Boiler #1, Paint Line #1, Engine #1, etc. (see instructions for more details)

Concrete crusher fueled by an 800 KW generator engine. Concrete crushing will be performed for only one week per year.

11. Is the air contaminant source(s) in a nonattainment area? If "Yes", then minor source BACT must be addressed. Yes No

☐ ☒

12. Normal operation:	Hours/Day 10	Days/Week 5	Weeks/Year 1	Days/Year 5
13. Percent annual throughput	Dec. – Feb. 0	March – May 100	June – August 0	Sept. – Nov. 0

TYPE OF PERMIT REQUESTED (check appropriate box)

14. Operating permit ☐	Date construction started N/A	Date completed N/A	Date of ownership change (if applicable) N/A
	Last permit number(s) N/A	Emission Source Reference Number(s) N/A	
Construction permit ☒	Last permit number(s) N/A	Emission Source Reference Number(s) N/A	

If you chose Construction permit above, then choose either New Construction, Modification, or Location Transfer

New Construction ☒	Starting date April 1, 2019	Completion date April 30, 2019
Modification ☐	Date modification started or will start	Date completed or will complete
Location Transfer ☐	Transfer date	Address of last location

15. Describe changes that have been made to this equipment or operation(s) since the last construction or operating permit application:

Not applicable.

16. Comments

None

SIGNATURE

Based upon information and belief formed after a reasonable inquiry, I, as the responsible person of the above mentioned facility, certify that the information contained in this application is accurate and true to the best of my knowledge. As specified in TCA Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

17. Signature (application must be signed before it will be processed)

Date

LB Minter

3/15/2019

Signer's name (type or print)

Title *Environmental &
Safety Manager*

Phone number with area code

Ivan B Minter

(615) 238-4013



DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor, Nashville, TN 37243
Telephone: (615) 532-0554, Email: Air.Pollution.Control@TN.gov

APC 109

**NON-TITLE V PERMIT APPLICATION
ROCK CRUSHING SOURCE DESCRIPTION**

Type or print. Submit for each rock crushing operation. Submit with the APC 100.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Organization's legal name and SOS control number [as registered with the TN Secretary of State (SOS)] Nashville Ready Mix - Franklin, Murfreesboro, Clarksville, Columbia, Mt. Juliet, Dickson	2. Emission Source Reference Number N/A
3. Is this air contaminant source subject to an NSPS or NESHAP rule? Yes ☐ No ☒ If Yes, list rule citation, including Part, Subpart, and applicable Sections:	

EQUIPMENT INFORMATION

The applicant must submit an equipment list and flow diagram. The applicant may use the table below to list the equipment or attach a separate sheet of paper for the equipment list. The equipment list must include each crusher, screen, conveyor, bin, pugmill, feeder, agricultural lime, etc. The flow diagram must show each piece of equipment labeled with a reference number.

4. Equipment type (Note 1)	Flow diagram reference number (Note 2)	Size (Note 3)	Operating rate (Tons/Hr.)		Date of manufacture
			Design	Actual	
Crusher, Screener Conveyor, Track Hoe,	N/A	N/A	150	150	N/A
Hammer Track Hoe, and					
Front End Loader					

EMISSION INFORMATION

5. Air contaminants. Emission estimates for each air contaminant emitted from this point should be based on stack sampling results or engineering calculations. Calculations should be attached on a separate sheet. (see instructions for more details)

Particulate Matter emission data:	Flow diagram ref. no. (Note 5)	Average Emissions (Lbs./Hr.)	Maximum Emissions (Lbs./Hr.)	Average Emissions (Tons/Yr)	Potential Emissions (Tons/Yr)	Emissions Estimation method (Note 6)	Control devices (Note 6)	Control efficiency (%)
Primary crushing	N/A	0.9	0.9	0.02 (1 wk)	0.02	3	N/A	N/A
Secondary crushing	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tertiary crushing	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Agricultural lime	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Open storage	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Enclosed storage	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Conveying & Transferring	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Loading out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Traffic dust	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other (specify)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other (specify)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Totals	N/A	0.9	0.9	0.02	0.02			

Note 1: Equipment type: The applicant must list each crusher, screen, conveyor, bin, pugmill, feeder, agricultural lime, etc.

Note 2: Flow diagram reference number: The applicant must attach a flow diagram. The flow diagram must show each piece of equipment, including each crusher, screen, conveyor, bin, pugmill, feeder, agricultural lime, etc. Each piece of equipment must be labeled with a reference number.

Note 3: Size: For crushers, size is the design operating rate (in ton/hr.). For screens, size is the dimensions of the top deck of the screen. For conveyors, size is the width of the conveyor. For bins, size is the design capacity in tons.

Note 4: Explain in comments, if necessary.

Note 5: As identified on the flow diagram required in item #3

Note 6: Refer to the instructions for the estimation method and control device codes.

6. Control device. Description of proposed monitoring, recordkeeping, and reporting to assure compliance with emission limits. Include operating parameters of control device (flow rate, temperature, pressure drop, etc.).
Water Pump and Water as dust suppression for Crusher and Screener.

ROAD INFORMATION

7. Roads:	Paved (Miles of road)	Unpaved (Miles of road)	Watered (Miles & frequency)	Other control (specify)
Plant yard	N/A	N/A	N/A	N/A
Access roads	N/A	N/A	N/A	N/A

STOCKPILE INFORMATION

8. Stockpiles:	Estimated annual tons	Turnover rate (Tons/Month)	Wetted as piled	No. of sides enclosed	Other dust control	Loading method (e.g. loader, conveyor)	
						Load in	Load out
Coarse: Over 1"	N/A						
Fine: 1" to 1/4"	N/A						
1/4" and less	N/A						
MFG. Sand							
Other (specify)							

9. Comments

Emission is minimal due to the number of operating hours, i.e., only 50 hours in a 1-week period.

SIGNATURE

If this form is being submitted at the same time as an APC 100 form, then a signature is not required on this form. Date this form regardless of whether a signature is provided. If this form is NOT being submitted at the same time as an APC 100 form, then a signature is required.

Based upon information and belief formed after a reasonable inquiry, I, as the responsible person of the above mentioned facility, certify that the information contained in this application is accurate and true to the best of my knowledge. As specified in TCA Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

10. Signature 		Date 3-27-2019
Signer's name (type or print) Ivan B. Minter	Title Environmental & Safety Manager	Phone number with area code (615) 238-4013

Nashville Ready Mix - All Sites

Concrete Crusher Emission Estimates

Emission factors are from AP-42, Table 11.19.2-2 (revised August 2004)

Average Materials Processed: 150 Ton/hr

Assumptions used in calculations

As a conservative estimate, the tertiary crushing emission factor is used for the entire crushing operation.

The screen emission factor is used for feeders. The conveyor emission factor is used for bins.

The PM-10 emission factor for truck unloading is used for the TSP emission factor for truck loading/unloading.

Potential/Actual Emissions - 1 week

	Number of pieces of equipment	Duration (Hr)	Operating rate (ton/hr)	TSP emission factor-controlled (lb/ton)	TSP Emissions (lb/hr)	TSP Emissions (ton/duration)
Primary Crusher	1	50	150	0.0012	0.180	0.005
Feeder(s)	1	50	150	0.0022	0.330	0.008
Screen(s)	1	50	150	0.0022	0.330	0.008
Truck loading	1	50	150	0.0001	0.015	0.000
Truck unloading	1	50	150	0.0001	0.015	0.000
Potential/Actual Emissions					0.9	0.02

Potential/Actual Emissions - 2 weeks

	Number of pieces of equipment	Duration (Hr/year)	Operating rate (ton/hr)	TSP emission factor-controlled (lb/ton)	TSP Emissions (lb/hr)	TSP Emissions (ton/duration)
Primary Crusher	1	100	150	0.0012	0.180	0.009
Feeder(s)	1	100	150	0.0022	0.330	0.017
Screen(s)	1	100	150	0.0022	0.330	0.017
Truck loading	1	100	150	0.0001	0.015	0.001
Truck unloading	1	100	150	0.0001	0.015	0.001
Potential/Actual Emissions					0.9	0.04

Equations used in calculation:

$[\text{TSP Emissions (lb/hr)}] = [\text{No. of pieces of equip.}] \times [\text{Operating rate (ton/hr)}] \times [\text{TSP Emission factor-controlled (lb/ton)}]$

$[\text{TSP Emissions (ton/yr)}] = [\text{TSP Emissions (lb/hr)}] \times [\text{Operating hours (hr/yr)}] / [2000 \text{ lb/ton}]$

Nashville Ready Mix - Site Operating Hours

Site	Duration (hr/year)
Nashville Ready Mix – La Vergne Plant	100
Nashville Ready Mix – Clarksville Plant	50
Nashville Ready Mix – Columbia Plant	50
Nashville Ready Mix – Dickson Plant	50
Nashville Ready Mix – Franklin Plant	50
Nashville Ready Mix – Main Shop	50
Nashville Ready Mix – Mt. Juliet Plant	50
Nashville Ready Mix – Murfreesboro Plant	50
Nashville Ready Mix – West Nashville Plant	50

**Nashville Ready Mix - All Sites
Crusher Engine Emission Estimate**

Engine Type	Fuel Type	KW	MMBtu/hr (1 KW = 3412.142 BTU/hr)	Operating Hour (hour)	Duration MMBtu	Potential Emission											
						NOx		CO		VOC		PM 10		SO2		Total HAPs	
						(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Diesel Engine	Diesel Fuel Only	800	2.73	100	273	12.04	0.60	2.59	0.13	0.96	0.05	0.85	0.04	0.79	0.04	0.010	0.001
Diesel Engine	Diesel Fuel Only	800	2.73	50	136	12.04	0.30	2.59	0.06	0.96	0.02	0.85	0.02	0.79	0.02	0.010	0.000

Pollutant	Emission Factor ⁽¹⁾		Comment
NOx	4.41	lb/MMBtu	
CO	0.95	lb/MMBtu	
VOC	3.50E-01	lb/MMBtu	TOC - Exhaust
PM 10	3.10E-01	lb/MMBtu	
SO2	2.90E-01	lb/MMBtu	
Total HAPs ⁽²⁾	3.79E-03	lb/MMBtu	

⁽¹⁾ NOx, CO, VOC, PM, and SO₂ factors are based on Table 3.3-1. EMISSION FACTORS FOR UNCONTROLLED GASOLINE AND DIESEL INDUSTRIAL ENGINES", AP-42 (7/00)

⁽²⁾ HAP factors are based on Table 3.3-2. EMISSION FACTORS FOR UNCONTROLLED GASOLINE AND DIESEL INDUSTRIAL ENGINES", AP-42 (7/00)

Potential Emission (lb/hr) = Emission Factor (lb/MMBtu) * Heat Input (MMBtu/hr)

Potential Emission (tpy) = Emission Factor (lb/MMBtu) * Annual Heat Input (MMBtu/yr) / 2,000 lb/ton

Electrical Power Calculation

http://www.dieselserviceandsupply.com/Power_Calculator.aspx#PowerCalc

Kilowatts to BTU/hr conversion

Reference http://www.rapidtables.com/convert/power/kW_to_BTU.htm

1 kW = 3412.142 BTU/hr

AP 42 Table 3.3-2. SPECIATED ORGANIC COMPOUND EMISSION FACTORS FOR UNCONTROLLED DIESEL ENGINES

Pollutant	Emission Factor (Fuel Input) (lb/MMBtu)
Benzene	0.0009
Toluene	0.0004
Xylenes	0.0003
1,3-Butadiene	0.0000
Formaldehyde	0.0012
Acetaldehyde	0.0008
Acrolein	0.0001
Naphthalene	0.0001
Total	0.0037904