

**MISSOURI**  
DEPARTMENT OF  
NATURAL RESOURCES

**MISSOURI AIR CONSERVATION COMMISSION**

**PERMIT TO CONSTRUCT**

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: 102018-007

Project Number: 2018-08-055  
Installation Number: 051-0088

Parent Company: Stockman Stoneworks, Inc.

Parent Company Address: 3918 Stockman Lane, Jefferson City, MO 65109

Installation Name: Stockman Stoneworks, Inc.

Installation Address: 3918 Stockman Lane, Jefferson City, MO 65109

Location Information: Cole County, S16 T44N R12W

Application for Authority to Construct was made for:  
New landscaping stone facility. This review was conducted in accordance with Section (5),  
Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

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Standard Conditions (on reverse) are applicable to this permit.

Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

*Kendall B. Halberstadt*

Director or Designee  
Department of Natural Resources

OCT 10 2018

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Effective Date

## STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Enforcement and Compliance Section of the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Enforcement and Compliance Section of the Department's Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available within 30 days of actual startup. Also, you must notify the Department's regional office responsible for the area within which you are located within 15 days after the actual start up of this (these) air contaminant source(s).

A copy of the permit application and this permit and permit review shall be kept at the installation address and shall be made available to Department's personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit using the contact information below.

Contact Information:  
Missouri Department of Natural Resources  
Air Pollution Control Program  
P.O. Box 176  
Jefferson City, MO 65102-0176  
(573) 751-4817

The regional office information can be found at the following website:  
<http://dnr.mo.gov/regions/>

**SPECIAL CONDITIONS:**

The permittee is authorized to construct and operate subject to the following special conditions:

*The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."*

Stockman Stoneworks, Inc.  
Cole County

1. PM<sub>10</sub> Emission Limitation
  - A. Stockman Stoneworks, Inc. shall emit less than 15.0 tons of PM<sub>10</sub> in any consecutive 12-month period from the entire installation (see table 1).
  - B. Attachment A or equivalent forms, such as electronic forms, approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Conditions 1.A.

Table 1: Emission Units

Emission unit:	Description:
EU 1A	Aggregate transfer- unloading
EU 1B	Sand Transfer- unloading
EU 1C	Supplement unloading to elevated storage silo
EU 2A	Aggregate transfer- to hopper
EU 2B	Sand transfer-to hopper
EU 3	Mixer
EU 4	Tumbler
EU 5	Haul roads/vehicular activity

2. Control Device Requirement-Baghouse
  - A. Stockman Stoneworks, Inc. shall control emissions from the list equipment using baghouses as specified in the permit application.
    - 1) EU 1C - Supplement unloading to elevated storage silo
    - 2) EU 4 - Tumbler
  - B. The baghouses shall be operated and maintained in accordance with the manufacturer's specifications. The baghouses shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. These gauges or meters shall be located such that Department of Natural Resources' employees may easily observe them.
  - C. Replacement filters for the baghouses shall be kept on hand at all times. The bags shall be made of fibers appropriate for operating conditions

**SPECIAL CONDITIONS:**

The permittee is authorized to construct and operate subject to the following special conditions:

expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).

- D. Stockman Stoneworks, Inc. shall monitor and record the operating pressure drop across the baghouses at least once every 24 hours when the associated equipment is in operation. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.
  - E. Stockman Stoneworks, Inc. shall maintain a copy of the baghouses manufacturer's performance warranty on site.
  - F. Stockman Stoneworks, Inc. shall maintain an operating and maintenance log for the baghouses which shall include the following:
    - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
    - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
3. Record Keeping and Reporting Requirements
- A. Stockman Stoneworks, Inc. shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request.
  - B. Stockman Stoneworks, Inc. shall report to the Air Pollution Control Program's Compliance/Enforcement Section, by mail at P.O. Box 176, Jefferson City, MO 65102 or by e-mail at [AirComplianceReporting@dnr.mo.gov](mailto:AirComplianceReporting@dnr.mo.gov), no later than 10 days after the end of the month during which any record required by this permit shows an exceedance of a limitation imposed by this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE  
SECTION (5) REVIEW

Project Number: 2018-08-055  
Installation ID Number: 051-0088  
Permit Number: 102018-007

Installation Address:  
Stockman Stoneworks, Inc.  
3918 Stockman Lane  
Jefferson City, MO 65109  
Cole County

Parent Company:  
Stockman Stoneworks, Inc.  
3918 Stockman Lane  
Jefferson City, MO 65109  
Cole County

REVIEW SUMMARY

- Stockman Stoneworks, Inc. has applied for authority to construct a new landscaping stone plant.
- The application was deemed complete on September 13, 2018.
- HAP emissions are not expected from the proposed equipment.
- None of the New Source Performance Standards (NSPS) apply to the installation.
- None of the NESHAPs apply to this installation. None of the currently promulgated MACT regulations apply to the proposed equipment.
- A baghouse is being used to control the Particulate Matter emissions from the supplement silo (EU 1C) and the tumbler (EU 4) in this permit.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM<sub>10</sub> are conditioned below de minimis levels.
- This installation is located in Cole County, an attainment/unclassified area for all criteria pollutants.
- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation's major source level is 250 tons per year and fugitive emissions are not counted toward major source applicability.
- Ambient air quality modeling was not performed since potential emissions of the application are conditioned below de minimis levels.

- Emissions testing is not required for the equipment as a part of this permit.
- No Operating Permit is required for this installation.
- Approval of this permit is recommended with special conditions.

## INSTALLATION DESCRIPTION

No permits have been issued to Stockman Stoneworks, Inc. from the Air Pollution Control Program.

Stockman Stoneworks's existing plant was inspected by the Air Pollution Control Program in August of 2003 and deemed that emissions were well below threshold levels and didn't need a construction or operating permit at that time.

## PROJECT DESCRIPTION

Stockman Stoneworks, Inc. of Jefferson City, MO will be constructing a new landscaping block manufacturing facility. Their existing block plant will be decommissioned. The new manufacturing facility is bottlenecked by the mixer and will have an MHDR of 45 tons/ hour. The raw block ingredients (sand, aggregate, and supplement) are received, mixed, and then the blocks are left to dry in a kiln before being tumbled, stacked, and wrapped. Then the blocks are set outside on their storage lot using a forklift until they are ready to be distributed or used.

## EMISSIONS/CONTROLS EVALUATION

The emission factors used in this analysis for EU-1a, 1b, 1c, 2a, 2b, and 3 were obtained from the EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Chapter 11.12 - Concrete Batching, June 2006. The MHDR of these units are determined by Stockman Stonework's, Inc. recipe for the blocks of 40% aggregate, 40% sand, and 20% supplement.

There are no known emission factors for block tumblers so to come up with conservative emission for PTE calculations the emission factors used in this analysis for the tumbler (EP-4) were obtained from the EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Chapter 11.19.2 - Crushed stone and pulverized mineral processing, "Fines Crushing" August 2004.

The emissions from the haul roads and forklift activity (EU-5) were calculated using emission factors from EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Chapter 13.2.2 & 13.2.3, Paved and Unpaved Haul Roads, November 2006/ January 1995.

The following table provides an emissions summary for this project. Existing potential emissions or existing actual emissions are unknown as their existing equipment did not require a permit and the existing facility is being decommissioned upon startup of the new facility. Potential emissions of the application represent the potential of the new facility, assuming continuous operation (8760 hours per year).

Table 2: Emissions Summary (tpy)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2017 EIQ)	Unconditioned Potential Emissions of the Project	New Conditioned Potential emissions of the installation
PM	25.0	N/D	N/A	148.34	53.37
PM <sub>10</sub>	15.0	N/D	N/A	41.69	<15.0
PM <sub>2.5</sub>	10.0	N/D	N/A	5.30	1.91
SO <sub>x</sub>	40.0	N/D	N/A	N/A	N/A
NO <sub>x</sub>	40.0	N/D	N/A	N/A	N/A
VOC	40.0	N/D	N/A	N/A	N/A
CO	100.0	N/D	N/A	N/A	N/A
GHG (CO <sub>2</sub> e)	N/A	N/D	N/A	N/A	N/A
GHG (mass)	N/A	N/D	N/A	N/A	N/A
HAPs	10.0/25.0	N/D	N/A	N/A	N/A

N/A = Not Applicable; N/D = Not Determined

### PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM<sub>10</sub> are conditioned below de minimis levels.

### APPLICABLE REQUIREMENTS

Stockman Stoneworks, Inc. shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved.

### GENERAL REQUIREMENTS

- *Start-Up, Shutdown, and Malfunction Conditions*, 10 CSR 10-6.050
- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110

- Per 10 CSR 10-6.110(4)(B)2.B(II) and (4)(B)2.C(II) a full EIQ is required for the first full calendar year the equipment (or modifications) approved by this permit are in operation.
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-6.165

#### SPECIFIC REQUIREMENTS

- *Restriction of Emission of Particulate Matter From Industrial Processes*, 10 CSR 10-6.400 *The aggregate weigh hopper (EU-2a) potential emission rate of 0.124 pounds per hour of PM and sand weigh hopper (EU-2b) potential emission rate of 0.038 pounds per hour of PM are individually below the process weight of 43.60 pounds per hour and therefore complies with this regulation.*

#### STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, it is recommended that this permit be granted with special conditions.

#### PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated August 27, 2018, received August 27, 2018, designating Stockman Stoneworks, Inc. as the owner and operator of the installation.



**Attachment A – PM<sub>10</sub> Compliance Worksheet**  
 Stockman Stoneworks, Inc. - Jefferson City, MO Facility  
 Cole County  
 Project Number: 2018-08-055  
 Installation Number: 051-0088

This sheet covers the period from \_\_\_\_\_ to \_\_\_\_\_.  
 month, year) (month, year)

C1	C2	C3	C4	C5	C6
Month/Year	Monthly production by the facility (tons)	Composite PM <sub>10</sub> Emission Factor (lbs PM <sub>10</sub> /ton)	Monthly Production Emissions (lbs)	Monthly Production Emissions (Tons)	12-Month PM <sub>10</sub> Emissions (Tons/Year)
(Example) September/2018	7,200	0.1972	1,419.84	0.709	0.709+ previous 11 months
		0.1972			
		0.1972			
		0.1972			
		0.1972			
		0.1972			
		0.1972			
		0.1972			
		0.1972			
		0.1972			
		0.1972			
		0.1972			
		0.1972			
		0.1972			
		0.1972			
		0.1972			
		0.1972			
		0.1972			

C1: Enter the Month and Year

C2: Enter the monthly total amount of stones produced in units of tons per month

C3: Composite PM<sub>10</sub> Emission Factor is in units of tons PM<sub>10</sub> per ton stones produced and considers the emissions from all emission units at the installation (EU 1-5)

C4 = ((C2 × C3) +SSM ) Include the startup, shutdown, and malfunction emissions (SSM Emissions) as reported to the Air Pollution Control Program's Compliance/Enforcement Section according to the provisions of 10 CSR 10-6.050.

C5=C4/2000

C6 = 12-Month Emissions (tons/year) are a rolling total calculated by adding [C5 + the total emissions of the previous eleven (11) months]. A total of less than **15.0** tons of PM<sub>10</sub> in any consecutive 12-month period indicates compliance.

## APPENDIX A

### Abbreviations and Acronyms

<b>%</b> .....	percent	<b>Mgal</b> .....	1,000 gallons
<b>°F</b> .....	degrees Fahrenheit	<b>MW</b> .....	megawatt
<b>acfm</b> .....	actual cubic feet per minute	<b>MHDR</b> .....	maximum hourly design rate
<b>BACT</b> .....	Best Available Control Technology	<b>MMBtu</b> ....	Million British thermal units
<b>BMPs</b> .....	Best Management Practices	<b>MMCF</b> .....	million cubic feet
<b>Btu</b> .....	British thermal unit	<b>MSDS</b> .....	Material Safety Data Sheet
<b>CAM</b> .....	Compliance Assurance Monitoring	<b>NAAQS</b> ....	National Ambient Air Quality Standards
<b>CAS</b> .....	Chemical Abstracts Service	<b>NESHAPs</b>	National Emissions Standards for Hazardous Air Pollutants
<b>CEMS</b> .....	Continuous Emission Monitor System	<b>NO<sub>x</sub></b> .....	nitrogen oxides
<b>CFR</b> .....	Code of Federal Regulations	<b>NSPS</b> .....	New Source Performance Standards
<b>CO</b> .....	carbon monoxide	<b>NSR</b> .....	New Source Review
<b>CO<sub>2</sub></b> .....	carbon dioxide	<b>PM</b> .....	particulate matter
<b>CO<sub>2e</sub></b> .....	carbon dioxide equivalent	<b>PM<sub>2.5</sub></b> .....	particulate matter less than 2.5 microns in aerodynamic diameter
<b>COMS</b> .....	Continuous Opacity Monitoring System	<b>PM<sub>10</sub></b> .....	particulate matter less than 10 microns in aerodynamic diameter
<b>CSR</b> .....	Code of State Regulations	<b>ppm</b> .....	parts per million
<b>dscf</b> .....	dry standard cubic feet	<b>PSD</b> .....	Prevention of Significant Deterioration
<b>EQ</b> .....	Emission Inventory Questionnaire	<b>PTE</b> .....	potential to emit
<b>EP</b> .....	Emission Point	<b>RACT</b> .....	Reasonable Available Control Technology
<b>EPA</b> .....	Environmental Protection Agency	<b>RAL</b> .....	Risk Assessment Level
<b>EU</b> .....	Emission Unit	<b>SCC</b> .....	Source Classification Code
<b>fps</b> .....	feet per second	<b>scfm</b> .....	standard cubic feet per minute
<b>ft</b> .....	feet	<b>SDS</b> .....	Safety Data Sheet
<b>GACT</b> .....	Generally Available Control Technology	<b>SIC</b> .....	Standard Industrial Classification
<b>GHG</b> .....	Greenhouse Gas	<b>SIP</b> .....	State Implementation Plan
<b>gpm</b> .....	gallons per minute	<b>SMAL</b> .....	Screening Model Action Levels
<b>gr</b> .....	grains	<b>SO<sub>x</sub></b> .....	sulfur oxides
<b>GWP</b> .....	Global Warming Potential	<b>SO<sub>2</sub></b> .....	sulfur dioxide
<b>HAP</b> .....	Hazardous Air Pollutant	<b>SSM</b> .....	Startup, Shutdown & Malfunction
<b>hr</b> .....	hour	<b>tph</b> .....	tons per hour
<b>hp</b> .....	horsepower	<b>tpy</b> .....	tons per year
<b>lb</b> .....	pound	<b>VMT</b> .....	vehicle miles traveled
<b>lbs/hr</b> .....	pounds per hour	<b>VOC</b> .....	Volatile Organic Compound
<b>MACT</b> .....	Maximum Achievable Control Technology		
<b>µg/m<sup>3</sup></b> .....	micrograms per cubic meter		
<b>m/s</b> .....	meters per second		

Stockman  
PTE Calculation

EU	Description	MHDR (tph)	Unc EF (lb/ton)			Unc E (lb/hr)			Unc E (tpy)			Control	Control %	Cont E (tpy)			EF Source
			PM2.5	PM10	PM	PM2.5	PM10	PM	PM2.5	PM10	PM						
1a**	Aggregate Transfer-unloading	18.000	0.0033	0.0033	0.0069	0.0594	0.0594	0.1242	0.2602	0.2602	0.5440	none	0.0000	0.2602	0.2602	0.5440	AP-42 Chapter 11.12, Concrete Batching, June 2006
1b**	Sand Transfer- unloading	18.000	0.0010	0.0010	0.0021	0.0178	0.0178	0.0378	0.0781	0.0781	0.1656	none	0.0000	0.0781	0.0781	0.1656	AP-42 Chapter 11.12, Concrete Batching, June 2006
*1c**	Supplement unloading to elevated storage silos	9.000	0.0003	0.0003	0.0010	0.0031	0.0031	0.0089	0.0134	0.0134	0.0390	Built into EF	0.0000	0.0134	0.0134	0.0390	AP-42 Chapter 11.12, Concrete Batching, June 2006
2a**	Aggregate transfer- To hoppers	18.000	0.0033	0.0033	0.0069	0.0594	0.0594	0.1242	0.2602	0.2602	0.5440	none	0.0000	0.2602	0.2602	0.5440	AP-42 Chapter 11.12, Concrete Batching, June 2006
2b**	Sand Transfer- to Hoppers	18.000	0.0010	0.0010	0.0021	0.0178	0.0178	0.0378	0.0781	0.0781	0.1656	none	0.0000	0.0781	0.0781	0.1656	AP-42 Chapter 11.12, Concrete Batching, June 2006
3	mixer	45.000	0.0184	0.1560	0.5720	0.8280	7.0200	25.7400	3.6266	30.7476	112.7412	none	0.0000	3.6266	30.7476	112.7412	AP-42 Chapter 11.12, Concrete Batching, June 2006
4	Tumbler	45.000	0.0009	0.0150	0.0390	0.0394	0.6750	1.7550	0.1725	2.9565	7.6869	baghouse	0.9500	0.0086	0.1478	0.3843	AP-42 Chapter 11.19, Crushed Stone Processing and Pulverized Mineral Processing, August 2004
5	Haul Roads	45.00000							0.80684	7.29931	26.45325			0.807	7.299	26.453	AP-42 Chapter 13.2.2 & 13.2.3, Paved and Unpaved Haul Roads. Nov. 2006/Jan. 1995
	shipping/ receiving/forklift																

Summary:	De Minimis Levels	Unc E (tpy)	Cont E (tpy)
PM	25	148.34	141.037
PM10	15	41.69	38.885
PM2.5	10	5.30	5.132

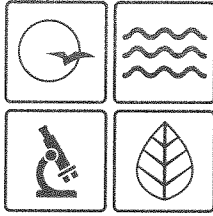
\*1c uses controlled emission factors so no additional control was given

\*\* MHDR reflects Stockmans recipe (40,40,20)(aggregate, sand,supplement)

PM10 Composite Emission Factor	
0.197283526	lb/ton

Max Production- ( to stay below de minimis)	152,065.00	tons/year

14.99996 tons of emissions



Missouri Department of dnr.mo.gov

# NATURAL RESOURCES

Michael L. Parson, Governor

Carol S. Comer, Director

OCT 10 2018

Mr. DJ Drury  
Vice President  
Stockman Stoneworks, Inc.  
3918 Stockman Lane  
Jefferson City, MO 65109

RE: New Source Review Permit - Project Number: 2018-08-055

Dear Mr. Drury:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions, on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions, your new source review permit application is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

This permit may include requirements with which you may not be familiar. If you would like the department to meet with you to discuss how to understand and satisfy the requirements contained in this permit, an appointment referred to as a Compliance Assistance Visit (CAV) can be set up with you. To request a CAV, please contact your local regional office or fill out an online request. The regional office contact information can be found at the following website: <http://dnr.mo.gov/regions/>. The online CAV request can be found at <http://dnr.mo.gov/cav/compliance.htm>.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the administrative hearing commission, whose contact information is: Administrative Hearing Commission, United States Post Office Building, 131 West High Street, Third Floor, P.O. Box 1557, Jefferson City, Missouri 65102, phone: 573-751-2422, fax: 573-751-5018, website: [www.oa.mo.gov/ahc](http://www.oa.mo.gov/ahc).



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Mr. DJ Drury  
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If you have any questions regarding this permit, please do not hesitate to contact Jordan Hull, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM



Susan Heckenkamp  
New Source Review Unit Chief

SH;jhj

Enclosures

c: Northeast Regional Office  
PAMS File: 2018-08-055

Permit Number: 102018-007

Stockman  
PTE Calculation

10 CSR 10-6.400  
E=55.0 P.11 - 40  
P=Process Rate=MHDR  
E= 43.60188428

Process Rate  
Allowable lb/hr  
Potential lb/hr

45  
43.60188428  
0.1242 EU-2a

0.0378 EU-2b

Activity	MHDR		Truck Types				Truck Type		We (tons)		Wf (tons)	
	(tons/hr)	(trips/hr)	Dump truck	fork lift	type	type	We*	Wf*	Dump truck/Straight	fork lift	type	type
receiving/shipping	90.0	3.750	100%					15	39			
forklift	45.0	30.000		100%				2	3.5			
title	0.000							0	0			
title	0.000							0	0			
title	0.000							0	0			
title	0.000							0	0			
title	0.000							0	0			
title	0.000							0	0			
title	0.000							0	0			
title	0.000							0	0			

truck type row must sum to 100% per each activity

1=empty

2=full

3=both

Road Segment ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14
D one way (feet)	354	1230	120											
D one way (miles)	0.100	0.233	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
receiving/shipping	3	3												
forklift			3											
title														
title														
title														
title														
title														
title														

Activities

receiving/shipping	27.000	27.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
forklift	0.000	0.000	2.750	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
title	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
title	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
title	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
title	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
title	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
title	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
title	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	27.00	27.00	2.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Surface	Unpaved	Paved	Paved	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved	Paved

W

E(PM2.5) (lbs/VMT)	0.28934	0.01898	0.00185	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
E(PM10) (lbs/VMT)	2.89339	0.08920	0.00673	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
E(PM30) (lbs/VMT)	10.17497	0.34598	0.03367	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Eext(PM2.5) (lbs/VMT)	0.20610	0.01576	0.00153	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Eext(PM10) (lbs/VMT)	2.06105	0.08422	0.00625	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Eext(PM30) (lbs/VMT)	7.24792	0.32110	0.03124	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
receiving/shipping	0.75	1.747159	0	0	0	0	0	0	0	0	0	0	0	0
forklift	0	0	1.383636	0	0	0	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0	0	0	0	0	0	0
title	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MHDR	0.75	1.747159	1.383636	0	0	0	0	0	0	0	0	0	0	0

MHDR

PTE PM2.5 (lb/hr)	0.217005	0.028675	0.002254	0	0	0	0	0	0	0	0	0	0	0
PTE PM10 (lb/hr)	2.170045	0.120898	0.009181	0	0	0	0	0	0	0	0	0	0	0
PTE PM30 (lb/hr)	7.831225	0.604482	0.045907	0	0	0	0	0	0	0	0	0	0	0
PTE PM2.5 (lb/hr) w/ rain	0.154579	0.02754	0.002092	0	0	0	0	0	0	0	0	0	0	0
PTE PM10 (lb/hr) w/ rain	1.545786	0.112202	0.008521	0	0	0	0	0	0	0	0	0	0	0
PTE PM30 (lb/hr) w/ rain	5.435941	0.581009	0.042605	0	0	0	0	0	0	0	0	0	0	0
PTE PM2.5 (tons/yr)	0.95048	0.129975	0.009871	0	0	0	0	0	0	0	0	0	0	0
PTE PM10 (tons/yr)	9.504799	0.529526	0.040214	0	0	0	0	0	0	0	0	0	0	0
PTE PM30 (tons/yr)	33.42477	2.847832	0.201072	0	0	0	0	0	0	0	0	0	0	0
PTE PM2.5 (tons/yr) w/ rain	0.677054	0.120827	0.009161	0	0	0	0	0	0	0	0	0	0	0
PTE PM10 (tons/yr) w/ rain	8.770542	0.491444	0.037322	0	0	0	0	0	0	0	0	0	0	0
PTE PM30 (tons/yr) w/ rain	23.80842	2.45722	0.186612	0	0	0	0	0	0	0	0	0	0	0

PTE (lb/hr)

PTE (tons/yr)

	PM	PM10	PM2.5
receiving/shipping	5.99895	1.657988	0.182119
forklift	0.042805	0.008521	0.002092
title	0	0	0
title	0	0	0
title	0	0	0
title	0	0	0
title	0	0	0
title	0	0	0
title	0	0	0
Sum PTE (lb/hr)	6.039558	1.666508	0.184211
Sum PTE (Tons/yr)	28.45325	7.299308	0.806842

Totals

Haul Road BMP's	Control Efficiency %		
	PM	PM10	PM2.5
No Control	0	0	0

Haul Road/Haul Truck/Material Hauled Information														
Haul Road ID No.:	1	2	3	4	5	6	7	8	9	10	11	12	13	14
W (tons):	27.00	27.00	2.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sL (g/m <sup>2</sup> ):	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
P:	105	105	105	105	105	105	105	105	105	105	105	105	105	105
N:	365	365	365	365	365	365	365	365	365	365	365	365	365	365
Haul Roads - Max Hourly VMT Rate and Emission Factor Calculations														
E(PM <sub>2.5</sub> )(lbs/VMT):	0.0170	0.0170	0.0017	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E(PM <sub>10</sub> )(lbs/VMT):	0.0692	0.0692	0.0067	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E(PM <sub>30</sub> )(lbs/VMT):	0.3460	0.3460	0.0337	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Eext(PM <sub>2.5</sub> )(lbs/VMT):	0.0158	0.0158	0.0015	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Eext(PM <sub>10</sub> )(lbs/VMT):	0.0642	0.0642	0.0062	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Eext(PM <sub>30</sub> )(lbs/VMT):	0.3211	0.3211	0.0312	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

$E = k(sL)^{0.91} * (W)^{1.02}$  where:

E = particulate emission factor (having units matching the units of k)

k = particle size multiplier for particle size range and units of interest

sL = road surface silt loading (grams per square meter) (g/m<sup>2</sup>)

W = average weight (tons) of the vehicles traveling the road

Table 13.2.1-1 PARTICLE SIZE MULTIPLIERS FOR PAVED ROAD EQUATION

Size range	k (lb/VMT)
PM2.5	0.00054
PM10	0.0022
PM15	0.0027
PM30	0.011

$E_{ext} = [k(sL)^{0.91} * (W)^{1.02}](1 - P/(4N))$  where:

k, sL, W and S are as defined above and

Eext = annual average emission factor in the same units as k

P = number of "wet" days with at least 0.01 inch of precipitation during the averaging period

N = number of days in the averaging period (365 for annual)

The equations retain the quality rating of A (D for PM2.5), if applied within the range of source conditions that were Silt loading:

0.03-400 g/m<sup>2</sup>

0.04-570 grains/square foot (ft<sup>2</sup>)

Mean vehicle weight:

1.8-38 megagrams (Mg)

2.0-42 tons

Mean vehicle speed:

1-88 kilometers per hour (kph)

1-55 miles per hour (mph)

The upper 95% confidence levels of equation 1 for PM10 is best described with equations using an exponent of 1.14

$E_{95\%} = k(sL)^{1.14} * (W)^{1.19}$

E95%(PM<sub>2.5</sub>)(lbs/VMT): 0.0304 0.0304 0.0020 0.0000 0.0000 0.0000

E95%(PM<sub>10</sub>)(lbs/VMT): 0.1239 0.1239 0.0082 0.0000 0.0000 0.0000



Haul Road/Haul Truck/Material Hauled Information														
Haul Road ID No.:	1	2	3	4	5	6	7	8	9	10	11	12	13	14
W (tons):	27.00	27.00	2.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
s (%):	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
P (days):	105	105	105	105	105	105	105	105	105	105	105	105	105	105
E(PM2.5) (lbs/VMT):	0.2893	0.2893	0.1035	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E(PM10) (lbs/VMT):	2.8934	2.8934	1.0351	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E(PM30) (lbs/VMT):	10.1750	10.1750	3.6401	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Eext(PM2.5) (lbs/VMT):	0.2061	0.2061	0.0737	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Eext(PM10) (lbs/VMT):	2.0610	2.0610	0.7374	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Eext(PM30) (lbs/VMT):	7.2479	7.2479	2.5930	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

E = k (s/12)<sup>a</sup> \* (W/3)<sup>b</sup> where:

E = size-specific emission factor (lb/VMT)

s = surface material silt content (%)

W = mean vehicle weight (tons)

**Constants for Equation**

Particle Size	Constant		
	k(lb/VMT)	a	b
PM2.5	0.15	0.9	0.45
PM10	1.5	0.9	0.45
PM30	4.9	0.7	0.45

Eext = E[(365-P)/365] where E is defined above and:

Eext = annual size-specific emission factor extrapolated for natural mitigation (lb/VMT)

P = number of days in a year with at least 0.01 inch of precipitation