

STATE OF MISSOURI

PERMIT BOARD



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:

022014-010

Project Number: 2013-10-061

Installation Number: 031-0119

Parent Company: Flickerwood Farms, Inc.

Parent Company Address: 3027 Larch Lane, Jackson, MO 63755

Installation Name: Flickerwood Farms, Inc.

Installation Address: 3027 Larch Lane, Jackson, MO 63755

Location Information: Cape Girardeau County, S12, T32N, R12E

Application for Authority to Construct was made for:

The installation of a new shaving mill and wood fired burner/dryer. This review was conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

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

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

FEB 25 2019

EFFECTIVE DATE

DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

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 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 Department's Air Pollution Control Program of the anticipated date of start up of these air contaminant sources. The information must be made available within 30 days of actual startup. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located within 15 days after the actual start up of these air contaminant sources.

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' 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 sources(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 at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

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Project No.	2013-10-061

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."

Flickerwood Farms, Inc.
Cape Girardeau County, S12, T32N, R12E

1. Superseding Condition
 - A. The conditions of this permit supersede all special conditions found in the previously issued construction permit Permit Number issued by the Air Pollution Control Program.

2. PM₁₀ Emission Limitation
 - A. Flickerwood Farms, Inc. shall emit less than 15.0 tons of PM₁₀ in any consecutive 12-month period from the entire installation as listed in Table 3

 - 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.

3. Haul Road Watering
 - A. Flickerwood Farms, Inc. shall water their unpaved haul roads whenever conditions exist which would cause visible fugitive emissions to enter the ambient air beyond the property boundary.

 - B. Watering may be suspended when the ground is frozen, during periods of freezing conditions when watering would be inadvisable for traffic safety reasons, or when there will be no traffic on the roads.

4. Control Device Requirement-Cyclone
 - A. Flickerwood Farms, Inc. shall control emissions from the wood fired burner/dryer (EP-09) using a cyclone as specified in the permit application.

 - B. The cyclone shall be operated and maintained in accordance with the manufacturer's specifications.

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SPECIAL CONDITIONS:

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

- C. Flickerwood Farms, Inc. shall maintain a copy of the cyclone manufacturer's specifications on site.
- D. Flickerwood Farms, Inc. shall maintain an operating and maintenance log for the cyclone 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.
- 5. Operational Requirement for Wood Fired Burner/Dryer (EP-09)
Flickerwood Farms, Inc. shall only operate the Wood Fired Burner/Dryer (EP-09) while the Shaving Mill (EP-07) is in operation.
- 6. Record Keeping and Reporting Requirements
 - A. Flickerwood Farms, 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. These records shall include MSDS for all materials used
 - B. Flickerwood Farms, Inc. shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 10 days after the end of the month during which any record required by this permit show an exceedance of a limitation imposed by this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (6) REVIEW

Project Number: 2013-10-061
Installation ID Number: 031-0119
Permit Number:

Flickerwood Farms, Inc.
3027 Larch Lane
Jackson, MO 63755

Complete: October 24, 2013

Parent Company:
Flickerwood Farms, Inc.
3027 Larch Lane
Jackson, MO 63755

Cape Girardeau County, S12, T32N, R12E

REVIEW SUMMARY

- Flickerwood Farms, Inc. has applied for authority to install a new shaving mill and wood fired burner/dryer.
- HAP emissions are expected from the proposed equipment due to the combustion of wood waste materials. Emission levels of the HAPs generated are expected to be below their respective SMAL.
- 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 cyclone is being used to control the particulate matter emissions from the wood fired burner/dryer (EP-09) in this permit.
- This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM₁₀ are conditioned to the de minimis levels. Potential emissions of particulate matter (PM) remain at minor source levels. Other pollutants are proportionately reduced to de minimis levels.
- This installation is located in Cape Girardeau County, an attainment 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 for PM₁₀ and particulate matter less than 2.5 microns in diameter (PM_{2.5}) was not performed since potential emissions of the application for these pollutants are below de minimis levels. Modeling is not required for PM.
- Emissions testing is not required for the equipment.
- No Operating Permit is required for this installation.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Flickerwood Farms, Incorporated (Flickerwood Farms) is an existing livestock products supply facility in Cape Girardeau County. The source is located at 3027 Larch Lane in Jackson, Missouri. The existing facility is a de minimis source and was constructed in 1983. Flickerwood Farms supplies livestock products including animal feed and animal bedding and also supplies mulch for local users. The feed mill has a maximum design capacity of 10 tons of feed per hour based on the maximum receiving capacity of the facility. Flickerwood Farms received a construction permit for three shaving mills and associated activities with a total capacity of 6.24 tons of logs processed per hour and wood fired burner/dryer with burner rating of 24 MMBtu/hr in 2008 in order to produce bulk wood shavings.

The following New Source Review permits have been issued to Flickerwood Farms, Inc. from the Air Pollution Control Program.

Table 1: Permit History

Permit Number	Description
032009-008	Shaving Mills

PROJECT DESCRIPTION

In 2013 Flickerwood Farms had a fire which destroyed the three existing shaving mill equipment and wood fired burner/dryer. Flickerwood Farms has proposed to install a new shaving mill with a maximum hourly design rate of 8.75 tons of logs processed per hour and a new wood fired burner with a burner rating of 24 MMBtu/hr. This project increases the throughput of the shaving mill and associated equipment therefore a construction permit is required for the shaving mill and new wood fired burner/dryer.

The process flow of the new shaving mill is very similar to what was permitted in 2008 with Flickerwood Farms implanting a single, larger, shaving mill as oppose to three separate shaving mills. The shavings from the mill (EP-07) are blown into a rotary drum dryer where shavings are transported through the dryer in three passes before exiting the dryer through a cyclone separator. After the cyclone removes the dried wood shavings from the dryer exhaust, a screen filters the larger shavings which will be bagged for shipment. The smaller wood particles pass through the screen and are

conveyed to the 24 MMBTU/hr wood fired burner (EP-09) where they are combusted. The wood burner is the source of heat for the shavings dryer. All emissions from the burner are vented through the shavings dryer and enter the ambient air at the cyclone exhaust. Table 1 contains a summary of the emission points and equipment that were considered for this project, including the increase in emissions from the haul roads and log and mulch storage piles.

Table 2: Project Emissions Points

Point ID	Description	MHDR	Units
EP-06b	Log Receiving Haul Road	0.104	VMT/hr (due to project)
EP-06c	Product Shipping Haul Road	0.0462	VMT/hr (due to project)
EP-06d	Mulch Shipping Haul Road	0.0167	VMT/hr (due to project)
EP-06e	Log Handling Vehicular Activity	0.86	VMT/hr (due to project)
EP-06f	Mulch Handling Vehicular Activity	0.0488	VMT/hr (due to project)
EP-07	Shaving Mill	8.75	Tons logs processed/hr
EP-08	Shaving/Mulch/Sawdust Handling (Loading, Unloading, Screening, Bagging and Storage)	8.75	Tons logs processed/hr
EP-09	Wood Fired Burner/Dryer	24	MMbtu/hr

The emission points at Flickerwood Farms as a result of this project have been reassigned due the change in method of calculations of the potential emissions. The following table summarizes the emission points at this installation.

Table 3: Emissions Points of Flickerwood Farms

Point ID	Description	MHDR	Units
EP-01	Feedmill Receiving	10	ton feed / hr
EP-02	Feedmill Internal Handling	10	ton feed / hr
EP-03	Feedmill Storage	10	ton feed / hr
EP-04	Feedmill Shipping (Bagging)	2.5	ton feed / hr
EP-05	Feedmill Shipping (Bulk Loadout)	7.5	ton feed / hr
EP-06a	Feedmill Haul Road	0.070	VMT/hr
EP-06b	Log Receiving Haul Road	0.104	VMT/hr
EP-06c	Product Shipping Haul Road	0.0462	VMT/hr
EP-06d	Mulch Shipping Haul Road	0.0167	VMT/hr
EP-06e	Log Handling Vehicular Activity	0.86	VMT/hr
EP-06f	Mulch Handling Vehicular Activity	0.0488	VMT/hr
EP-07	Shaving Mill	8.75	Tons logs processed/hr
EP-08	Shaving/Mulch/Sawdust Handling (Loading, Unloading, Screening, Bagging and Storage)	8.75	Tons logs processed/hr
EP-09	Wood Fired Burner/Dryer	24	MMbtu/hr

EMISSIONS/CONTROLS EVALUATION

The emission factors used in the analysis of the shaving mill (EP-07) and shaving/mulch/sawdust screening and handling (EP-08) were obtained from the EPA Web Based Factor Information Retrieval (WebFIRE) Data System. The SCC codes for these processes are 30700801 and 30700803 respectively.

The haul emission and vehicular activity emissions were calculated using the AP-42 Section 13.2.2, *Unpaved Roads*, (November 2006) for the unpaved portions and Section 13.2.1 “Paved Roads” (January, 2011) for the paved portions. Undocumented watering is being used to control emissions from the unpaved haul roads. A 50% control efficiency for PM and PM₁₀ and a 40% control efficiency for PM_{2.5} are applied to the emission calculations for the use of undocumented watering or chemical surfactant.

The emission factors and control efficiencies used in the analysis of the wood burner and the feed mill were obtained from the Environmental Protection Agency (EPA) document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 1.6 *Wood Residue Combustion in Boilers* (9/03). The conditioned potential emissions of the burner/dryer are indirectly limited due to the fact that the burner/dryer does not operate unless the shaving mill is in operation. A special condition has been put in place that restricts the operation of the burner/dryer to only occur while the shaving mill is in operation.

The following table provides an emissions summary for this project. Existing potential emissions were taken from construction permit 032009-008. Existing actual emissions were taken from the installation’s 2013 EIQ. Potential emissions of the application represent the potential of the new equipment and affected equipment, assuming continuous operation (8760 hours per year).

Table 2: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2013 EIQ)	Potential Emissions of the Application	*New Installation Conditioned Potential
PM	25.0	N/D	N/D	80.68	26.30
PM ₁₀	15.0	<15.0	5.10	46.844	<15.00
PM _{2.5}	10.0	N/D	4.46	28.75	8.94
SOx	40.0	1.389	0.32	2.63	0.81
NOx	40.0	27.222	6.30	51.51	15.86
VOC	40.0	0.944	0.21	1.79	0.55
CO	100.0	33.333	7.69	63.07	19.42
GHG (CO ₂ e)	75,000 / 100,000	N/D	N/D	20,922	6,440
GHG (mass)	0.0 / 100.0 / 250.0	N/D	N/D	20,499	6,310
HAPs	10.0/25.0	0.603	0.00	1.14	0.35

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

*The combustion emissions from the wood fired burner/dryer are indirectly limited due to the fact that the burner/dryer does not operate unless the shaving mill is in operation.

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM₁₀ are conditioned below de minimis levels. Potential emissions of PM remain at minor source levels. Other pollutants are proportionately reduced to de minimis levels.

APPLICABLE REQUIREMENTS

Flickerwood Farms, 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

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
- *Operating Permits*, 10 CSR 10-6.065
- *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 shaving mill (EP-07) and wood fired burner/dryer (EP-09) compliance with the emission rate calculated within this rule.
- *Restriction of Emission of Sulfur Compounds*, 10 CSR 10-6.260. Wood fired burner/dryer (EP-09) is in compliance with this rule

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

Gerad Fox
New Source Review Unit

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated October 16, 2013, received October 24, 2013, designating Flickerwood Farms, Inc. as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.

Attachment A: PM₁₀ Annual Emissions Tracking Sheet
 Flickerwood Farms Inc
 Project Number: 2013-10-061
 Permit Number:

3027 Larch Lane, Jackson, MO 63755
 Cape Girardeau County, S12, T32N, R12E

This sheet covers the period from _____ to _____ (Copy as needed)
 (Month, Day Year) (Month, Day Year)

(a)	Emission Points 1-5 and 6a Feed Mill and Feed Mill Haul Roads			Emission Units 6b-9 Shavings Mill, Shaving/Mulch/Sawdust Handling, Shaving and Mulch Haul Roads and Wood Fired Burner/Dryer			(h)	(i)	(j)	(k)
	(b)	(c)	(d)	(e)	(f)	(g)				
Date (Month, Year)	(EP1-5,6a) Tons of Feed Received (per month)	(EP1-5,6a) Composite Emission Factor (lb/ton of feed)	(EP1- 5,6a) Emissions (pounds)	Shavings Mill Emissions (EP6b-9) (Tons Logs Processed)	Emission Factor (EP6b-9) (lb/ton Logs)	Shavings Mill Emissions (EP6b-9) (pounds)	Monthly PM ₁₀ Emissions (tons)	Previous Month's 12- Month PM ₁₀ Emissions (tons)	Monthly PM ₁₀ Emissions from Previous Year (tons)	12-Month Total PM ₁₀ Emissions (tons)
<i>Example</i>	1,000,000	0.062	90.0	0.045	1.222	0.00	0.075			
<i>Example</i>	1,500,000	0.062	135.0	0.068	1.222	0.054	0.089			
		0.062			1.222					
		0.062			1.222					
		0.062			1.222					
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		0.062			1.222					
		0.062			1.222					

- a) Record the current date. (Month, Year)
- b) Record this month's feed received by the feedmill.
- c) Composite emission factor for feedmill operations.
- d) Calculate using the following equation: (d) = (b) x (c).
- e) Record this month's logs processed by the shaving mill.
- f) Composite emission factor for shaving mill operations.
- g) Calculate using the following equation: (g) = (e) x (f).
- h) Calculate using the following equation: (h) = [(d) + (g)] / 2000.
- i) Record the 12-month PM₁₀ emissions (k) from last month.
- j) Record the monthly PM₁₀ emissions (e) from this month of last year.
- k) Calculate the new 12-month PM₁₀ emissions. (k) = (h) + (i) - (j). A total of less than 15.0 tons of PM₁₀ per year is necessary for compliance.

APPENDIX A

Abbreviations and Acronyms

%	percent	m/s	meters per second
°F	degrees Fahrenheit	Mgal	1,000 gallons
acfm	actual cubic feet per minute	MW	megawatt
BACT	Best Available Control Technology	MHDR	maximum hourly design rate
BMPs	Best Management Practices	MMBtu	Million British thermal units
Btu	British thermal unit	MMCF	million cubic feet
CAM	Compliance Assurance Monitoring	MSDS	Material Safety Data Sheet
CAS	Chemical Abstracts Service	NAAQS ...	National Ambient Air Quality Standards
CEMS	Continuous Emission Monitor System	NESHAPs National Emissions Standards for Hazardous Air Pollutants
CFR	Code of Federal Regulations	NO_x	nitrogen oxides
CO	carbon monoxide	NSPS	New Source Performance Standards
CO₂	carbon dioxide	NSR	New Source Review
CO_{2e}	carbon dioxide equivalent	PM	particulate matter
COMS	Continuous Opacity Monitoring System	PM_{2.5}	particulate matter less than 2.5 microns in aerodynamic diameter
CSR	Code of State Regulations	PM₁₀	particulate matter less than 10 microns in aerodynamic diameter
dscf	dry standard cubic feet	ppm	parts per million
EQ	Emission Inventory Questionnaire	PSD	Prevention of Significant Deterioration
EP	Emission Point	PTE	potential to emit
EPA	Environmental Protection Agency	RACT	Reasonable Available Control Technology
EU	Emission Unit	RAL	Risk Assessment Level
fps	feet per second	SCC	Source Classification Code
ft	feet	scfm	standard cubic feet per minute
GACT	Generally Available Control Technology	SIC	Standard Industrial Classification
GHG	Greenhouse Gas	SIP	State Implementation Plan
gpm	gallons per minute	SMAL	Screening Model Action Levels
gr	grains	SO_x	sulfur oxides
GWP	Global Warming Potential	SO₂	sulfur dioxide
HAP	Hazardous Air Pollutant	tph	tons per hour
hr	hour	tpy	tons per year
hp	horsepower	VMT	vehicle miles traveled
lb	pound	VOC	Volatile Organic Compound
lbs/hr	pounds per hour		
MACT	Maximum Achievable Control Technology		
µg/m³	micrograms per cubic meter		

Mr. Mark Boardman
Owner
Flickerwood Farms, Inc.
3027 Larch Lane
Jackson, MO 63755

RE: New Source Review Permit - Project Number: 2013-10-061

Dear Mr. Boardman:

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, if any, 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 and 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.

If you have any questions regarding this permit, please do not hesitate to contact Gerad Fox, 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:gfl

Enclosures

c: Southeast Regional Office
PAMS File: 2013-10-061

Permit Number: