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: 072018-008  Project Number: 2018-02-020
Installation Number: 186-0001
Parent Company: Mississippi Lime Company
Parent Company Address: 3870 South Lindbergh Blvd, Suite 200, St. Louis, MO 63127
Installation Name: Mississippi Lime Company
Installation Address: 16147 U.S. Highway 61, Ste. Genevieve, MO 63670
Location Information: Ste. Genevieve County, S29, T38N, R9E

Application for Authority to Construct was made for:
Temporary permit to burn natural gas in kilns RK1 and RK2 outside of startup and refractory cureout times. This review was conducted in accordance with Section (3), 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
David Little, PE
Environmental Engineer III
New Source Review Unit

Director or Designee
Department of Natural Resources

JUL 23 2018
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."

Mississippi Lime Company
Ste. Genevieve County, S29, T38N, R9E

1. Temporary Permit

2. Natural Gas Limit
   B. MLC shall develop and use forms to demonstrate compliance with Special Condition 2.A. The forms shall contain at a minimum the following information,
      1) Installation name
      2) Installation ID
      3) Permit number
      4) Current month
      5) Current 12-month date range
      6) Monthly natural gas throughput (MMCF) separate for RK1 and RK2
      7) Monthly natural gas throughput (MMCF) combined for RK1 and RK2
      8) Natural gas throughput shall be determined by the use of individual, non-resettable gas flow meters at each RK1 and RK2. The meters shall be calibrated and maintained according to manufacturer’s standards, a copy of which shall be kept on site. A record of all calibrations and maintenance activities performed shall be kept on site.
      9) 12-month rolling total natural gas throughput (MMCF)
      10) Indication of compliance status with Special Condition 2.A.

3. NOx Emission Monitoring
   A. MLC shall conduct a study on RK1 and RK2 NOx emissions using existing NOx CEMS.
      1) MLC shall determine the NOx emission rate (lb/ton lime) for each kiln during normal operation when firing stone and natural gas. Natural gas shall be the only fuel used in the respective kiln during this time.
      2) MLC shall determine the NOx emission rate (lb/ton lime) for each kiln during normal operation when firing stone and solid fuels. No natural gas shall be used in the respective kiln during this time.
SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

3) MLC shall determine the NOx emission rate (lb/ton lime) for each kiln during normal operation when firing stone, solid fuel, and natural gas.

B. MLC shall commence the study within 60 days after the first date that natural gas was fired outside of startup and cureout times in either kiln RK1 or RK2. The study shall end when enough representative information has been gathered, but no later than 1 year after commencing the study. At least 30 days prior to conducting the study, MLC shall submit a study protocol to StackTesting@dnr.mo.gov. The protocol shall include methods that will be used to determine how the information gathered during the study will be deemed representative. The study protocol shall be approved by the Director prior to conducting the study.

C. Each study scenario shall be conducted at respective maximum capacity (MBtu/hr of natural gas input per kiln, tph lime production per kiln, and the maximum solid fuel rate(s)).
1) If co-firing gaseous and solid fuels each at maximum capacity is not practical for safety/product quality/other reasons, then the fuels may be fired at less than their respective maximum capacity, however their combined MMBtu/hr shall be at the maximum rated for safety/product quality/other reasons. The specific reason for not firing each co-fired fuel at its respective maximum capacity shall be detailed.
2) If it is impractical to test at maximum capacity, emission units may be studied at less than the maximum capacity; in this case, subsequent firing of natural gas outside of startup and cureout times is limited to 110 percent of the studied rate until a new study is conducted. Once the emission units are so limited, operation at higher capacities is allowed for no more than 15 total days for the purpose of additional studies to regain the authority to operate at the maximum capacity.

D. MLC shall submit an electronic copy of the study report to StackTesting@dnr.mo.gov within 60 days of completion of the required monitoring. The report shall account for all operational and emission parameters addressed both in the permit conditions as well as in any other applicable state or federal rules or regulations. The report shall include legible copies of the raw data sheets, analytical instrument laboratory data, and complete sample calculations from the required U.S. EPA Method for at least one sample run. The report shall include the following values present/recorded during each of the three study scenarios.
1) Kiln (RK1 or RK2)
2) Natural gas rate (MMCF/hr)
3) Natural gas HHV (Btu/cf)
4) Solid fuel types, compositions (wt% sulfur, nitrogen, and ash)
5) Solid fuel rate (tph)
6) Solid fuel HHV (Btu/lb)
SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

7) Kiln feed material composition (wt% sulfur and nitrogen)
8) Kiln feed material rate (tph)
9) Lime production rate (tph)
10) NOx emission rates (units of measure)
11) Start and stop times of each study scenario

E. MLC shall submit a permit amendment application to the Air Pollution Control Program’s Permits Section within 120 days of completion of the required monitoring. The application shall account for differences in emission factors, emission rates, and limits between this permit and what is necessary for compliance based upon the monitoring study. The application shall address emissions that the affected emission units were capable of accommodating without undertaking this project of natural gas combustion outside of startup/cureout times.

4. Record Keeping and Reporting Requirements
A. Mississippi Lime Company shall maintain all records required by this permit for not less than five years and shall make them available to any Missouri Department of Natural Resources’ personnel upon request. These records shall include SDS for all materials used.

B. Mississippi Lime Company 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 (3) REVIEW
Project Number: 2018-02-020
Installation ID Number: 186-0001
Permit Number: 072018-008

Installation Address:
Mississippi Lime Company
16147 U.S. Highway 61
Ste. Genevieve, MO 63670
Ste. Genevieve County, S29, T38N, R9E

Parent Company:
Mississippi Lime Company
3870 South Lindbergh Blvd, Suite 200
St. Louis, MO 63127

REVIEW SUMMARY

• Mississippi Lime Company has applied for authority to burn natural gas in kilns RK1 and RK2 outside of startup and refractory cureout times.

• The application was deemed complete on March 9, 2018.

• HAP emissions are expected from the natural gas combustion.

• 40 CFR 60 Subpart HH, Standards of Performance for Lime Manufacturing Plants, applies.

• None of the NESHAPs under 40 CFR 61 apply.


• Existing baghouses are being used to control filterable particulate matter emissions.

• This review was conducted in accordance with Section (3) of Missouri State Rule 10 CSR 10-6.060, Construction Permits Required. Potential emissions of NOx are conditioned below de minimis levels.

• This installation is located in Ste. Genevieve County, an attainment/unclassifiable area for all criteria pollutants.

• This installation is on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation is classified as item number 11. Lime plants. The installation’s major source level is 100 tons per year and fugitive emissions are counted toward major source applicability.
• Ambient air quality modeling was not performed since potential emissions of the application are conditioned below de minimis levels.

• NO\textsubscript{x} emissions will be monitored using existing CEMS.

• No operating permit amendment is needed for this temporary activity. An amendment will be needed if the activity is conducted outside of this temporary permit.

• Approval of this permit is recommended with special conditions.

**INSTALLATION DESCRIPTION**

Mississippi Lime Company (herein MLC) is an existing lime plant located in Ste. Genevieve. MLC is a major source of several pollutants and has a Part 70 operating permit. The following NSR permits have been issued to MLC from the Air Pollution Control Program.

<table>
<thead>
<tr>
<th>Permit Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>102017-015</td>
<td>Modification to lime loadout system.</td>
</tr>
<tr>
<td>062017-010</td>
<td>Underground crushing plant.</td>
</tr>
<tr>
<td>032016-005</td>
<td>Modification of stone screen and loadout system.</td>
</tr>
<tr>
<td>072015-011</td>
<td>New lime milling system and lime screening system.</td>
</tr>
<tr>
<td>082014-010</td>
<td>Temporary crushing operation.</td>
</tr>
<tr>
<td>042014-003</td>
<td>Temporary mine screening operation.</td>
</tr>
<tr>
<td>122013-009</td>
<td>Amended emission calculations.</td>
</tr>
<tr>
<td>122013-009</td>
<td>A Section (5) permit issued on December 30, 2015 for the modification of three (3) existing kilns.</td>
</tr>
<tr>
<td>042013-009</td>
<td>Temporary portable crusher and screening operation.</td>
</tr>
<tr>
<td>072013-007</td>
<td>Temporary mine crushing operation.</td>
</tr>
<tr>
<td>112012-009B</td>
<td>Amended test conditions.</td>
</tr>
<tr>
<td>112012-009A</td>
<td>Amended two emission units and haul road at lime hydrating plant.</td>
</tr>
<tr>
<td>112012-009</td>
<td>A Section (5) permit issued on November 19, 2012 for a new lime hydrating plant.</td>
</tr>
<tr>
<td>082011-002</td>
<td>A Section (5) permit issued on July 5, 2011 for hydration process.</td>
</tr>
<tr>
<td>042010-010</td>
<td>A Section (5) permit issued on April 16, 2010 for a transfer loading station to transfer finished lime product to temporary storage.</td>
</tr>
<tr>
<td>042009-001</td>
<td>A Section (5) permit for new limestone crushing, screening, and conveying equipment for the underground mine</td>
</tr>
<tr>
<td>072004-012</td>
<td>Vertical kilns-(netting).</td>
</tr>
<tr>
<td>052003-045</td>
<td>A Section (5) permit issued on May 2, 2003, for a new lime hydrator.</td>
</tr>
<tr>
<td>122002-007</td>
<td>A Section (8) permit for two (2) new Rotary Lime Kilns.</td>
</tr>
<tr>
<td>102002-008</td>
<td>A Section (5) permit issued on October 7, 2002, for a lime handling system.</td>
</tr>
<tr>
<td>082002-004</td>
<td>A Section (5) permit issued on August 9, 2002, for a new railcar transloading system.</td>
</tr>
<tr>
<td>Permit Number</td>
<td>Description</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------</td>
</tr>
<tr>
<td>092001-014</td>
<td>A Section (5) permit issued on September 19, 2001, for a new Vertical Kiln plant with supporting equipment.</td>
</tr>
<tr>
<td>112001-005</td>
<td>A Section (5) permit issued on November 6, 2001, for a new bagging operation.</td>
</tr>
<tr>
<td>052001-003</td>
<td>A Section (5) permit issued on May 4, 2001, to add two (2) additional hydrated lime storage silos, two (2) additional truck load out systems and one (1) additional rail load out system.</td>
</tr>
<tr>
<td>0999-009</td>
<td>A Section (3) Temporary Permit issued on September 14, 1999, to reclaim and remediate waste storage piles. Permit Expiration Date: July 31, 2001.</td>
</tr>
<tr>
<td>0799-015</td>
<td>A Section (5) permit issued on July 20, 1999, to revise Permit No. 0679-002 to account for increased potential emissions.</td>
</tr>
<tr>
<td>1198-020</td>
<td>A Section (5) permit issued on November 24, 1998, for a modification to the rotary kiln load out system.</td>
</tr>
<tr>
<td>0898-019</td>
<td>A Section (5) permit issued on August 17, 1998, for construction of a Maerz natural gas fired vertical lime kiln and ancillary equipment.</td>
</tr>
<tr>
<td>0198-006</td>
<td>A Section (5) permit issued on January 8, 1998, for the addition of a pneumatic conveying system from the Rotary Hydrate Plants No. 2 &amp; No. 3 to Rotary Hydrate Plant No. 1.</td>
</tr>
<tr>
<td>0997-015</td>
<td>A Section (5) permit issued on September 11, 1997, for modifications to the lime handling and blending system at the Peerless Plant.</td>
</tr>
<tr>
<td>0897-035</td>
<td>A Section (5) permit issued on August 26, 1997, to amend Permit No. 0292-010A for a natural gas fired Maerz Vertical Lime Kiln to include an ancillary limestone feed and limestone processing system.</td>
</tr>
<tr>
<td>0897-018</td>
<td>A Section (5) permit issued on December 2, 1997, to replace an existing natural gas fired burner of the precipitated calcium carbonate system (MRPCC-2) with a larger burner.</td>
</tr>
<tr>
<td>0897-017</td>
<td>A Section (5) permit issued on August 20, 1997, for an underground limestone crushing operation.</td>
</tr>
<tr>
<td>0395-008</td>
<td>A Section (5) permit issued on February 10, 1995, to construct a new hydrate bulk bagging system.</td>
</tr>
<tr>
<td>0794-014</td>
<td>A Section (5) permit issued on July 20, 1994, to construct a Fuller pneumatic conveying system to convey precipitated calcium carbonate (PPC) from PPC Plant No. 1 to PPC Plant No. 2.</td>
</tr>
<tr>
<td>0292-010</td>
<td>A Section (5) permit issued on February 1, 1992, for the addition of a new natural gas fired Maerz Vertical Lime kiln.</td>
</tr>
<tr>
<td>1090-006</td>
<td>A Section (5) permit issued on October 11, 1990, for the addition of two (2) storage silos for lime hydrate.</td>
</tr>
<tr>
<td>0889-013</td>
<td>A Section (5) permit issued on August 30, 1989, to add a calcium carbonate slurry operation.</td>
</tr>
<tr>
<td>0588-008A</td>
<td>A Section (5) permit issued on May 31, 1988, for a milling operation.</td>
</tr>
<tr>
<td>1086-005A</td>
<td>A Section (5) permit issued on October 1, 1986, to construct a precipitated calcium carbonate plant (MRPCC-2).</td>
</tr>
<tr>
<td>0284-008A to 010A</td>
<td>A Section (5) permit issued on February 21, 1984, to construct a rotary hydrator (MRH-3).</td>
</tr>
<tr>
<td>0480-006</td>
<td>A Section (8) permit issued on April 1, 1980, to construct two (2) rotary lime kiln systems.</td>
</tr>
<tr>
<td>0679-002</td>
<td>A Section (5) permit issued on June 6, 1979, for various crushing, conveying, storage and loading equipment.</td>
</tr>
</tbody>
</table>
PROJECT DESCRIPTION

MLC proposes to combust natural gas in lime kilns RK1 (EU-3280, EP-640) and RK2 (EU-3310, EP-645) outside of startup and refractory cureout times. RK1 and RK2 were constructed under PSD construction permit 122002-007. That permit is based upon but does not explicitly require via a special condition, natural gas being used only during startup and cureout. MLC proposes to use blends of natural gas and solid fuel during normal operation. No new equipment or physical changes will be implemented.

The applicant requested confidentiality per 10 CSR 10-6.210 Confidential Information, for design capacities, throughputs, hours of operation, and emission factors. Confidentiality was granted. This is the public permit version. A confidential version was created under project 2018-02-021.

EMISSIONS/CONTROLS EVALUATION

The emissions profile from a kiln is complex. There are combustion emissions from fuel. There are calcining emissions from feed. The fuel and feed are natural-based materials that can vary in composition. Comparing pollutant to pollutant, the fuel and feed can contribute much different amounts to each pollutant's total emission rate. In order to calculate the project emissions increase, these complexities need to be understood to an extent that reliable predictions can be made for the proposed project. However, the original construction permit for RK1 and RK2 is based upon natural gas being combusted only during startup and cureout. CEMS and stack tests have been implemented during normal operation times, but only for solid fuel types. As RK1 and RK2 are existing emission units, new project emissions are calculated as PTE minus baseline actual emissions (BAE) or projected actual emissions (PAE) minus BAE. PTE, PAE, and BAE include the entire emission unit, not just one material or one fuel. However, due to the lack of available site-specific information, a comparison cannot accurately be made for baseline operation using natural gas during startup with solid fuels during normal operation versus post-project emissions using a combination of all fuels. However, the project emissions increase still needs to be determined.

The evaluation of the project emissions increase was started using PAE minus BAE. This method allows increases such as the following which are likely not related to the project to be subtracted from the PAE.

- The applicant stated this project will not result in an increase in lime production. However, it was also stated that allowing natural gas to be burned outside of startup and cureout may allow the kilns to continue operation when a coal mill is down. The issue is short versus long term production. It is known that a natural gas flame is not as energy efficient as other fuels. Hourly lime production on solely natural gas could decrease up to percent. Hourly and annual production could increase if previously the calcining reaction was limited by heat input, and now fuels can be co-fired at a higher rate. On an annual basis, the usage of natural gas could allow the kilns to remain in operation when they would otherwise be down due to the solid fuel handling system or crushers being down.
These latter scenarios could be an emissions increase related to the project, however the application did not specifically address them.

- Solid fuel usage is not expected to increase as a result of this project. Solid fuel-based NOx emissions can be removed.

The above items were also removed from the BAE in order to compare PAE and BAE in similar situations. What remains is the BAE of natural gas combustion before the project subtracted from the PAE of natural gas combustion after the project.

Emission factors were obtained from I. The application uses a NOx emission factor of \( I \) lb/MMCF of natural gas. This factor is based upon \( I \), large wall-fired boilers. The \( I \) were promulgated in the 1970s and 1980s. However, these kilns were permitted in 2002. Therefore the \( I \) factor of \( I \) lb/MMCF may be more appropriate only due to timing. However, using the \( I \) factor results in a larger project emissions increase and corresponding lower natural gas throughput limit (\( I \) versus \( I \) MMCF/yr). The \( I \) factor errs on the side of caution. The throughput limit coordinates with the allowed de minimis NOx emission increase. NOx emissions have the highest increase of all pollutants. The project emission increases of all other pollutants are below respective de minimis levels and SMALs.

Assuming the only change is the natural gas usage rate simplifies the project emissions calculation but may be incorrect. The project emissions should be the effect on each entire kiln (the emission units), not just natural gas combustion, and not just while empty. However, that information wasn’t available during the permit review as the project has not yet been implemented. Therefore, an accurate comparison of post-project emissions to BAE could not be performed during this permit review. The wall-fired boiler emission factor may not be representative of a lime kiln. There may be a change in NOx emissions due to other parameters. Each kiln is equipped with NOx CEMS. Therefore, to ensure this project does not result in an emissions increase above de minimis and a PSD violation, this permit requires a NOx study to be performed on each kiln using CEMS data.

- MLC will obtain emission rates from each kiln when firing natural gas only, with minimal stone feed. No other fuels will be present. This is a typical startup scenario, already occurs without this project, and NOx CEMS data is already available. MLC has stated it is not practical to fire the kilns without stone feed present due to damaging the kilns and lost production, and that the stone feed should contribute little or no NOx. Therefore, firing with minimal stone feed is the closest scenario to firing an empty kiln. This will determine an emission factor (lb/MMCF) for comparison to the \( I \) boiler factors. A lb/hr emission rate can also be determined.

- MLC will obtain lb/hr emission rates from each kiln during normal operation, with the only fuel being natural gas. This will determine if there is an emissions increase when operating on natural gas compared to normal operation on solid fuels. If natural gas and solid fuels can be co-fired then this emission rate should be compared as well. Also, the lb/hr gas burner emission rate from an empty kiln subtracted from the lb/hr emission rate during normal operation with the only fuel being natural gas yields the NOx generated from feed materials. MLC has stated there is only one feed material, a consistent, high quality, high calcium Salem
formation limestone. The permit requires a composition analysis of the stone feed fired during the study.

- This permit will be amended to account for a revised emission factor, revised project emissions calculation method (e.g. not just PAE-BAE of natural gas), and a revised limit/compliance demonstration method (e.g. NOx tpy limit, or other limit).
- An increase in short term or annual lime production may result in an increase in NOx and other pollutants, which may require additional permitting.
- Natural gas is relatively clean burning and is consistent in quality. Therefore, it produces the highest quality lime, according to references. If this project results in a new product type then it may be viewed as a modification to or change in the method of operation of the kilns and other emission units, which may require additional permitting for other pollutants.

As insufficient information was available during this permit’s issuance, the Air Pollution Control Program cannot determine if this project is a major modification. Therefore, the program has not made a determination regarding PSD applicability and nothing in this permit should be construed as concurrence that PSD does not apply to this project. This is a temporary permit to study the effect of natural gas usage outside of startup and refractory cureout. All existing permitted BACT and other limits remain applicable to RK1 and RK2 while combusting natural gas outside of startup and refractory cureout.

The following tables provide an emissions summary for this project. For the conditioned project emissions increase in Table 2, as the limit is a natural gas throughput limit and not just a NOx limit, then potential emissions of other pollutants were proportionately reduced. Existing potential emissions in Table 3 were obtained from operating permit OP2013-035 which obtained them by extrapolating actual emissions, and therefore may not be accurate. Also, construction permits have been issued since the operating permit was issued which may increase installation-wide potential emissions.

Table 2: Project Emissions Increase (tpy)

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Unconditioned PAE, RK1 and RK2 Natural Gas Portion</th>
<th>BAE, RK1 and RK2 Natural Gas Portion</th>
<th>Conditioned Project Emissions Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM</td>
<td>2.99</td>
<td>1.01</td>
<td>0.27</td>
</tr>
<tr>
<td>PM_{10}</td>
<td>11.94</td>
<td>4.02</td>
<td>1.09</td>
</tr>
<tr>
<td>PM_{2.5}</td>
<td>11.94</td>
<td>4.02</td>
<td>1.09</td>
</tr>
<tr>
<td>SO_{2}</td>
<td>0.94</td>
<td>0.32</td>
<td>0.09</td>
</tr>
<tr>
<td>NO_{x}</td>
<td>440.06</td>
<td>148.28</td>
<td>&lt; 40.0</td>
</tr>
<tr>
<td>VOC</td>
<td>8.64</td>
<td>2.91</td>
<td>0.79</td>
</tr>
<tr>
<td>CO</td>
<td>132.02</td>
<td>44.48</td>
<td>12.00</td>
</tr>
<tr>
<td>GHG (CO_{2e})</td>
<td>189,718.39</td>
<td>63,925.07</td>
<td>17,244.73</td>
</tr>
<tr>
<td>GHG (mass)</td>
<td>188,604.72</td>
<td>63,549.82</td>
<td>17,143.50</td>
</tr>
<tr>
<td>Combined HAPs</td>
<td>2.97</td>
<td>1.00</td>
<td>0.27</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>0.12</td>
<td>0.04</td>
<td>0.01</td>
</tr>
<tr>
<td>Hexane</td>
<td>2.83</td>
<td>0.95</td>
<td>0.26</td>
</tr>
</tbody>
</table>

Other individual HAPs are potentially emitted from the project.
Table 3: Emissions Summary (tpy)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PM</td>
<td>25.0</td>
<td>N/D</td>
<td>N/D</td>
<td>0.27</td>
<td>Major</td>
</tr>
<tr>
<td>PM$_{10}$</td>
<td>15.0</td>
<td>23,000</td>
<td>1,165.96</td>
<td>1.09</td>
<td>Major</td>
</tr>
<tr>
<td>PM$_{2.5}$</td>
<td>10.0</td>
<td>1,400</td>
<td>522.66</td>
<td>1.09</td>
<td>Major</td>
</tr>
<tr>
<td>SO$_2$</td>
<td>40.0</td>
<td>14,862</td>
<td>2,746.97</td>
<td>0.09</td>
<td>Major</td>
</tr>
<tr>
<td>NO$_x$</td>
<td>40.0</td>
<td>31,686.40</td>
<td>3,350.63</td>
<td>&lt; 40.0</td>
<td>Major</td>
</tr>
<tr>
<td>VOC</td>
<td>40.0</td>
<td>471.70</td>
<td>30.72</td>
<td>0.79</td>
<td>Major</td>
</tr>
<tr>
<td>CO</td>
<td>100.0</td>
<td>789,352</td>
<td>11,192.18</td>
<td>12.00</td>
<td>Major</td>
</tr>
<tr>
<td>GHG (CO$_2$e)</td>
<td>N/A</td>
<td>795,877.29</td>
<td>2,622,788</td>
<td>17,244.73</td>
<td>Major</td>
</tr>
<tr>
<td>GHG (mass)</td>
<td>N/A</td>
<td>N/D</td>
<td>2,615,491</td>
<td>17,143.50</td>
<td>Major</td>
</tr>
<tr>
<td>Combined HAPs</td>
<td>25.0</td>
<td>43.50</td>
<td>26.47</td>
<td>0.27</td>
<td>Major</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>2.0</td>
<td>N/D</td>
<td>N/D</td>
<td>0.01</td>
<td>N/D</td>
</tr>
<tr>
<td>Hexane</td>
<td>10.0</td>
<td>N/D</td>
<td>N/D</td>
<td>0.26</td>
<td>N/D</td>
</tr>
</tbody>
</table>

N/A = Not Applicable; N/D = Not Determined
Other individual HAPs are potentially emitted installation-wide.
Existing actual GHG emissions were obtained from EPA flight website, converted to short tons.

APPLICABLE REQUIREMENTS

Mississippi Lime Company 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

- Operating Permits, 10 CSR 10-6.065
- 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
- 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, not an exhaustive list

- **New Source Performance Regulations, 10 CSR 10-6.070**
  - Standards of Performance for Lime Manufacturing Plants, 40 CFR Part 60, Subpart HH
  - Standards of Performance for Nonmetallic Mineral Processing Plants, 40 CFR Part 60, Subpart OOO

- **MACT Regulations, 10 CSR 10-6.075**
  - National Emission Standards for Lime Manufacturing Plants, 40 CFR Part 63, Subpart AAAAA

**STAFF RECOMMENDATION**

On the basis of this review conducted in accordance with Section (3), 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 January 11, 2018, received February 14, 2018, designating Mississippi Lime Company as the owner and operator of the installation.
- The Application for Authority to Construct form, dated March 8, 2018, received March 9, 2018, designating Mississippi Lime Company as the owner and operator of the installation.

The following documents are permit references:

- Amended Project Emissions V2.xlsx, Excel document, Mississippi Lime Company, April 2, 2018
- U.S. EPA flight website, [https://ghgdata.epa.gov/ghgp/main.do](https://ghgdata.epa.gov/ghgp/main.do)
APPENDIX A
Abbreviations and Acronyms

% ...............percent
°F .............degrees Fahrenheit
acfm ..........actual cubic feet per minute
BACT ...... Best Available Control Technology
BMPs ...... Best Management Practices
Btu .......... British thermal unit
CAM ...... Compliance Assurance Monitoring
CAS .......... Chemical Abstracts Service
CEMS ...... Continuous Emission Monitor System
CFR .......... Code of Federal Regulations
CO .......... carbon monoxide
CO2 .......... carbon dioxide
CO2e ....... carbon dioxide equivalent
COMS ...... Continuous Opacity Monitoring System
CSR .......... Code of State Regulations
dscf ....... dry standard cubic feet
EIQ ........ Emission Inventory Questionnaire
EP .......... Emission Point
EPA ........ Environmental Protection Agency
EU .......... Emission Unit
fps ........ feet per second
ft ........... feet
GACT ...... Generally Available Control Technology
GHG ........ Greenhouse Gas
gpm ....... gallons per minute
gr .......... grains
GWP ........ Global Warming Potential
HAP ........ Hazardous Air Pollutant
hr .......... hour
hp .......... horsepower
lb .......... pound
lbs/hr ...... pounds per hour
MACT ...... Maximum Achievable Control Technology
µg/m³ ....... micrograms per cubic meter
m/s .......... meters per second
Mgal .......1,000 gallons
MW .......... megawatt
MHDR ...... maximum hourly design rate
MMBtu .... Million British thermal units
MMCF ...... million cubic feet
MSDS ...... Material Safety Data Sheet
NAAQS .... National Ambient Air Quality Standards
NESHAPs National Emissions Standards for Hazardous Air Pollutants
NOx .......... nitrogen oxides
NSPS ...... New Source Performance Standards
NSR ........ New Source Review
PM .......... particulate matter
PM2.5 ....... particulate matter less than 2.5 microns in aerodynamic diameter
PM10 ........ particulate matter less than 10 microns in aerodynamic diameter
ppm .......... parts per million
PSD .......... Prevention of Significant Deterioration
PTE .......... potential to emit
RACT ...... Reasonable Available Control Technology
RAL .......... Risk Assessment Level
SCC ......... Source Classification Code
scfm ........ standard cubic feet per minute
SDS .......... Safety Data Sheet
SIC .......... Standard Industrial Classification
SIP .......... State Implementation Plan
SMAL ....... Screening Model Action Levels
SOx .......... sulfur oxides
SO2 .......... sulfur dioxide
SSM ........ Start, Shutdown & Malfunction
tph ........ tons per hour
tpy ........ tons per year
VMT ....... vehicle miles traveled
VOC ........ Volatile Organic Compound
Mr. Jonathan Kennedy
Environmental & Regulatory Affairs Manager
Mississippi Lime Company
16147 U.S. Highway 61
Ste. Genevieve, MO 63670

RE: New Source Review Permit - Project Number: 2018-02-020

Dear Mr. Kennedy:

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.

JUL 23 2018
If you have any questions regarding this permit, please do not hesitate to contact David Little, 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

[Signature]

Susan Heckenkamp
New Source Review Unit Chief

SH:dlj

Enclosures

c: Southeast Regional Office
   PAMS File: 2018-02-020

Permit Number: 072018-008