

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: **102017-010** Project Number: 2017-07-010
Installation Number: 033-0036

Parent Company: Show-Me Ethanol, LLC

Parent Company Address: 26530 Highway 24 East, Carrollton, MO 64633

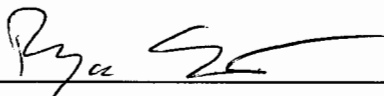
Installation Name: Show-Me Ethanol, LLC

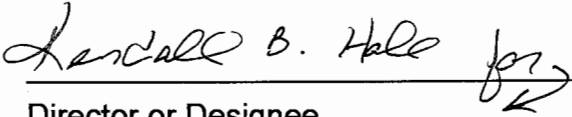
Installation Address: 26530 Highway 24 East, Carrollton, MO 64633

Location Information: Carroll County (S35, T53N, R23W)

Application for Authority to Construct was made for:
The installation of two (2) additional cooling tower cells. This review was conducted in accordance with Section (5), 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.


Prepared by
Ryan Schott
New Source Review Unit


Director or Designee
Department of Natural Resources
OCT 19 2017
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 startup 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 startup 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."

Show-Me Ethanol, LLC
Carroll County (S35, T53N, R23W)

1. Superseding Condition

The conditions of this permit supersede Special Condition 12 found in Construction Permit No. 042008-004A, previously issued by the Air Pollution Control Program.

2. Cooling Tower Requirements

A. The cooling tower [SME-80] shall be operated and maintained within the manufacturer's specifications, which shall be kept onsite.

B. The cooling water recirculation rate shall not exceed 30,000 gallons per minute. Show-Me Ethanol, LLC shall demonstrate compliance with this special condition using Attachment A or an equivalent form, such as an electronic form approved by the Air Pollution Control Program.

C. The drift loss shall not exceed 0.005% of the cooling water recirculation rate. Verification of drift loss shall be made by the manufacturer's guarantee, which shall be kept onsite.

D. The total dissolved solids (TDS) concentration in the recirculated cooling water shall not exceed 1,800 parts per million. Once per month, a TDS sample shall be collected and the results compared to the limit.

E. After twenty-four (24) consecutive months of TDS sampling, Show-Me Ethanol, LLC may petition the Air Pollution Control Program to change the sampling frequency or remove the sampling requirements if compliance is demonstrated with Special Condition 2.D.

3. Record Keeping and Reporting Requirements

A. Show-Me Ethanol, LLC 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. Show-Me Ethanol, LLC 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 email at 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: 2017-07-010

Installation ID Number: 033-0036

Permit Number:

102017-010

Installation Address:

Show-Me Ethanol, LLC
26530 Highway 24 East
Carrollton, MO 64633

Parent Company:

Show-Me Ethanol, LLC
26530 Highway 24 East
Carrollton, MO 64633

Carroll County (S35, T53N, R23W)

REVIEW SUMMARY

- Show-Me Ethanol, LLC has applied for authority to install two (2) additional cooling tower cells.
- The application was deemed complete on July 17, 2017.
- HAP emissions are not expected from the proposed equipment.
- None of the NSPS, NESHAPs, or currently promulgated MACT regulations apply to the equipment in this project. 40 CFR 63 Subpart Q does not apply to the cooling tower because it is not operated with chromium-based water treatment chemicals.
- No air pollution control equipment is being used with the new equipment.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants are below de minimis levels.
- This installation is located in Carroll County, an attainment area for all criteria pollutants.
- This installation is classified as item number 20, *Chemical process plants*, on the List of Named Installations found in 10 CSR 10-6.020(3)(B); however, the installation is not one of the stationary sources listed in §52.21(b)(1)(i)(a), as ethanol production facilities that produce ethanol by natural fermentation included in NAICS codes 325193 or 312140 are not included in the chemical process plant category.
- Monthly TDS sampling is required for the cooling tower.
- Addition of the equipment in this permit qualifies as an off-permit change to your Part 70 Operating Permit.

- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Show-Me Ethanol, LLC operates a 73 million gallon per year fuel grade ethanol production facility located in Carrollton, Missouri. In addition to ethanol, the plant produces distiller's dried grains and solubles (DDGS) and corn oil for animal feed as a by-product of the alcohol manufacturing process. Show-Me Ethanol, LLC is considered a single installation with Ray-Carroll County Grain Growers, Inc. and Ray-Carroll Fuels, LLC; however, each of the three facilities is permitted under its own separate operating permit. Show-Me Ethanol, LLC is currently permitted under Part 70 Operating Permit OP2017-035.

The following New Source Review permits have been issued to Show-Me Ethanol, LLC from the Air Pollution Control Program.

Table 1: Permit History

Permit Number	Description
042008-004	Installation of a 60.5 MMgal/yr fuel grade ethanol plant
042008-004A	Grain receiving increase; emission point and modeling revisions
122015-005	Installation of a new fermentation vessel and hammermill
122015-005A	Administrative correction

PROJECT DESCRIPTION

Show-Me Ethanol, LLC produces ethanol by converting cornstarch to sugars and then converting the sugars to ethanol. During the production process, heat is generated and removed by cooling water through non-contact heat exchangers. A cooling tower is utilized to remove this heat through evaporative cooling. The facility currently has a cooling tower with four (4) cells [SME-80]. Show-Me Ethanol, LLC is proposing to install two (2) additional cells in order to provide additional cooling capacity to the production process. The new cells will be constructed adjacent to the existing cells and will utilize the existing cooling water supply and return piping. In order to meet the operational demands of the two (2) additional cells, Show-Me Ethanol, LLC is proposing to increase the cooling water recirculation rate from 25,000 gallons per minute (1.5 million gallons per year) to 30,000 gallons per minute (1.8 million gallons per year). Modifications to the cooling tower will not affect any other processes at the facility.

EMISSIONS/CONTROLS EVALUATION

The emission factors used in this analysis were obtained from the EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 13.4 *Wet Cooling Towers* (January 1995). Emissions from the cooling tower were calculated assuming a recirculation rate of 30,000 gallons per minute, a total dissolved solids

(TDS) content of 1,800 parts per million, and a drift loss of 0.005%. It was conservatively assumed that all emitted particulate matter is PM_{2.5}.

The following table provides an emissions summary for this project. Existing potential emissions were taken from the installation's current operating permit (OP2017-035). Existing actual emissions were taken from the installation's 2016 EIQ. Potential emissions of the project represent the potential of the new equipment, assuming continuous operation (8,760 hours per year).

Table 2: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2016 EIQ)	Potential Emissions of the Project	New Installation Conditioned Potential
PM	25.0	N/D	N/D	0.99	N/D
PM ₁₀	15.0	21.75	11.65	0.99	22.74
PM _{2.5}	10.0	N/D	7.81	0.99	N/D
SO _x	40.0	45.32	0.82	N/A	45.32
NO _x	40.0	45.70	41.59	N/A	45.70
VOC	40.0	44.96	16.08	N/A	44.96
CO	100.0	99.98	24.97	N/A	99.98
Total HAPs	25.0	11.27	N/D	N/A	11.27

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 all pollutants are below de minimis levels.

APPLICABLE REQUIREMENTS

Show-Me Ethanol, LLC 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. For a complete list of applicable requirements for your installation, please consult your operating permit.

GENERAL REQUIREMENTS

- *Start-Up, Shutdown, and Malfunction Conditions*, 10 CSR 10-6.050
- *Operating Permits*, 10 CSR 10-6.065

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
 - Per 10 CSR 10-6.110(4)(B)2.A, a full EIQ is required annually.
- *Restriction of Emission of Odors*, 10 CSR 10-6.165
- *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

AMBIENT AIR QUALITY IMPACT ANALYSIS

Show-Me Ethanol, LLC previously performed ambient air quality modeling in Construction Permit No. 042008-004, which included an analysis on PM₁₀ and incorporated emissions from the cooling tower. Results of the modeling showed not only that none of the emissions will cause or contribute to any NAAQS or Prevention of Significant Deterioration (PSD) increment violations, but PM₁₀ emissions were far below any of the thresholds. Although this project has the potential to emit PM₁₀ from the cooling tower which was previously modeled, the previous low modeling results and the low project emission rate are not expected to cause or contribute to any NAAQS or PSD increment violations for PM₁₀. Therefore, remodeling was not necessary for this project.

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 July 5, 2017, received July 7, 2017, designating Show-Me Ethanol, LLC as the owner and operator of the installation.

Attachment A – Cooling Water Recirculation Rate Log

Show-Me Ethanol, LLC

Carroll County (S35, T53N, R23W)

Project Number: 2017-07-010

Installation ID Number: 033-0036

Permit Number: 102017-010

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

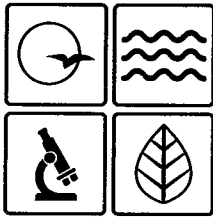
Date (month, year)	Cooling Water Recirculation Rate (gallons/minute)

The cooling water recirculation rate must be less than 30,000 gallons per minute in order to demonstrate compliance with Special Condition 2.B.

APPENDIX A

Abbreviations and Acronyms

%percent	Mgal1,000 gallons
°Fdegrees Fahrenheit	MWmegawatt
acfmactual cubic feet per minute	MHDRmaximum hourly design rate
BACTBest Available Control Technology	MMBtuMillion British thermal units
BMPsBest Management Practices	MMCFmillion cubic feet
BtuBritish thermal unit	MSDSMaterial Safety Data Sheet
CAMCompliance Assurance Monitoring	NAAQSNational Ambient Air Quality Standards
CASChemical Abstracts Service	NESHAPs National Emissions Standards for Hazardous Air Pollutants
CEMSContinuous Emission Monitor System	NO_xnitrogen oxides
CFRCode of Federal Regulations	NSPSNew Source Performance Standards
COcarbon monoxide	NSRNew Source Review
CO₂carbon dioxide	PMparticulate matter
CO_{2e}carbon dioxide equivalent	PM_{2.5}particulate matter less than 2.5 microns in aerodynamic diameter
COMSContinuous Opacity Monitoring System	PM₁₀particulate matter less than 10 microns in aerodynamic diameter
CSRCode of State Regulations	ppmparts per million
dscfdry standard cubic feet	PSDPrevention of Significant Deterioration
EIQEmission Inventory Questionnaire	PTEpotential to emit
EPEmission Point	RACTReasonable Available Control Technology
EPAEnvironmental Protection Agency	RALRisk Assessment Level
EUEmission Unit	SCCSource Classification Code
fpsfeet per second	scfmstandard cubic feet per minute
ftfeet	SDSSafety Data Sheet
GACTGenerally Available Control Technology	SICStandard Industrial Classification
GHGGreenhouse Gas	SIPState Implementation Plan
gpmgallons per minute	SMALScreening Model Action Levels
grgrains	SO_xsulfur oxides
GWPGlobal Warming Potential	SO₂sulfur dioxide
HAPHazardous Air Pollutant	tphtons per hour
hrhour	tpytons per year
hphorsepower	VMTvehicle miles traveled
lbpound	VOCVolatile Organic Compound
lbs/hrpounds per hour	
MACTMaximum Achievable Control Technology	
µg/m³micrograms per cubic meter	
m/smeters per second	



Missouri Department of dnr.mo.gov

NATURAL RESOURCES

Eric R. Greitens, Governor

Carol S. Comer, Director

OCT 19 2017

Mr. Daniel Olvera
Safety & Environmental Coordinator
Show-Me Ethanol, LLC
26530 Highway 24 East
Carrollton, MO 64633

RE: New Source Review Permit - Project Number: 2017-07-010

Dear Mr. Olvera:

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 and with your amended operating permit 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.



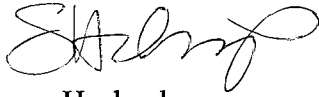
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Mr. Daniel Olvera
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If you have any questions regarding this permit, please do not hesitate to contact Ryan Schott, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, 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:rsj

Enclosures

c: Northeast Regional Office
PAMS File: 2017-07-010

Permit Number: 102017-010