

AIR EMISSION PERMIT NO. 11100082- 001

IS ISSUED TO

Mark Sand & Gravel Co – Multiple Sites

MARK SAND & GRAVEL CO - NONMETALLIC

525 Kennedy Park Road

Fergus Falls, Otter Tail County, MN 56537

The emission units, control equipment and emission stacks at the stationary source authorized in this general permit are as described in the Permit Applications Table.

This general permit supersedes Air Emission Registration Permit Nos. 99000305-001, 99000234-002, 99000264-001, 99000263-001, and 99000306-001, and authorizes the Permittee to construct, modify, and operate nonmetallic mineral processing stationary sources at multiple locations in Minnesota under the conditions set forth herein as long as all conditions of this general permit are always met at each stationary source covered by the Permittee's general permit. (Portable crushing spreads or aggregate processing plants in some situations may be stationary sources themselves, or in other situations parts of another stationary source). If the construction, modification, or operation of a nonmetallic mineral processing stationary source by the Permittee would not comply with all conditions of this general permit, the Permittee must apply for and obtain an individual Part 70, state, or registration permit before beginning actual construction of the modification or change. Terms used in this general permit are as defined in the state air quality rules unless the term is explicitly defined in this general permit.

Unless otherwise indicated, all the Minnesota rules cited as the origin of the permit terms are incorporated into the State Implementation Plan under 40 CFR § 52.1220 and as such are enforceable by the U.S. Environmental Protection Agency (EPA) Administrator or citizens under the Clean Air Act.

Permit Type: State General, Limits to Avoid Pt 70/Limits to Avoid NSR

Issue Date: June 9, 2009

Expiration: Nonexpiring
Title I Conditions do not expire

Don Smith, P.E., Manager
Air Quality Permits Section
Industrial Division

for Paul Eger
Commissioner
Minnesota Pollution Control Agency

Permit Applications Table

| Permit Type | Application Date(s) | Permit Action |
|--|---------------------|---------------|
| Nonmetallic Mineral General Permit -Reissuance | 12/24/08 and 6/1/09 | 001 |

TABLE OF CONTENTS

Notice to the Permittee

Permit Shield

Table A: Limits and Other Requirements

Table B: Submittals

Appendix I: Source-Specific Requirements

Attached Forms: These forms are available on the MPCA Website at <http://www.pca.state.mn.us/air/permits/forms.html>

Form Name: NM-CR, MN General Permit Annual Compliance Certification

Form Name: NM-EQ, Equipment Description and Notification Form

Form Name: GP-01, Air Emission General Permit Administrative Changes

Form Name: NM-DRF, Deviations Report

Form Name: NM-RE, Location Notification

NOTICE TO THE PERMITTEE:

Your stationary source may be subject to the requirements of the Minnesota Pollution Control Agency's (MPCA) solid waste, hazardous waste, and water quality programs. If you wish to obtain information on these programs, including information on obtaining any required permits, please contact the MPCA general information number at:

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| Metro Area | 651-296-6300 |
| Outside Metro Area | 1-800-657-3864 |
| TTY | 651-282-5332 |

The rules governing these programs are contained in Minn. R. chs. 7000-7105. Written questions may be sent to: Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, Minnesota 55155-4194.

Questions about this air emission permit or about air quality requirements can also be directed to the telephone numbers and address listed above.

PERMIT SHIELD:

Subject to the limitations in Minn. R. 7007.1800, compliance with the conditions of this permit shall be deemed compliance with the specific provision of the applicable requirement identified in the permit as the basis of each condition.

Subject to the limitations of Minn. R. 7007.1800 and 7017.0100, subp. 2, notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements.

TABLE A: LIMITS AND OTHER REQUIREMENTS

Table A contains the limits and other requirements with which your nonmetallic mineral processing stationary source(s) must comply. These limits are located in the first column of the table (What to do). The limits can be emission limits or operational limits. This column also contains the actions that you must take and the records you must keep to show that you are complying with the limits. The second column of Table A (Why to do it) lists the regulatory basis for these limits. An appendix is included in your general permit. Unless specifically indicated otherwise, requirements contained in the various parts of the appendix are enforceable conditions of this general permit. The limits and other requirements contained in Table A apply to each nonmetallic mineral processing stationary source constructed, modified, or operated by the Permittee which is covered by this general permit.

Stationary Source: “Stationary source” has the meaning given in Minn. R. 7005.0100, subp. 42c. For there to be a nonmetallic mineral processing stationary source, one or more pieces of processing equipment (such as those listed in Table A.1, namely crushers, screens, transfer operations, etc.) must be present and operational (storage of equipment in an inoperative state does not constitute a stationary source). Stationary sources may contain portable, mobile, and stationary equipment.

Multiple-Party Site: A multiple-party site is a stationary source location where two or more equipment owners or operators operate nonmetallic mineral processing equipment on the same site and there exists a contractual or other similar relationship between them regarding processing of nonmetallic minerals or their nonmetallic mineral processing operations support each other at the site.

At a multiple-party site, the governing permit is the permit held by the nonmetallic mineral processing company that establishes the stationary source and hires others to perform part of the nonmetallic mineral processing there. This company, which is the holder of the governing permit, is the Permittee responsible for the multiple-party site. If you are the Permittee of a stationary source location which is a multiple-party site, you shall require all parties to comply with the provisions of your permit.

Table A.1: Eligibility Requirements

| What to do | Why to do it |
|--|--|
| <p>Emission Units Allowed: Each nonmetallic mineral processing stationary source constructed, modified and operated under this general permit shall consist only of:</p> <p>Crushers (subject to the fines crushing production limitation described, below, under “Materials Allowed”)</p> <p>Screens</p> <p>Wet screening operations and associated transfer operations downstream of the wet screening operation in the production line process up to, but not including, the next crusher in the production line of a nonmetallic mineral processing stationary source. A wet screening operation means a screening facility designed and operated to remove unwanted material from the product by a washing process whereby the product is completely saturated with water in a slurry</p> <p>Transfer operations (including belt conveyors, enclosed truck/railcar loading stations, bucket elevators, storage bins, stackers, ladders, chutes, classification screws, feeders, pneumatic systems, and bagging operations)</p> <p>Internal combustion engines</p> <p>Sand heaters</p> <p>Air separators (closed system)</p> <p>Storage piles</p> <p>Paved and unpaved roads and parking lots</p> <p>Bulldozers, loaders, and other related vehicles</p> <p>Insignificant activities as defined in Minn. R. 7007.1300, subp. 2 and 3</p> <p>Conditionally insignificant activities listed in Minn. R. 7008.</p> | <p>Minn. Stat. § 116.07, subd. 4a; Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100</p> |
| <p>Emission Units Not Allowed: Although only the emission units listed in “Emission Units Allowed” are allowed under this general permit, the following emission units that are sometimes part of a nonmetallic mineral processing stationary source are specifically not allowed under this general permit: grinding mills, air conveying systems, air classifiers, calciners, and aggregate heaters/dryers.</p> | <p>Minn. Stat. § 116.07, subd. 4a; Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100</p> |
| <p>New Source Performance Standards: If applicable, the owner or operator shall comply with NSPS standards for nonmetallic mineral processing, volatile organic liquid storage vessels (storage tanks), compression ignition internal combustion engines and spark ignition internal combustion engines.</p> | <p>40 CFR pt. 60, subps. OOO, Kb, IIII and JJJJ; Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100</p> |

Table A.1. (Continued)

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| <p>National Emission Standards for Hazardous Air Pollutants: If applicable, the owner or operator shall comply with the NESHAP standards for reciprocating internal combustion engines.</p> | <p>40 CFR pt. 63, subp. ZZZZ; Minn. R. 7007.0800, subp. 2</p> |
| <p>Revised New Source Performance Standards for Nonmetallic Mineral Processing: If 40 CFR 60, subp. OOO is revised after October 28, 2008, those changes shall be automatically applicable under this permit. The Permittee shall comply with any changes according to the schedule provided in Subpart OOO as allowed by US. EPA.</p> | <p>40 CFR pt. 60, subp. OOO; Minn. R. 7007.0800, subp. 2</p> |
| <p>Materials Allowed: Except as specifically provided below, a nonmetallic mineral processing stationary source constructed, modified, and operated under this general permit may produce or process only:</p> <ul style="list-style-type: none"> Crushed and broken limestone Crushed and broken granite Crushed and broken stone Construction sand and gravel Recycled concrete Recycled asphalt pavement The initial steps in producing manufactured sand <p>Exceptions:</p> <p>Other - De Minimis Quantities: A de minimis quantity is a quantity of materials, other than those listed above, that may be produced or processed such that the total amount of actual emissions from producing or processing of all de minimis quantities in any calendar year at any stationary source location is less than one ton (i.e., 1 ton/year per site) of Particulate Matter (PM). No pollutants other than PM, Particulate Matter less than 10 microns (PM₁₀) or Particulate Matter less than 2.5 (PM_{2.5}) may be emitted as a result of producing or processing the other material, except those emitted from the operation of associated internal combustion engines. Whenever the Permittee produces or processes de minimis quantities of other materials, calculations of the projected and actual PM, PM₁₀ and PM_{2.5} emissions from producing or processing de minimis quantities must be kept by the Permittee along with records of the dates, site, tons of material produced or processed and a description of the material.</p> <p>Fines Crushing: Crushing material to a maximum size of 3/16 inch or smaller in any calendar year at any stationary source location covered by this general permit is limited to less than 50,000 tons (i.e., 50,000 tons/year per site). Whenever the Permittee performs fines crushing, records must be kept by the Permittee indicating the dates, site, and tons of material produced or processed as well as a description of the material. Crushing material to a maximum size of 3/16 inch is referred to in this general permit as “fines crushing.” Fines crushing involve the production of manufactured sand and products of a similar size.</p> | <p>Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100</p> |

Table A.1. (Continued)

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| Control Equipment Allowed: A nonmetallic mineral processing stationary source constructed, modified, and operated under this general permit may contain add-on air pollution control equipment to capture and remove air pollutants from process air streams or have equipment located indoors provided that compliance with all emission limits in this general permit is maintained without considering the effect of such controls. Because no prescribed operation and maintenance and recordkeeping are required, reduced emissions due to such add-on control equipment will not be considered when calculating emissions for the annual emissions inventory. | Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100 |
| Geographic Areas of Operation Allowed: Under this general permit, provided all conditions are met at all stationary sources, the Permittee is authorized to construct, modify and operate multiple stationary sources simultaneously anywhere in Minnesota except any area designated as maintenance area for PM ₁₀ . If the Permittee wishes to operate at a location in an area that is or becomes reclassified nonattainment for PM ₁₀ after issuance of this general permit, the Permittee must submit an application for an individual part 70, state, or registration permit to cover that location before commencing operation or beginning actual construction or modification of a nonmetallic mineral processing stationary source. | Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, Minn. R. 7007.0800, subp. 12, and Minn. R. 7007.1100 |

Table A.2: Total Facility Requirements

| What to do | Why to do it |
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| Circumvention: Do not install or use a device or means that conceals or dilutes emissions, which would otherwise violate a federal or state air pollution control rule, without reducing the total amount of pollutant emitted. | Minn. R. 7011.0020 |
| Fugitive Emissions: The owner or operator shall not cause or permit the handling, use, transporting, or storage of any material in a manner which may allow avoidable amounts of particulate matter to become airborne. Comply with all other requirements listed in Minn. R. 7011.0150. | Minn. R. 7011.0150 |
| Noise: The Permittee shall comply with the noise standards set forth in Minn. R. 7030.0010 to 7030.0080 at all times during the operation of any emission units. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act. | Minn. R. 7030.0010 - 7030.0080 |
| Inspections: The owner or operator shall comply with the inspection procedures and requirements as found in Minn. R. 7007.0800, subp. 9(A). | Minn. R. 7007.0800, subp. 9(A) |
| General Conditions: The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16 | Minn. R. 7007.0800, subp. 16 |
| Performance Testing: Conduct all performance testing in accordance with Minn. R. ch. 7017 unless otherwise noted. The Commissioner may request additional performance testing under Minn. R. 7017.2020, subp. 1. | Minn. R. 7017.2001-7017.2060 |
| Performance Test Notifications and Submittals: Performance Tests Notification (written): due 30 days before each Performance Test Performance Test Plan: due 30 days before each Performance Test. To be submitted on <i>form NM-TP</i> Performance Test Pretest Meeting: due 7 days before each Performance Test Performance Test Report: due 45 days after each Performance Test Performance Test Microfiche/CD Copy: due 105 days after each Performance Test The Notification, Test Plan, and Test Report may be submitted in alternative format as allowed by Minn. R. 7017.2018. | Minn. R. 7017.2018; Minn. R. 7017.2030, subps. 1-4; and Minn. R. 7017.2035, subp. 1-2 |
| Recordkeeping: Retain all records required by this general permit at each stationary source or at the Permittee's option, the Permittee's central office for a period of five years from the date of monitoring, emission calculations, sampling, measurement, or report. Records which must be retained include all calibration and maintenance records, all original chart recordings for continuous monitoring instrumentation, and copies of all reports and records required by this general permit. Records must conform to the requirements listed in Minn. R. 7007.0800, subp. 5(A). | Minn. R. 7007.0800, subp. 5(A) and 5(C) |
| Submittals: All submittals required by this general permit must be certified by a responsible official, defined in Minn. R. 7007.0100, subp. 21. Submittals which must be provided on forms approved by the Commissioner are noted in Tables A and B. All submittals must be postmarked or received by the date specified in the tables. | Minn. R. 7007.0800, subp. 6 |

Table A.2 (Continued)

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| <p>Notification of Deviations Endangering Human Health or the Environment: As soon as possible after discovery, notify the Commissioner or the state duty officer, either orally or by facsimile, of any deviation from permit conditions which could endanger human health or the environment.</p> | <p>Minn. R. 7019.1000, subp. 1</p> |
| <p>Notification of Deviations Endangering Human Health or the Environment Report: Within 2 working days of discovery, notify the Commissioner in writing of any deviation from permit conditions which could endanger human health or the environment. Include the following information in this written description:</p> <ol style="list-style-type: none"> 1. the cause of the deviation; 2. the exact dates of the period of the deviation, if the deviation has been corrected; 3. whether or not the deviation has been corrected; 4. the anticipated time by which the deviation is expected to be corrected, if not yet corrected; and 5. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation. | <p>Minn. R. 7019.1000, subp. 1</p> |
| <p>Operation Changes: In any shutdown, breakdown, or deviation the Permittee shall immediately take all practical steps to modify operations to reduce the emission of any regulated air pollutant. The Commissioner may require feasible and practical modifications in the operation to reduce emissions of air pollutants. No emissions units that have an unreasonable shutdown or breakdown frequency of process or control equipment shall be permitted to operate.</p> | <p>Minn. R. 7019.1000, subp. 4</p> |
| <p>Shutdown Notifications: Notify the Commissioner at least 24 hours in advance of a planned shutdown of any control equipment or process equipment if the shutdown would cause any increase in the emissions of any regulated air pollutant. If the owner or operator does not have advance knowledge of the shutdown, notification shall be made to the Commissioner as soon as possible after the shutdown. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 3.</p> <p>At the time of notification, the owner or operator shall inform the Commissioner of the cause of the shutdown and the estimated duration. The owner or operator shall notify the Commissioner when the shutdown is over.</p> | <p>Minn. R. 7019.1000, subp. 3</p> |
| <p>Breakdown Notifications: Notify the Commissioner within 24 hours of a breakdown of more than one hour duration of any control equipment or process equipment if the breakdown causes any increase in the emissions of any regulated air pollutant. The 24-hour time period starts when the breakdown was discovered or reasonably should have been discovered by the owner or operator. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 2.</p> <p>At the time of notification or as soon as possible thereafter, the owner or operator shall inform the Commissioner of the cause of the breakdown and the estimated duration. The owner or operator shall notify the Commissioner when the breakdown is over.</p> | <p>Minn. R. 7019.1000, subp. 2</p> |

Table A.2 (Continued)

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| Semiannual Deviations Report: Due 30 days after the end of each calendar half-year. The first semi-annual report submitted by the Permittee shall cover the calendar half-year in which the permit was issued. The first report of each calendar year covers January 1 – June 30 due by July 30. The second report of each calendar year covers July 1 – December 31 due by January 30. If no deviations have occurred, the Permittee shall submit the report stating no deviations. <i>To be submitted on a form NM-DRF.</i> | Minn. R. 7007.0800, subp. 6(A)(2) |
| Annual Compliance Certification: Due 31 days after the end of each calendar year (<i>January 31</i>) following general permit issuance (for the previous calendar year). The report covers all deviations experienced during the calendar year. <i>To be submitted on a form NM-CR.</i> | Minn. R. 7007.0800, subp. 6(C) |
| Emissions Inventory Report: Due on or before April 1 of each calendar year following permit issuance. To be submitted on a form approved by the Commissioner. | Minn. R. 7019.3000-7019.3010 |
| Emission Fees: Due 60 days after receipt of an MPCA invoice. | Minn. R. 7002.0005-7002.0095 |
| Name Change of Ownership or Control of Stationary Source: The owner or operator shall submit to the MPCA the Air Emission General Permit <i>Administrative Changes Form (GP-01)</i> within 7 days of the name change in ownership or control of the stationary source. If the Commissioner determines that the new owner or operator meets the eligibility requirements of the general permit for general permit issuance, then the Commissioner shall issue the general permit to the new owner or operator. Issuance of a general permit to the new owner or operator of an eligible stationary source voids and supersedes the general permit of the previous owner or operator. If the Commissioner determines the new owner or operator does not meet the eligibility requirements, the new owner or operator shall submit a permit application for a registration, state, or part 70 permit within 120 days of the Commissioner's written request for the application. | Minn. R. 7007.1100, subp. 8; Minn. R. 7007.0800, subp. 2 |

Table A.3: Requirements and Limits that Apply to the Entire Stationary Source

| What to do | Why to do it |
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| <p>Material Moisture Content:</p> <p>At each stationary source, the feed material moisture content shall be greater than or equal to 1.5 percent. This shall be demonstrated at each stationary source by either 1 or 2 below:</p> <p>1. Test moisture content of each different feed material source (sampled at an area representative of the feed source and physically capable of being sampled), as follows:</p> <ul style="list-style-type: none"> a. Use American Society for Testing and Materials (ASTM) method numbers D 2216-92 or D 4643-93 (or equivalent). b. Keep records of each moisture content test summarizing the method used, results, date, time, and initials of person performing test. c. Test weekly, when operating, unless three consecutive tests at the stationary source location show moisture contents of greater than or equal to 1.5 percent after which testing is no longer required until the source of the feed material changes. d. When testing indicates that feed material moisture content is less than 1.5 percent, or in situations where it is infeasible to sample and test, or where the Permittee elects not to sample and test, the Permittee must operate a moisture addition device at or immediately prior to the initial crusher(s) or initial screen(s) where unprocessed feed material is being fed to achieve a moisture content greater than or equal to 1.5 percent. Moisture addition during operation shall continue until subsequent moisture content testing demonstrates that feed material moisture content is greater than or equal to 1.5 percent. Daily, when operating, either: (i) keep records of the date, water flow rate, material throughput rate, and initials of the person making the record and the time the record was made; or (ii) conduct moisture content testing daily on the feed material after water application following a. and b. above, and if results show moisture content is less than 1.5 percent, increase water addition to insure moisture is 1.5 percent or greater and re-test to verify. | <p>Title I Condition: To qualify for this general permit under Minn. R. 7007.1100; Limit to avoid classification as major source and modification under 40 CFR § 52.21 and Minn. R. 7007.3000; Limit to avoid major source classification under 40 CFR § 70.2 and Minn. R. 7007.0200; Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100</p> |
| <p><u>OR</u></p> <p>2. Keep records indicating that feed material is being removed from below the water table - or from below the surface of a waterway (e.g., creek, river, lake) - or that the feed material is recycled asphalt pavement. Records shall include a description of the source (if recycled asphalt pavement, so indicate), the corresponding dates, and the initials of the person making the record.</p> | |

Table A.3 (Continued)

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| <p>Stationary Source Designation and Capacity Limits: Only one option (Small, Medium, or Large) at a time shall apply at each stationary source covered by this general permit. The option that shall apply to a particular stationary source is selected by the Permittee from the Stationary Source Designation Matrix in Appendix I, either Table 1 or Table 2. The option, along with the limit on annual production (throughput), and the limit on the amount of equipment shall be indicated in a Location Notification submitted by the Permittee as required by this general permit on a form approved by the Commissioner.</p> <p>(Wet screening operations and associated transfer operations downstream of the wet screening operation in the production line process up to, but not including, the next crusher in the production line of a nonmetallic mineral processing stationary source shall not be counted towards the number of units or capacity levels indicated under the three site designation options. A wet screening operation means a screening facility designed and operated to remove unwanted material from the product by a washing process whereby the product is completely saturated with water in slurry.)</p> <p>To demonstrate compliance with the annual production limit at each stationary source location, the Permittee shall maintain daily record of the production, in tons. The Permittee shall also maintain record of the monthly calculation and the 12-month rolling sum (i.e., the current month plus the eleven preceding months). If a stationary source has less than 12 months of operational data, the Permittee shall determine compliance during the first 12 months under this general permit using the following formula:</p> $N = 0.95 \times (\text{Annual Production Limit}) + 0.0045 \times (\text{Annual Production Limit}) \times (n-1)$ <p>Where “n” is the number of months in operation, and “N” is the rolling sum limit for the current month.</p> <p>At its option, the Permittee may calculate and record individual monthly sums, in lieu of 12-month rolling sums, for a stationary source location such that the annual production limit divided by 12 is not exceeded. These calculations and records must be made by the 15th day of the following month.</p> <p>(At a multiple-party site, the number of pieces of equipment (Table 1) or the capacity of equipment (Table 2) of all parties operating at the site at the same time shall be added together by the Permittee to determine the stationary source designation and the appropriate non-process dust control option for that site. Likewise, the production of all parties shall be added together by the Permittee to determine compliance with the annual production limit from the Stationary Source Designation Matrix, in Appendix I.)</p> | <p>Title I Condition. To qualify for this general permit under Minn. R. 7007.1100; Limit to avoid classification as major source and modification under 40 CFR § 52.21 and Minn. R. 7007.3000; Limit to avoid major source classification under 40 CFR § 70.2 and Minn. R. 7007.0200; Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, Minn. R. 7007.1100, and Minn. R. 7011.0150</p> |
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Table A.3 (Continued)

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| <p>Non-Process Dust Control Options:</p> <p>The option (Small, Medium, or Large), and the associated non-process dust control requirements, that shall apply to each stationary source covered by this general permit is selected by the Permittee from the Stationary Source Designation Matrix as described above.</p> <p><u>Small Stationary Source Non-Process Dust Control:</u></p> <p>The Permittee shall comply with the requirements of Minn. R. 7011.0150. This means that all reasonable measures shall be taken to prevent avoidable amounts of particulate matter from becoming airborne. In a practical manner this refers to preventing avoidable visible dust emissions beyond the lot line surrounding the stationary source. Control of non-process dust emissions can be achieved through such measures as applying water or commercially available dust suppressant to stock piles, unpaved roads and handling areas.</p> <p><u>Medium Stationary Source Non-Process Dust Control:</u></p> <p>In addition to the requirements described in the “Small” option, the following requirements apply to the Permittee:</p> <ol style="list-style-type: none"> 1. Record date and time of action and initials of person making the record. 2. Record amount of water or dust suppressant applied. 3. If a commercially available dust suppressant is used, it shall be applied in accordance with the manufacturer’s guidelines. A copy of these manufacturer’s guidelines must be kept by the Permittee. <p><u>Large Stationary Source Non-Process Dust Control:</u></p> <p>In addition to the requirements described in the “Small” option, the following requirements apply to the Permittee:</p> <ol style="list-style-type: none"> 1. Record date and time of action and initials of person making the record; 2. Record amount of water or dust suppressant applied; 3. If a commercially available dust suppressant is used, it shall be applied in accordance with the manufacturer’s guidelines. A copy of these manufacturer’s guidelines must be kept by the Permittee; 4. Record the location (e.g., on a site sketch) of water or dust suppressant application; 5. Install a rain gauge at the site and record the precipitation in the previous 24 hours for each day of operation at the site; 6. Make and record basic weather observations according to the Weather Summary Criteria listed in Appendix I that best characterize each operating day; 7. Unpaved roads at the site shall be posted with speed limit signs indicating a maximum speed of 10 miles per hour; and 8. Equipment to apply water or dust suppressant shall always be available at the site or on call for use at the site within a given operating day. | <p>Title I Condition: Limit to avoid classification as major source and modification under 40 CFR § 52.21 and Minn. R. 7007.3000; Limit to avoid major source classification under 40 CFR § 70.2 and Minn. R. 7007.0200; Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, Minn. R. 7007.1100, and Minn. R. 7011.0150</p> |
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Table A.3 (Continued)

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| <p>Equipment Inventory List: The Permittee shall maintain a written list of each piece of equipment on site, if applicable. The list shall include the type of equipment, serial number, dates of installation, modification and reconstruction, all applicable Standards of Performance for New Stationary Sources, subparts OOO, IIII and JJJJ records, and for the National Emission Standards for Hazardous Air Pollutants, subpart ZZZZ, if applicable. The list shall be updated to include any new, modified or changed equipment just before making a change. When the list is updated, the Permittee shall maintain copies of all previous equipment lists on site or the central office for a period of 5 years. Notation of the evaluation shall be done before making every modification or change. In the notation, the Permittee shall re-evaluate whether if the facility still qualifies for this general permit. If the answer is no, the Permittee must apply for a Part 70 permit that would authorize the modification or change that would allow to operate the facility before making the modification or change. <i>The Permittee may use Form NM-EQ as an equivalent for the equipment inventory list but must include the additional requirements listed above.</i></p> | <p>To qualify for this general permit under Minn. R. 7007.1100 and Minn. R. 7007.0800, subp. 2</p> |
| <p>Labeling Requirements: The Permittee shall permanently affix the manufacturer's serial number (or otherwise unique identifying number) to each piece of crushing, screening, transfer operation, heaters, air separators, and stationary internal combustion engine equipment for tracking purposes within 60 days of permit issuance, if applicable. The number shall be permanently affixed and maintained so that it is readable and visible at all times from a safe distance at each stationary source. This number shall correspond to the number contained in records regarding the piece of equipment.</p> | <p>Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100</p> |
| <p>Location Notification: Submit a Location Notification at least 48 hours prior to each change in location of a stationary source, establishment of a new stationary source location, or change in a capacity/dust control option at an individual stationary source. <i>To be submitted on a form NM-RE.</i></p> | <p>Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, Minn. R. 7007.0800, subp. 12, and Minn. R. 7007.1100</p> |
| <p>Source Specific Requirements: Comply with the source-specific requirements in Appendix I of this permit</p> | <p>To qualify for this general permit under Minn. R. 7007.1100. See Appendix I</p> |

Table A.4: Limits that Apply to NSPS Crushers

(Those subject to 40 CFR pt. 60, subp. OOO.)

| What to do | Why to do it |
|---|---|
| Opacity: less than 15 percent opacity. | 40 CFR § 60.672(c) and Minn. R. 7011.3350 |

Table A.5: Limits that Apply to other Equipment Subject to NSPS

(Those subject to 40 CFR pt. 60, subp. OOO. Included here are, screens, belt conveyors, bucket elevators, bagging operations, storage bins, and enclosed truck or railcar loading stations.)

| What to do | Why to do it |
|---|---|
| Opacity: less than 10 percent opacity. | 40 CFR § 60.672(b) and Minn. R. 7011.3350 |

Table A.6: Limits that Apply to Equipment not Subject to NSPS

| What to do | Why to do it |
|---|--------------------------------|
| Opacity: For equipment put in operation on or after 7/9/69: less than 20 percent opacity. | Minn. R. 7011.0715, subp. 1(B) |
| Opacity: For equipment put in operation before 7/9/69: less than 20 percent opacity except that a maximum of 60 percent opacity shall be permissible for four minutes in any 60-minute period and 40 percent opacity shall be permissible for four additional minutes in any 60-minute period. | Minn. R. 7011.0710, subp. 1(B) |

Table A.7: NSPS Notification and Testing Requirements for Equipment Newly Subject to NSPS (Subpart OOO) and Submittal Requirements for Replacements

(If you are the Permittee responsible for a stationary source location which is a multiple-party site covered by your general permit you shall take all reasonable measures to insure that all equipment being operated at the stationary source has met these requirements in Table A.7. You are not required to repeat the notices and tests if they have already been done; however, you must be able to indicate where the documentation of the notices and tests can be found (e.g., the Air Quality file associated with a company you have hired).)

| What to do | Why to do it |
|--|--|
| CONSTRUCTION OR RECONSTRUCTION: Notification of construction or reconstruction postmarked no later than 30 days after the start of construction as defined in 40 CFR§ 60.2 except for mass-produced (prefabricated) affected facilities. | 40 CFR § 60.7(a)(1) and Minn. R. 7019.0100, subp. 1 |
| ACTUAL INITIAL STARTUP: Notification of actual initial startup date postmarked within 15 days after such date. | 40 CFR § 60.7(a)(3) and Minn. R. 7019.0100, subp. 1 |
| INITIAL PERFORMANCE TESTING: Shall be completed within 60 days of achieving maximum production rate but no later than 180 days after initial startup date. | 40 CFR § 60.8(a), 60.675, 60.676, Minn. R. 7017.2015, and Minn. R. 7011.3350 |
| PERFORMANCE TEST NOTIFICATION: Performance test notification postmarked at least 30 days prior to conducting a performance test. | 40 CFR § 60.8(d), and Minn. R. 7017.2015, subp. 2(A) |
| REPLACEMENT: Notification postmarked within 60 days after making the replacement. | 40 CFR § 60.670(d), 60.676, and Minn. R. 7011.3350 |
| NOTIFICATION OF ANY PHYSICAL CHANGE OR OPERATIONAL CHANGE: Notification postmarked 60 days or as soon as practicable before the change is commenced. | 40 CFR § 60.7(a)(4); 40 CFR § 60.670 and Minn. R. 7019.0100, subp. 1 |

Table A.8: Requirements and Limits that Apply to Stationary Internal Combustion Engines at Each Stationary Source

(This includes generators as well as other stationary internal combustion engines (e.g., those which directly drive crushers or screens), but does not include mobile sources, such as loaders, haul trucks and other vehicles.)

| What to do | Why to do it |
|---|---|
| <p>Allowed Fuels: Diesel fuel, natural gas, liquefied petroleum gas (LPG)/propane, biodiesel and gasoline, subject to the limitation described below. No other fuels shall be used.</p> <p>For each stationary source location covered by this general permit, the Permittee shall monthly record the amount of each fuel used during the previous month and do the calculation on the Stationary Internal Combustion Engines Fuel Use <i>form (NM-EN)</i> in Appendix I by the 15th of the following month, if more than one fuel was used. The Permittee may elect to make and record this calculation in a different format, but it must include the same information.</p> <p>(At a multiple-party site, the fuel used by all parties operating at the site at the same time shall be added together by the Permittee to determine compliance for that site.)</p> | <p>Title I Condition. Limit to avoid classification as major source and modification under 40 CFR § 52.21 and Minn. R. 7007.3000; limit to avoid major source classification under 40 CFR § 70.2 and Minn. R. 7007.0200; Minn. R. 7011.2300, subp. 2; Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100</p> |
| SO₂: less than or equal to 0.5 lbs/mmBtu heat input using a 3-hour rolling average | Minn. R. 7011.2300, subp. 2 |
| Opacity: less than or equal to 20 percent opacity once operating temperatures have been obtained. | Minn. R. 7011.2300, subp. 1 |
| Sitting Conditions: The Permittee shall maintain the sitting conditions for generators as listed in Appendix I. | Minn. R. 7007.1100; Minn. R. 7007.0800, subp. 2 |
| Fuel Supplier Certification: The Permittee shall obtain and maintain a fuel supplier certification for each shipment of diesel fuel, certifying that the sulfur content does not exceed 0.50% by weight. | Minn. R. 7007.0800, subps. 4 & 5 |

Table A.9: Requirements and Limits that Apply to Stationary Emergency Internal Combustion Engines at Each Stationary Source

| What to do | Why to do it |
|---|----------------------------------|
| SO₂: less than or equal to 0.5 lbs/mmBtu heat input using a 3-hour rolling average | Minn. R. 7011.2300, subp. 2 |
| Opacity: less than or equal to 20 percent opacity once operating temperatures have been obtained. | Minn. R. 7011.2300, subp. 1 |
| Fuel type: Natural gas/propane/diesel/biodiesel only by design. | Minn. R. 7005.0100, subp. 35a |
| Hours of Operation: The Permittee shall maintain documentation on site that the unit is an emergency generator by design that qualifies under the U.S. EPA memorandum entitled "Calculating Potential to Emit (PTE) for Emergency Generators" dated September 6, 1995, limiting operation to 500 hours per year. | Minn. R. 7007.0800, subps. 4 & 5 |
| Fuel Supplier Certification: The Permittee shall obtain and maintain a fuel supplier certification for each shipment of diesel fuel, certifying that the sulfur content does not exceed 0.50% by weight. | Minn. R. 7007.0800, subps. 4 & 5 |

Table A.10: Limits and Requirements that Apply to Volatile Organic Liquid Storage Tanks (Must be Insignificant Activities) Which are Subject to 40 CFR pt. 60, subp. Kb

Tanks *subject* to 40 CFR pt. 60, subp. Kb includes those meeting both of the following requirements:

- storage capacity is greater than or equal to 40 m³ (10,568 gallons); *and*
- tank construction, reconstruction, or modification commenced after July 23, 1984.

(If you are the Permittee responsible for a stationary source location which is a multiple-party site covered by your general permit, you shall take all reasonable measures to insure that all subject tanks meet these requirements in Table A.10. You are not required to repeat the recordkeeping requirement if it has already been met.)

| What to do | Why to do it |
|--|---|
| Tank size: Any volatile organic liquid storage tank constructed, reconstructed, or modified after July 23, 1984, must have a design capacity less than 75 m ³ (19,815 gallons) | Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100 |
| Records: For each tank, keep records showing the dimension of the storage vessel and an analysis showing the capacity of the storage vessel. Retain records for the life of the tank. | 40 CFR § 60.116b(b) and 60.116b(a), and Minn. R. 7011.1520(C) |

Table A.11: Limits and Requirements that Apply to New and Existing Sand Heaters

| What to do | Why to do it |
|--|---|
| PM: less than or equal to 0.30 grains per dry standard cubic foot unless required to reduce emissions to less than or equal to either the amount allowed by Minn. R. 7011.0700 to 7011.0735 | Minn. R. 7011.0610, subp. 1(A)(1) |
| Opacity: less than or equal to 20% opacity except for one-six minute period per hour of not more than 60 % percent opacity. | Minn. R. 7011.0610, subp. 1(A)(2) |
| SO₂: less than or equal to 2.0 lbs/mmBtu using a 3-hour rolling average | Minn. R. 7011.0610, subp. 2 (A) |
| Maximum Capacity of Total Heaters: less than or equal to 10.0 mmBtu/hr | Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100 |
| Fuel Type: Natural Gas and Propane only | Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100 |

Table A.12: The following Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (40 CFR pt. 60, subp. IIII) for Engines with less than 30 liters per cylinder that were constructed, modified, or reconstructed after July 11, 2005.

The date that construction commences is the date the engine is ordered by the owner or operator. Applies to owners and operators that commence construction after July 11, 2005, of the following engines:

- 1) *engines manufactured after April 1, 2006, and are not fire pump engines*
- 2) *engines manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006.*

Engines modified or reconstructed after July 11, 2005, must meet the emission standards for the model year in which the engine was originally new, not the year that the engine was modified or reconstructed.

Emergency Stationary Internal Combustion Engine (ICE) is defined as an engine whose operation is limited to emergency situations and required testing and maintenance. Examples include stationary ICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or stationary ICE used to pump water in the case of fire or flood, etc. Stationary CI ICE used to supply power to an electric grid or that supply power as part of a financial arrangement with another entity are not considered to be emergency engines.

HP- Horsepower

g/HP-hr- grams per horsepower-hour

Owners and Operators of Non-Emergency Engines (Pre-2007) and < 10 liters/cylinder

| What to do | Why to do it |
|---|---|
| A. EMISSION STANDARDS | hdr |
| MAXIMUM ENGINE POWER LESS THAN 11 HP | hdr |
| NMHC + NOx: less than 7.8 g/HP-hr | 40 CFR § 60.4204 (a); Minn. R. 7011.3520 |
| CO: less than 6.0 g/HP-hr | 40 CFR § 60.4204 (a); Minn. R. 7011.3520 |
| PM: less than 0.75 g/HP-hr | 40 CFR § 60.4204 (a); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 11 HP BUT LESS THAN 25HP | hdr |
| NMHC + NOx: less than 7.1 g/HP-hr | 40 CFR § 60.4204 (a); Minn. R. 7011.3520 |
| CO: less than 4.9 g/HP-hr | 40 CFR § 60.4204 (a); Minn. R. 7011.3520 |
| PM: less than 0.60 g/HP-hr | 40 CFR § 60.4204 (a); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 25 HP BUT LESS than 50 HP | hdr |
| NMHC + NOx: less than 7.1 g/HP-hr | 40 CFR § 60.4204 (a); Minn. R. 7011.3520 |

| | |
|--|---|
| CO: less than 4.1 g/HP-hr | 40 CFR § 60.4204 (a); Minn. R. 7011.3520 |
| PM: less than 0.60 g/HP-hr | 40 CFR § 60.4204 (a); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 50 HP BUT LESS than 175 HP | hdr |
| NOx: less than 6.9 g/HP-hr for engine power greater | 40 CFR § 60.4204 (a); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 175 HP BUT GREATER THAN 750 HP | hdr |
| HC: less than 1.0 g/HP-hr | 40 CFR § 60.4204 (a); Minn. R. 7011.3520 |
| NOx: less than 6.9 g/HP-hr | 40 CFR § 60.4204 (a); Minn. R. 7011.3520 |
| CO: less than 8.5 g/HP-hr | 40 CFR § 60.4204 (a); Minn. R. 7011.3520 |
| PM: less than 0.40 g/HP-hr | 40 CFR § 60.4204 (a); Minn. R. 7011.3520 |

Owners and Operators of Non-Emergency Engines (Pre-2007) and ≥ 10 liters/cylinder and < 30 liters/cylinder

| What to do | Why to do it |
|---|---|
| A. EMISSION STANDARDS | hdr |
| NOx: less than 12.7 g/HP-hr (17.0 g/KW-hr) when maximum test speed is less than 130 revolutions per minute (rpm) | 40 CFR § 60.4204; 40 CFR § 94.8(a)(1); Minn. R. 7011.3520 |
| NOx: less than 33.6 g/HP-hr ($45.0 \times N^{-0.20}$) when maximum test speed is at least 130 rpm but less than 2000 rpm, where N is the maximum test speed of the engine in rpm | 40 CFR § 60.4204; 40 CFR § 94.8(a)(1); Minn. R. 7011.3520 |
| NOx: less than 7.3 g/HP-hr (9.8 g/kW-hr) when maximum test speed is 2000 rpm or more. | 40 CFR § 60.4204; 40 CFR § 94.8(a)(1); Minn. R. 7011.3520 |

Owners and Operators of Non-Emergency Engines (2007 and later) and < 30 liters/cylinder

| What to do | Why to do it |
|--|--|
| A. EMISSION STANDARDS | hdr |
| NO_x : less than 12.7 g/HP-hr (17.0 g/KW-hr) when maximum test speed is less than 130 revolutions per minute (rpm) | 40 CFR § 60.4204; 40 CFR § 94.8(a)(1); Minn. R. 7011.3520 |
| NO_x : less than 33.6 g/HP-hr ($45.0 \times N^{-0.20}$) when maximum test speed is at least 130 rpm but less than 2000 rpm, where N is the maximum test speed of the engine in rpm | 40 CFR § 60.4204; 40 CFR § 94.8(a)(1); Minn. R. 7011.3520 |
| NO_x : less than 7.3 g/HP-hr (9.8 g/kW-hr) when maximum test speed is 2000 rpm or more. | 40 CFR § 60.4204; 40 CFR § 94.8(a)(1); Minn. R. 7011.3520 |
| B. FUEL REQUIREMENTS FOR OWNERS AND OPERATORS OF NON-EMERGENCY ENGINES | hdr |
| Fuel Restriction: On October 1, 2007, the owners and operators that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR§ 80.510(a) | 40 CFR § 60.4207; 40 CFR § 80.510(a); Minn. R. 7011.3520 |
| Fuel Restriction: On October 1, 2010, the owners and operators of stationary CI internal combustion engines with a displacement of less than 30 liters per cylinder that use diesel fuel must use the requirements of 40 CFR§ 80.510(b) for nonroad diesel fuel | 40 CFR § 60.4207; 40 CFR § 80.510(b); Minn. R. 7011.3520 |
| Fuel Used Up: Owners and operators of pre-2011 model year stationary CI internal combustion engines may petition the EPA Administrator for approval to use remaining non-compliant fuel that does not meet the fuel requirements of 40 CFR§ 60.4207 (a) and (b) beyond the dates required for purpose of using up existing fuel inventories. If approved, the petition will be valid for a period of up to 6 months. If additional time is needed, the owner or operator is required to submit a new petition to the EPA Administrator. | 40 CFR § 60.4207; Minn. R. 7011.3520 |

| | |
|--|--|
| C. COMPLIANCE REQUIREMENTS FOR OWNERS AND OPERATORS OF NON-EMERGENCY ENGINES | hdr |
| The owner or operator must comply with the emission standards specified in 40 CFR§ 60.4204, and must operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer. In addition, owners and operators may only change those settings that are permitted by the manufacturer. The owner and operator must also meet the requirements of 40 CFR pts. 89, 94 and/or 1068, as they apply to you. | 40 CFR § 60.4211; Minn. R. 7011.3520 |
| <p>For <u>pre-2007 model year engines</u> with a displacement < 30 liters per cylinder that are not fire pump engines, you must demonstrate compliance according to <u>one</u> of the methods specified below:</p> <ol style="list-style-type: none"> (1) Purchasing an engine certified according to 40 CFR pt. 89 or 40 CFR pt. 94, as applicable, for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications; (2) Keeping records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in this subpart and these methods must have been followed correctly; (3) Keeping records of engine manufacturer data indicating compliance with the standards; (4) Keeping records of control device vendor data indicating compliance with the standards; or (5) Conducting an initial performance test to demonstrate compliance with the emission standards according to the requirements specified in 40 CFR§ 60.4212, as applicable. | 40 CFR § 60.4211(b)(1) through (5); Minn. R. 7011.3520 |
| The owner or operator of a 2007 model year and later with a displacement < 30 liters per cylinder stationary CI internal combustion engine and must comply with the emission standards specified in 40 CFR§ 60.4204(b) or 40 CFR§ 60.4205(b). The engine must be installed and configured according to the manufacturer's specifications. | 40 CFR § 60.4211(c) Minn. R. 7011.3520 |
| D. MONITORING FOR OWNERS AND OPERATORS FOR NON-EMERGENCY ENGINES | hdr |
| The owner or operator of a stationary CI internal combustion engine equipped with a diesel particulate filter to comply with the emission standards in 40 CFR § 60.4204, the diesel particulate filter must be installed with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached. | 40 CFR § 60.4209(b); Minn. R. 7011.3520 |

| | |
|--|---|
| E. NOTIFICATIONS AND REPORTING FOR OWNERS AND OPERATORS FOR NON-EMERGENCY ENGINES | hdr |
| <p>Owners and operators of non-emergency stationary CI ICE that are greater than 2,237 KW (3,000 HP), or have a displacement of greater than or equal to 10 liters per cylinder, or are pre-2007 model year engines that are greater than 130 KW (175 HP) and not certified, must meet the following requirements:</p> <p>Submit an initial notification as required in 40 CFR § 60.7(a)(1). The notification must include the following information :</p> <ol style="list-style-type: none"> 1) Name and address of the owner or operator; 2) The address of the affected source; 3) Engine information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement; 4) Emission control equipment; and 5) Fuel used. | <p>40 CFR § 60.4214(a)(1); Minn. R. 7011.3520</p> |
| F. RECORDKEEPING FOR OWNERS AND OPERATORS FOR NON-EMERGENCY ENGINES | hdr |
| <p>Owners and operators of non-emergency stationary CI ICE that are greater than 2,237 KW (3,000 HP), or have a displacement of greater than or equal to 10 liters per cylinder, or are pre-2007 model year engines that are greater than 130 KW (175 HP) and not certified, must meet the following requirements:</p> <p>Keep records of the following information:</p> <ol style="list-style-type: none"> 1) All notifications submitted and all documentation supporting any notification; 2) Maintenance conducted on the engine; 3) If the stationary CI internal combustion is a certified engine, documentation from the manufacturer that the engine is certified to meet the emission standards; and 4) If the stationary CI internal combustion is not a certified engine, documentation that the engine meets the emission standards. | <p>40 CFR § 60.4214(a)(2); Minn. R. 7011.3520</p> |
| <p><i>Records of Any Corrective Actions:</i> If the stationary CI internal combustion engine is equipped with a diesel particulate filter, the owner or operator must keep records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached.</p> | <p>40 CFR § 60.4214(c); Minn. R. 7011.3520</p> |

Owners and Operators of Emergency Engines Except Fire Pump Engines (Pre-2007) and < 10 liters/cylinder

| What to do | Why to do it |
|--|---|
| A. EMISSION STANDARDS | hdr |
| MAXIMUM ENGINE POWER LESS THAN 11 HP | hdr |
| <i>NMHC</i> + <i>NOx</i> : less than 7.8 g/HP-hr | 40 CFR § 60.4205 (a); Minn. R. 7011.3520 |
| <i>CO</i> : less than 6.0 g/HP-hr | 40 CFR § 60.4205 (a); Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.75 g/HP-hr | 40 CFR § 60.4205 (a); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 11 HP BUT LESS THAN 25HP | hdr |
| <i>NMHC</i> + <i>NOx</i> : less than 7.1 g/HP-hr | 40 CFR § 60.4205 (a); Minn. R. 7011.3520 |
| <i>CO</i> : less than 4.9 g/HP-hr | 40 CFR § 60.4205 (a); Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.60 g/HP-hr | 40 CFR § 60.4205 (a); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 25 HP BUT LESS than 50 HP | hdr |
| <i>NMHC</i> + <i>NOx</i> : less than 7.1 g/HP-hr | 40 CFR § 60.4205 (a); Minn. R. 7011.3520 |
| <i>CO</i> : less than 4.1 g/HP-hr | 40 CFR § 60.4205 (a); Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.60 g/HP-hr | 40 CFR § 60.4205 (a); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 50 HP BUT LESS than 175 HP | hdr |
| <i>NOx</i> : less than 6.9 g/HP-hr for engine power greater | 40 CFR § 60.4205 (a); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 175 HP BUT GREATER THAN 750 HP | hdr |
| <i>HC</i> : less than 1.0 g/HP-hr | 40 CFR § 60.4205 (a); Minn. R. 7011.3520 |
| <i>NOx</i> : less than 6.9 g/HP-hr | 40 CFR § 60.4205 (a); Minn. R. 7011.3520 |
| <i>CO</i> : less than 8.5 g/HP-hr | 40 CFR § 60.4205 (a); Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.40 g/HP-hr | 40 CFR § 60.4205 (a); Minn. R. 7011.3520 |

Owners and Operators of Emergency Engines Except Fire Pump Engines (Pre-2007) and ≥ 10 liters/cylinder and < 30 liters/cylinder

| What to do | Why to do it |
|--|--|
| <i>NOx</i> : less than 12.7 g/HP-hr (17.0 g/KW-hr) when maximum test speed is less than 130 revolutions per minute (rpm) | 40 CFR § 60.4205(a); 40 CFR § 94.8(a)(1); Minn. R. 7011.3520 |
| <i>NOx</i> : less than 33.6 g/HP-hr ($45.0 \times N^{-0.20}$) when maximum test speed is at least 130 rpm but less than 2000 rpm, where N is the maximum test speed of the engine in rpm | 40 CFR § 60.4205(a); 40 CFR § 94.8(a)(1); Minn. R. 7011.3520 |
| <i>NOx</i> : less than 7.3 g/HP-hr (9.8 g/kW-hr) when maximum test speed is 2000 rpm or more. | 40 CFR § 60.4205(a); 40 CFR § 94.8(a)(1); Minn. R. 7011.3520 |

Owners and Operators of Emergency Engines Except Fire Pump (2007 and later) and < 30 liters/cylinder

| What to do | Why to do it |
|---|--|
| A. EMISSION STANDARDS | hdr |
| MAXIMUM ENGINE POWER LESS THAN 50 HP (Model Year 2007). Shall comply with the certification emission standards for new nonroad CI engines. | hdr |
| <i>NMHC+NO_x</i> : less than 3.5 g/HP-hr (4.7 g/kW-hr) | 40 CFR § 60.4205(b); 40 CFR § 60.4202; 40 CFR § 89.112; Minn. R. 7011.3520 |
| <i>CO</i> : less than 3.7 g/HP-hr (5.0 g/kW-hr) | 40 CFR § 60.4205(b); 40 CFR § 60.4202; 40 CFR § 89.112; Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.30 g/HP-hr (0.40 g/kW-hr) | 40 CFR § 60.4205(b); 40 CFR § 60.4202; 40 CFR § 89.112; Minn. R. 7011.3520 |
| Opacity: shall not exceed the following: (1) 20 percent during the acceleration mode; (2) 15 percent during the lugging mode; and (3) 50 percent during the peaks in either the acceleration or lugging modes. | 40 CFR § 60.4205(b); 40 CFR § 60.4202; 40 CFR § 89.113; Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER LESS THAN 11 HP (Model Year 2008+) | hdr |
| <i>NMHC + NO_x</i> : less than 5.6 g/HP-hr | 40 CFR § 60.4205 (b); 40 CFR § 1039.104, 105, 107, 115 and 40 CFR § 60.4202, Table 2 ; Minn. R. 7011.3520 |
| <i>CO</i> : less than 6.0 g/HP-hr | 40 CFR § 60.4205 (b); 40 CFR § 1039.104, 105, 107, 115 and 40 CFR § 60.4202, Table 2; Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.30 g/HP-hr | 40 CFR § 60.4205 (b); 40 CFR § 1039.104, 105, 107, 115 and 40 CFR § 60.4202, Table 2; Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 11 HP BUT LESS THAN 25 HP (Model Year 2008+) | hdr |
| <i>NMHC + NO_x</i> : less than 5.6 g/HP-hr | 40 CFR § 60.4205 (b); 40 CFR § 1039.104, 105, 107, 115 and 40 CFR § 60.4202, Table 2; Minn. R. 7011.3520 |

| | |
|---|---|
| <i>CO</i> : less than 4.9 g/HP-hr | 40 CFR § 60.4205 (b); 40 CFR § 1039.104, 105, 107, 115 and 40 CFR § 60.4202, Table 2; Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.30 g/HP-hr | 40 CFR § 60.4205 (b); 40 CFR § 1039.104, 105, 107, 115 and 40 CFR § 60.4202, Table 2; Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 25 HP BUT LESS THAN 50 HP (Model Year 2008+) | hdr |
| <i>NMHC</i> + <i>NOx</i> : less than 5.6 g/HP-hr | 40 CFR § 60.4205 (b); 40 CFR § 1039.104, 105, 107, 115 and 40 CFR § 60.4202, Table 2; Minn. R. 7011.3520 |
| <i>CO</i> : less than 4.1 g/HP-hr | 40 CFR § 60.4205 (b); 40 CFR § 1039.104, 105, 107, 115 and 40 CFR § 60.4202, Table 2; Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.22 g/HP-hr | 40 CFR § 60.4205 (b); 40 CFR § 1039.104, 105, 107, 115 and 40 CFR § 60.4202, Table 2; Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL 50 HP (Model Year 2007). Shall comply with the certification emission standards for new nonroad CI engines for the same model year and maximum engine power in 40 CFR§ 89.112 and 40 CFR§ 89.113 for all pollutants beginning in model year 2007 | hdr |

Owners and Operators of Fire Pump Engines (All years 2007 and after) and < 30 liters/cylinder

| What to do | Why to do it |
|---|---|
| A. EMISSION STANDARDS | hdr |
| MAXIMUM ENGINE POWER LESS THAN 11 HP (Model Year 2010 and earlier) | hdr |
| <i>NMHC</i> + <i>NOx</i> : less than 7.8 g/HP-hr | 40 CFR § 60.4205 (c); Minn. R. 7011.3520 |
| <i>CO</i> : less than 6.0 g/HP-hr | 40 CFR § 60.4205 (c); Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.75 g/HP-hr | 40 CFR § 60.4205 (c); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER LESS THAN 11 HP (Model Year 2011+) | hdr |
| <i>NMHC</i> + <i>NOx</i> : less than 5.6 g/HP-hr | 40 CFR § 60.4205 (c); Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.30 g/HP-hr | 40 CFR § 60.4205 (c); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 11 HP BUT LESS THAN 25HP (Model Year 2010 and earlier) | hdr |
| <i>NMHC</i> + <i>NOx</i> : less than 7.1 g/HP-hr | 40 CFR § 60.4205 (c); Minn. R. 7011.3520 |
| <i>CO</i> : less than 4.9 g/HP-hr | 40 CFR § 60.4205 (c); Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.60 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 11 HP BUT LESS THAN 25HP (Model Year 2011+) | hdr |
| <i>NMHC</i> + <i>NOx</i> : less than 5.6 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.30 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 25 HP BUT LESS than 50 HP (Model Year 2010 and earlier) | hdr |
| <i>NMHC</i> + <i>NOx</i> : less than 7.1 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| <i>CO</i> : less than 4.1 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.60 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 25 HP BUT LESS than 50 HP (Model Year 2011+) | hdr |
| <i>NMHC</i> + <i>NOx</i> : less than 5.6 g/HP-hr | 40 CFR§ 60.4205 (c) |
| <i>PM</i> : less than 0.22 g/HP-hr | 40 CFR§ 60.4205 (c) |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 50 HP BUT LESS than 75 HP (Model Year 2010 and earlier) | hdr |

| | |
|--|--|
| <i>NMHC</i> + <i>NOx</i> : less than 7.8 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| <i>CO</i> : less than 3.7 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.60 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 50 HP BUT LESS than 75 HP (Model Year 2011+) ¹ | hdr |
| <i>NMHC</i> + <i>NOx</i> : less than 3.5g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.30 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 75 HP BUT LESS than 100 HP (Model Year 2010 and earlier) | hdr |
| <i>NMHC</i> + <i>NOx</i> : less than 7.8 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| <i>CO</i> : less than 3.7 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.60 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 75 HP BUT LESS than 100 HP (Model Year 2011+) ¹ | hdr |
| <i>NMHC</i> + <i>NOx</i> : less than 3.5 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.30 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 100 HP BUT LESS than 175 HP (Model Year 2009 and earlier) | hdr |
| <i>NMHC</i> + <i>NOx</i> : less than 7.8 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| <i>CO</i> : less than 3.7 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.60 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 100 HP BUT LESS than 175 HP (Model Year 2010+) ² | hdr |
| <i>NMHC</i> + <i>NOx</i> : less than 3.0 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.22 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 175 HP BUT LESS than 300 HP (Model Year 2008 and earlier) | hdr |
| <i>NMHC</i> + <i>NOx</i> : less than 7.8 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| <i>CO</i> : less than 2.6 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.40 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 175 HP BUT LESS than 300 HP (Model Year 2009+) | hdr |

| | |
|---|--|
| <i>NMHC + NOx</i> : less than 3.0 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.15 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 300 HP BUT LESS than 600 HP (Model Year 2008 and earlier) | hdr |
| <i>NMHC + NOx</i> : less than 7.8 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| <i>CO</i> : less than 2.6 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.40 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 300 HP BUT LESS than 600 HP (Model Year 2009+) | hdr |
| <i>NMHC + NOx</i> : less than 3.0 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.15 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 600 HP BUT LESS OR EQUAL TO 750 HP (Model Year 2008 and earlier) | hdr |
| <i>NMHC + NOx</i> : less than 7.8 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| <i>CO</i> : less than 2.6 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.40 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN OR EQUAL TO 600 HP BUT LESS OR EQUAL TO 750 HP (Model Year 2009+) | hdr |
| <i>NMHC + NOx</i> : less than 3.0 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.15 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN 750 HP (Model Year 2007 and earlier) | hdr |
| <i>NMHC + NOx</i> : less than 7.8 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| <i>CO</i> : less than 2.6 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.40 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| MAXIMUM ENGINE POWER GREATER THAN 750 HP (Model Year 2008+) | hdr |
| <i>NMHC + NOx</i> : less than 4.8 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |
| <i>PM</i> : less than 0.15 g/HP-hr | 40 CFR§ 60.4205 (c); Minn. R. 7011.3520 |

¹ For model years 2011-2013, owners and operators of fire pump stationary CI ICE in this engine power category with a rated speed of greater than 2,560 revolutions per minute (rpm) may comply with the emission limitations for 2010 model year engines

² For model years 2010-2012, owners and operators of fire pump stationary CI ICE in this engine power category with a rated speed of greater than 2,560 rpm may comply with the emission limitations for 2009 model year engines

| | |
|---|--|
| B. MONITORING, REPORTING AND RECORDKEEPING FOR OWNERS AND OPERATORS OF EMERGENCY ENGINES | hdr |
| <p>The owner or operator is not required to submit an initial notification.</p> <p>Starting with the model year 2013 for engine power less than 75 HP; model year 2012 for engine power less than 175 HP; and model year 2011 for engine power greater than and equal to 175 HP.</p> <p>If the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, the owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter.</p> <p>The owner must record the time of operation of the engine and the reason the engine was in operation during that time.</p> | 40 CFR§ 60.4214 (b); Minn. R. 7011.3520 |
| <p>Starting with the model year 2013 for engine power less than 75 HP; model year 2012 for engine power less than 175 HP; and model year 2011 for engine power greater than and equal to 175 HP, stationary CI internal combustion engine manufacturers must add a permanent label stating that the engine is for stationary emergency use only to each new emergency stationary CI internal combustion engine greater than or equal to 19 KW (25 HP) that meets all the emission standards for emergency engines in 40 CFR§ 60.4202 but does not meet all the emission standards for non-emergency engines in 40 CFR§ 60.4201. The label must be added according to the labeling requirements specified in 40 CFR§ 1039.135(b). Engine manufacturers must specify in the owner's manual that operation of emergency engines is limited to emergency operations and required maintenance and testing.</p> | 40 CFR§ 60.4210 (f); Minn. R. 7011.3520 |

Table A.12: The following Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (40 CFR pt. 60, subp. JJJJ) for Engines with less than or equal to 500 brake horsepower. These engines can use gasoline fuel only.

The engines that are constructed, modified or reconstructed after June 12, 2006, are subject to these rules. The date that construction commences is the date the engine is ordered by the owner or operator.

1. Non-emergency engines with a maximum engine power less than 500 HP, manufactured on or after July 1, 2008;
2. Emergency engines with a maximum engine power greater than 25HP, manufactured on or after January 1, 2009;
3. Engines than are acting as temporary replacement units and that are located at a stationary source for less than 1 year and that have been properly certified as meeting the standards that would be applicable to such engine under the appropriate nonroad engine provisions, are not required to meet any other requirements.

| |
|--|
| Owners and Operators of Non-Emergency Engines (Manufactured after July 1, 2008) |
|--|

| What to do | Why to do it |
|---|---|
| Owners and operators use gasoline must use gasoline that meets the per gallon sulfur limit in 40 CFR § 80.195. | 40 CFR§ 60.4235 |
| After July 1, 2010, owners and operators may not install stationary SI ICE with a maximum engine power of less than 500 HP that do not meet the applicable requirements in 40 CFR § 60.4233. | 40 CFR§ 60.4236(c) |
| The owner or operator must operate and maintain the certified stationary SI internal combustion engine and control device according to the manufacturer's emission-related written instructions, and must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. | 40 CFR§ 60.4243(a) |
| <p>Owners and operators of all stationary SI ICE must keep records of the information in (1) through (4).</p> <p>(1) All notifications and all documentation supporting any notification as described in 40 CFR §§ 60.7 and 60.19.</p> <p>(2) Maintenance conducted on the engine.</p> <p>(3) If the stationary SI internal combustion engine is a certified engine, documentation from the manufacturer that the engine is certified to meet the emission standards and information as required in 40 CFR parts 90 and 1048.</p> <p>(4) If the stationary SI internal combustion engine is not a certified engine or is a certified engine operating in a non-certified manner and subject to 40 CFR§ 60.4243(a)(2), documentation that the engine meets the emission standards.</p> | 40 CFR§ 60.4245 (a); 40 CFR§ 60.7 and 60.19. |
| For all stationary SI emergency ICE greater than or equal to 130 HP and less than 500 HP manufactured on or after July 1, 2011 that do not meet the standards applicable to non-emergency engines, the owner or operator of must keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. | 40 CFR§ 60.4243(d) |

Owners and Operators of Emergency Engines (Manufactured after July 1, 2008)

| What to do | Why to do it |
|---|--------------------|
| The owner or operator of an emergency stationary SI internal combustion engine that is less than 130 HP, was built on or after July 1, 2008, and does not meet the standards applicable to non-emergency engines, you must install a non-resettable hour meter upon startup of your emergency engine. | 40 CFR§ 60.4237 |
| Emergency stationary ICE may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. There is no time limit on the use of emergency stationary ICE in emergency situations. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency ICE beyond 100 hours per year. Emergency stationary ICE may operate up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. For owners and operators of emergency engines, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as permitted in this section, is prohibited. | 40 CFR§ 60.4243(d) |
| Emergency stationary SI ICE with a maximum engine power of greater than 19 KW (25 HP), owners and operators may not install engines that do not meet the applicable requirements in <i>40 CFR§ 60.4233 after January 1, 2011</i> . | 40 CFR§ 60.4236(a) |
| For all stationary SI emergency ICE greater than 25 HP and less than 130 HP manufactured on or after July 1, 2008, that do not meet the standards applicable to non-emergency engines, the owner or operator of must keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The owner or operator must document how many hours are spent for emergency operation; including what classified the operation as emergency and how many hours are spent for non-emergency operation. | 40 CFR§ 60.4245(b) |

Table A.14: The following **are the requirements of the** National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines (40 CFR pt. 63, subp. ZZZZ)

Owners and operators of new and reconstructed stationary engines located at area sources of HAP emissions must meet the requirements of 40 CFR pt. 60, subps. IIII or JJJJ, as appropriate. If the owners and operators are in compliance with either 40 CFR pt. 60, subps. IIII or JJJJ, as appropriate, they would be in compliance with 40 CFR pt. 63, subp. ZZZZ, for new and reconstructed engines.

Existing Source: Constructed or reconstructed before June 12, 2006

New Source: Constructed or reconstructed on or after June 12, 2006

Reconstructed must meet the definition of reconstruction in 40 CFR§ 63.2 and reconstruction is commenced on or before June 12, 2006.

TABLE B: SUBMITTALS

Table B lists the submittals you must send to the Commissioner. Table B is divided into two sections, for source-specific submittal requirements and for submittals required of all Permittees. Source-specific submittals are further organized as either one-time only or recurrent requirements.

Return complete permit application to: Minnesota Pollution Control Agency
Air Quality Permit Coordinator
520 Lafayette Road North,
St. Paul, Minnesota 55155-4194

Send all other submittals to: Minnesota Pollution Control Agency,
Air Quality Compliance Tracking Coordinator
520 Lafayette Road North,
St. Paul, Minnesota 55155-4194.

| New Source and Equipment One-Time Submittals | | | |
|--|--|--|--|
| What to Send | When to Send | What is affected | Citation |
| Location Notification on a form approved by the Commissioner | At least 48 hours prior to each change in location of a stationary source, establishment of a new stationary source location, or a change in capacity/dust control option at an individual stationary source | Each stationary source (plant location) to be covered by your general permit | Minn. R. 7007.0800, subp. 12 |
| NSPS Equipment Description and Notification of commencement of construction (defined in 40 CFR§ 60.2) on a form approved by the Commissioner Notifying | No later than 30 days after start of construction | Equipment newly subject to NSPS except for mass-produced (i.e., prefabricated) facilities | 40 CFR §. 60.7(a)(1); Minn. R. 7019.0100 |
| NSPS Equipment Description and Notification of initial startup date on a form approved by the Commissioner | Within 15 days after initial startup | Equipment newly subject to NSPS | 40 CFR §. 60.7(a)(3); Minn. R. 7019.0100 |
| NSPS Equipment Description and Notification of equipment replacement on a form approved by the Commissioner (With information required in 40 CFR§ 60.676) | Within 60 days after making the replacement | An existing facility (piece of equipment not subject to NSPS) being replaced by a piece of equipment of equal or smaller size or capacity) | 40 CFR § 60.676(a) and 60.670(d); Minn. R. 7011.3350 |

| Routine Submittals | | | |
|---|---|---|----------------------------------|
| What to Send | When to Send | What is affected | Citation |
| Semiannual Deviations Reporting on a form approved by the Commissioner with a summary of <i>all</i> instances of deviations from permit conditions (or indicating none occurred). Submit the report for the second half-year report with your annual Compliance Certification. Use Form NM-DRF | Semiannually: due July 30, covering January 1 through June 30, and due January 31, covering July 1 through December 31 | All stationary sources (plant locations) covered by your general permit (A single form may be submitted supplying necessary information for all stationary sources covered by this general permit during the reporting period) | Minn R. 7007.0800, subp. 6(A)(2) |
| Annual Compliance Certification on a form approved by the Commissioner. Submit with the second half-year semiannual deviations report. Use Form NM-CR | Annually, by January 31 for the previous calendar year | | Minn. R. 7007.0800 subp. 6(C) |
| Emissions inventory report A form will be sent for you to complete and return | Annually, by April 1 for the previous calendar year | | Minn. R. 7019.3000-7019.3100 |
| Emission fees | Annually, within 60 days of receipt of an MPCA invoice | | Minn. R. 7002.0005-7002.0085 |
| Periodic Submittals (required as necessary) | | | |
| Oral notification of deviation endangering human health or the environment | Immediately after discovery | (A single notification and/or submittal may be submitted supplying necessary information for all stationary sources covered by this general permit if events coincide. Otherwise, each requirement applies separately to each stationary source for each individual event.) | Minn. R. 7019.1000, subp. 1 |
| Written description of deviation endangering human health or the environment | Within 2 days of discovery | | Minn. R. 7019.1000, subp. 1 |
| Shutdown notification | At least 24 hours before a planned shutdown of process or control equipment if it would cause an increase in the emission of air pollutants and again when the shutdown is over | | Minn. R. 7019.1000, subp. 3 |
| Breakdown notification | Immediately for a breakdown of more than one hour duration of any process or control equipment if the breakdown causes an increase in the emission of air pollutants and again when the breakdown is over | | Minn. R. 7019.1000, subp. 2 |

| | | | |
|--|--|--|-----------------------------|
| Notification and Test Plan on a form approved by the Commissioner | At least 30 days before performance test date | Affected facility (piece of equipment) as defined in 40 CFR § 60.676 and any other equipment required to be tested | Minn. R. 7017.2030 |
| Pre-test meeting | At least 7 days prior to performance test date | | Minn. R. 7017.2030, subp. 4 |
| Test report | Within 45 days after performance test date | Affected facility (piece of equipment) as defined in 40 CFR § 60.676 and any other equipment tested | Minn. R. 7017.2035, subp. 2 |
| Microfiche or CD copy of test report | Within 105 days after performance test date | | Minn. R. 7017.2035, subp. 2 |

APPENDIX I: SOURCE-SPECIFIC REQUIREMENTS

Stationary Source Designation Matrix

Stationary Internal Combustion Engines Fuel Use

Weather Summary Criteria

Generator Sitting Conditions

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NONMETALLIC MINERAL PROCESSING GENERAL PERMIT, STATIONARY SOURCE DESIGNATION MATRIX

TABLE 1 - Annual Production versus Numbers of Units

| Table 1. Stationary Source Category Annual Production (tons) - Up to: | | | | | | | | | | | | | |
|---|-----------------|---------|---------------------|--|-----------|-----------|-----------|-------------|-------------|-------------|-------------|-------------|-------------|
| Category | Number of Units | | | Stationary Source Annual Production (tons) | | | | | | | | | |
| | Crushers | Screens | Transfer Operations | 500,000 | 1,000,000 | 1,250,000 | 1,500,000 | 1,750,000 | 2,000,000 | 2,250,000 | 2,500,000 | 2,750,000 | 3,000,000 |
| A | 1 | 1 | 10 | small | small | small | small | medium | medium | medium | medium | medium | large |
| B | 2 | 2 | 20 | small | small | small | small | medium | medium | medium | large | large | large |
| C | 3 | 3 | 30 | small | small | small | medium | medium | medium | large | large | large | not allowed |
| D | 4 | 4 | 40 | small | small | small | medium | medium | large | large | not allowed | not allowed | not allowed |
| E | 5 | 5 | 50 | small | small | medium | medium | large | large | not allowed | not allowed | not allowed | not allowed |
| F | 6 | 6 | 60 | small | small | medium | medium | large | not allowed | not allowed | not allowed | not allowed | not allowed |
| G | 7 | 7 | 70 | small | small | medium | large | not allowed | not allowed | not allowed | not allowed | not allowed | not allowed |
| H | 8 | 8 | 80 | medium | medium | medium | large | not allowed | not allowed | not allowed | not allowed | not allowed | not allowed |

TABLE 2 - Annual Production versus In-Place Capacity

| Table 2. Stationary Source Category Annual Production (tons) Versus In-Place Capacity | | | | | | | | | | | | | |
|---|------------------------------------|---------|---------------------|---|-----------|-----------|-----------|-----------|-----------|-------------|-------------|-------------|-------------|
| Category | Cumulative In-Place Capacity (tph) | | | Stationary Source Annual Production (tons) Up to: | | | | | | | | | |
| | Crushers | Screens | Transfer Operations | 500,000 | 1,000,000 | 1,250,000 | 1,500,000 | 1,750,000 | 2,000,000 | 2,250,000 | 2,500,000 | 2,750,000 | 3,000,000 |
| I | 750 | 750 | 7500 | small | small | small | medium | medium | medium | large | large | large | not allowed |
| II | 1250 | 1250 | 12500 | medium | medium | medium | medium | medium | large | large | not allowed | not allowed | not allowed |
| III | 2500 | 2500 | 25000 | large | large | large | large | large | large | not allowed | not allowed | not allowed | not allowed |

Stationary sources, using Table 2, with cumulative capacities above 2,500 tons per hour (tph) for crushers or for screens or above 25,000 tph for transfer operations are not allowed under this general permit.

If Table 2 is used for determining the stationary source designation, in order to demonstrate compliance with the cumulative capacity limitation, the Permittee must keep an up-to-date record (e.g., a site plan or process flow diagram) showing the cumulative in-place capacity of each equipment type at the stationary source. This record does not need to identify specific unique identifying numbers for pieces of equipment. It may be generic in nature, but must be sufficiently detailed to determine the cumulative capacity of all equipment types at the stationary source. Wet screening operations are excluded from counting toward the number of units in the matrix above.



Minnesota Pollution
Control Agency

520 Lafayette Road North
St. Paul, MN 55155-4194

NM-EN

STATIONARY INTERNAL COMBUSTION ENGINES FUEL USE

Air Quality Permit Program - General Permit Nonmetallic Mineral
Processing

- 1) AQD File No.: _____
- 2) AQD Permit No.: _____
- 3) Company Name: _____
- 4) Stationary Source Name/Location: _____
- 5) Dates of period covered by calculation: _____
- 6) Printed name of person recording calculation: _____
- 7) Date (must be done by 15th of following month): _____

| Fuel Type | Amount Burned in Previous 12-Month Period at Stationary Source Location * | Units | Multiplying Factor | Subtotal |
|--|--|---------------------------|--------------------|----------|
| Diesel Fuel | | Gallons | x 3.09 ÷ 10,000 | |
| Diesel Fuel with up to 20% Biodiesel | | Gallons | x 2.83 ÷ 10,000 | |
| Natural Gas | | Cubic Feet | x 1.70 ÷ 1,000,000 | |
| Liquefied Petroleum Gas (LPG) / Propane | | Gallons | x 6.95 ÷ 100,000 | |
| Gasoline | | Gallons | x 4.24 ÷ 1,000 | |
| Calculation Total (Sum subtotals) | | Must be less than 90 * | | |

* If a stationary source has less than 12 months of operational data, the Permittee shall determine compliance during the first 12 months under this general permit using the following formula:

$$N = 0.95 \times (\text{Annual Limit}) + 0.0045 \times (\text{Annual Limit}) \times (n-1)$$

Where "n" is the number of months in operation, and "N" is the rolling sum limit for the current month.

At its option, the Permittee may calculate and record individual monthly sums, in lieu of 12-month rolling sums, for a stationary source location such that the annual production limit divided by 12 is not exceeded. Also at its option, if only one fuel is used, the Permittee may record and sum the quantity of fuel used directly, in which case the annual limits are as follows: 291,545 gallons for diesel fuel, 317,851 gallons for diesel fuel with up to 20% biodiesel, 53 million cubic feet for natural gas, 1.3 million gallons for propane, and 21,221 gallons for gasoline.

TDD (for hearing and speech impaired only): (651) 282-5332

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**WEATHER SUMMARY CRITERIA
FOR
LARGE STATIONARY SOURCE NON-PROCESS DUST CONTROL OPTION
NONMETALLIC MINERAL PROCESSING GENERAL PERMIT**

Sky Conditions

| | |
|------------------|---|
| CLR | <1/10 cloud coverage |
| SCT (Ptly Cldy) | 1/10-5/10 cloud coverage (opaque) |
| BKN (Mstly Cldy) | 6/10-9/10 cloud coverage (opaque) |
| OVC (Cloudy) | 10/10 cloud coverage (opaque) |
| THN OVC | Sky is completely covered with high thin clouds and <5/10 cloud coverage is opaque |

Note: The cloud coverage is a cumulative total of all cloud layers.

Weather Conditions

| | |
|----------------------|---|
| Fog | May also be associated with drizzle and may obstruct sky |
| Drizzle | Small particles of rain many times associated with fog |
| Lt Rain | Continuous falling at a light rate (good horizontal visibility) |
| Mod Rain | Continuous falling at a mod. rate (horiz. visibility decreased) |
| Hvy. Rain | Continuous falling at heavy rate; in sheets (horizontal visibility low) |
| T-Stm | Thunderstorm -- thunder, lightning, and usually mod. to hvy. rain |
| Hail | Associated with thunderstorms |
| Frz Rain | Rain that freezes on contact of cold objects; glazing |
| Sleet | Mixture of rain and ice pellets |
| Ice Pellets | Clear/mostly translucent pellets of ice -- not easily broken/crushed |
| Snw Grns/Snw Pellets | Hard/crunchy opaque (white) pellets of snow -- easily crushed |
| Lt Snow | Falling at a light rate; flurries (good horizontal visibility) |
| Mod Snow | Falling at a moderate rate (horizontal visibility decreased) |
| Hvy Snow | Falling at a heavy rate (poor horizontal visibility) |

Wind Scale

| | | |
|-----------|--------------|---|
| 0-10 MPH | Light Breeze | Leaves rustle |
| 10-20 MPH | Light Wind | Small tree branches move; wind extends light flag |
| 20-30 MPH | Mod. Wind | Large branches in motion; umbrella used with difficulty |
| 30-40 MPH | Mod. Gale | Whole trees in motion; difficulty walking against wind |
| 40-50 MPH | Strong Gale | Twigs break off of trees |

Temperature

Approximate using a range of 5 degrees Fahrenheit if the actual temperature is not known.

GENERATOR/ENGINE SITTING CONDITIONS

| Capacity Allowed to Operate Simultaneously horsepower | Minimum Stack Height Feet (meters) | Minimum Distance Between Engines and Property Boundaries Feet (meters) |
|--|---|---|
| 500 | 14(4.27) | 60 (18.30) |
| 750 | 14(4.27) | 135(41.15) |
| 1000 | 14(4.27) | 210(64.0) |
| 1500 | 14(4.27) | 330(100.0) |

TECHNICAL SUPPORT DOCUMENT
for
AIR EMISSION GENERAL PERMIT
for
NONMETALLIC MINERAL PROCESSING
OCTOBER 2008

This technical support document (TSD) is intended for all the interested parties of the general permit and to meet the requirements that have been set forth by the federal regulations and Minnesota Rules ((40 CFR § 70.7(a)(5)) and Minn. R. 7007.0850, subp. 1). The purpose of this document is to provide the legal and factual justification for each applicable requirement or policy decision considered in the preliminary determination to issue the general permit.

It is a goal of the Minnesota Pollution Control Agency (MPCA) to efficiently implement its air emission permitting program and to continuously improve the permitting process. One objective to meeting this goal is the development of general permits for specific industrial categories. This document presents the MPCA's overall approach for the efficient permitting of non metallic mineral processing facilities.

1. General Information

1.1. Applicant and Stationary Source Location:

| Applicant/Address | Stationary Source/Address (SIC Codes Include: 1422, 1423, 1429, 1442 and 1446) |
|--------------------------|---|
| Various | Various |
| | (Cannot be in PM ₁₀ maintenance areas) |

1.2 Description of the Permit Action

The general permit covers both those nonmetallic mineral processing operations which permanently operate at a single location as well as those temporary operations (sometimes referred to as portable crushing spreads) that move from one location to another. Both of these are referred to in the general permit materials by the term "stationary source" which is defined in Minn. R. 7005.0100, subp. 42c. The issuance of this general permit is authorized by Minn. R. 7007.1100, supb. 1, which allows the MPCA to issue a general permit is "numerous and similar stationary sources are subject to substantially similar regulatory requirements..." This approach provides for greater efficiency than the individual permit approach. The general permit authorizes operation in all areas of the state except areas designated maintenance area for Particulate Matter smaller than 10 microns (PM₁₀).

The general permit will replace the Existing Stationary Nonmetallic Mineral Processing Plant General Permit which was issued in 1996. Current holders of this general permit will need to apply for this reissued general permit or an individual Part 70, State or Registration Permit.

The stationary source eligible for the general permit are non major sources as defined in Minn. R. 7007.0200. The general permit covers stationary sources required to obtain permits under Minn. R. 7007.0250. The proposed general permit contains federally enforceable conditions to limit the Potential-To-Emit (PTE) of each criteria pollutant (including Particulate Matter (PM)) to less than 90 tons per year (tpy); therefore, each stationary source covered by this general permit is a non major source as defined in 40 CFR § 52.21 Prevention of Significant Deterioration (Minn. R. 7007.3000). Also, each stationary source is a non major source as defined in 40 CFR § 52.24 (Minn. R. 7007.4000) for all pollutants. Finally, each stationary source is non major under federal Operating Program, 40 CFR pt. 70 (Minn. R. 7007.0200), and an area source under the National Emission Standards for Hazardous Air Pollutants, 40 CFR pt. 63; therefore this permit is a State permit not a Part 70 permit.

Each stationary source eligible for the general permit may include the following types of equipment and activities for which a permit is required under Minn. R. 7007.0150:

- Crushers (subject to the fines crushing production limitation described below)

- Screens

Wet screening operation and associated transfer operations downstream of the wet screening operation in the production line process up to, but not including, the next crusher in the production line of a nonmetallic mineral processing plant. A wet screening operation means a screening facility designed and operated to remove unwanted material from the product by a washing process whereby the product is completely saturated with water in a slurry

Transfer operations (including belt conveyor, enclosed truck/railcar loading stations, bucket elevators, storage bins, stacker, ladders chutes, classification screws, feeders, pneumatic systems, and bagging operations)

- Internal combustion engines

- Storage piles

- Space heaters

- Air separators without induced air flow (closed system)

- Paved and unpaved roads and parking lots

- Bulldozer, loaders, and other related vehicles

Insignificant activities listed in Minn. R. 7007.1300, subp. 2 and 3 and/or conditionally insignificant activities listed in Minn. R. 7008

For clarification, specific examples of equipment not allowed to be operated under this general permit include: grinding mills, air conveying system, air classifiers (is an industrial machine which sorts materials by a combination of size, shape and density), calciners, and aggregate heaters/dryers. In addition, a stationary source constructed, modified, and reconstructed under this general permit shall not contain equipment which is an affected facility under any New Source Performance Standard (NSPS) under 40 CFR pt. 60 other than nonmetallic mineral processing plants under 40 CFR pt. 60, subp. OOO, storage tanks (must be insignificant activities) are subject to a

recordkeeping requirement under 40 CFR pt. 60, subp. Kb, compression internal combustion engines under 40 CFR pt. 60,

subp. IIII and spark ignition internal combustion engines under 40 CFR pt. 60, subp. JJJJ. Also, source constructed or reconstructed under any National Emission Standards for Hazardous Air Pollutants (NESHAPs) for area sources other than 40 CFR pt. 63, subp. ZZZZ, reciprocity internal combustion engines are not eligible for the general permit. Also, U.S. Environmental Protection Agency has revised 40 CFR pt. 60, subp. OOO. Add-on air pollution control equipment to capture and remove air pollutants from process air streams (and location of operations indoors) is allowed, but compliance with all emission limits in this general permit must be maintained without considering the effect of such controls.

Except as specifically provided below, a nonmetallic mineral processing stationary source constructed, modified, and operated under this general permit may produce or process only:

Crushed and broken limestone
Crushed and broken granite
Crushed and broken stone
Construction sand and gravel
Recycled concrete
Recycled asphalt pavement
The initial steps on producing manufactured sand

Exceptions:

Other – De Minimis Quantities: A de minimis quantity is a quantity of materials, other than those listed above, that may be produced or processed such that the total amount of actual emissions from producing or processing of all de minimis quantities in any calendar year at any stationary source location must be less than one ton (i.e., 1 ton/year per site) of PM. No pollutants other than PM, PM_{2.5} and PM₁₀ may be emitted as a result of producing or processing the other material, except those emitted from the operation of associated internal combustion engines. Whenever the Permittee produces or processes de minimis quantities of other materials, calculations of the projected and actual PM, PM_{2.5} and PM₁₀ emissions from producing or processing de minimis quantities must be kept by the Permittee along with records of the dates, site, tons of material produced or processed and a description of the material.

Fines Crushing: Crushing material to a maximum size of 3/16 inch or smaller in any calendar year at any stationary source location covered by this general permit is limited to less than 50,000 tons (i.e., 50,000 tons/year per site). Whenever the Permittee performs fines crushing, records must be kept by the Permittee indicating the dates, site and tons of material produced or processed as well as a description of the material. Crushing material to a maximum size of 3/16 inch is referred to in this general permit as “fines crushing”. Fines crushing involves the production of manufactured sand and products of a similar size.

A stationary source is not eligible for the general permit, or ceases to be eligible for the general permit, if any of the following are true:

1. The stationary source is located in or comes to be located in a PM₁₀ maintenance area;
2. The stationary source has emission sources or produces or processes material other than as provided for above;
3. The stationary source actual emissions have exceeded 90 tons thresholds of criteria pollutants based on a 12-month rolling sum; and
4. The stationary source does not meet the eligible requirements above.

1.3 Changes to the General Permit

The following types of changes have been made to the general permit:

- Updated to reflect current MPCA templates and standard citation formatting;
- Updated to reflect the MPCA current policies;
- Added a place holder for the revised NSPS, subp. OOOO;
- Added the name change of ownership or control of stationary source;
- Added the equipment list inventory;
- Removed the submittal extension request;
- Added that the MPCA will be accepting NSPS performance test results from other states;
- Added a clarification to “excludes wet screening operations from counting toward the number of units in the matrix”
- Added biodiesel as an allowable fuel;
- Incorporated the applicable requirements for NSPS, subp. IIII, JJJJ and NESHAPs, subp. ZZZZ;
- Added sand heaters, air separators and insignificant activities as defined in Minn. R. 7008;
- Added modeled parameters for generators/engines;
- Revised annual fuel limits for single fuel usage;
- Included notification of all equipment (not just NSPS) in the revised application; and
- Revised the application forms to reflect all the above changes.

1.4 Emissions of the Stationary Source

Table 1. Potential to Emit (PTE) Summary

| Pollutant | PTE (tons/year, tpy) |
|---|---------------------------------|
| Particulate Matter (PM) | <90 |
| Particulate Matter less than 10 microns (PM ₁₀) | <90 |
| Particulate Matter less than 2.5 microns (PM _{2.5}) | <90 |
| Sulfur Dioxide (SO ₂) | <90 |
| Nitrogen Oxide (NO ₂) | <90 |
| Carbon Monoxide (CO) | <90 |
| Volatile Organic Compounds (VOCs/Ozone) | <90 |

The general permit preauthorizes modifications and new construction, provided all conditions are always met, in such a way that the overall PTE of the stationary source remains less than 90 tons per years for each pollutant. In addition to avoiding classification as a major source for New Source Review/Prevention of Significant Deterioration (NSR/PSD) and 40 CFR pt. 70 (as described above) this avoids triggering the requirement to prepare an Environmental Assessment Worksheet (EAW), because of air emissions, pursuant to Minnesota Environmental Quality Board rules. A Permittee may still need to prepare an EAW in certain situations, however, due to other reasons, such as the overall size of a mine or pit.

Again, the general permit contains provisions to restrict the PTE of PM below 90 tpy including fugitive emission as shown in the attachments to this TSD. The Part 70 threshold for this industry source category is 100 tpy of PM₁₀ (based on October 1995 U.S. Environmental Protection Agency (EPA) policy memorandum) including fugitives [and per Minn. R. 7007.0200, subp. (2)(B)(27)], while the NSR/PSD threshold is 250 tpy of PM excluding fugitives [given Subpart OOO effective date in 1983 and PSD effective date in 1980] and PM_{2.5} threshold is 250 tpy effected July 15, 2008. Therefore, limiting the PTE of PM below 90 tpy, including fugitives, to avoid potentially triggering the federal thresholds.

Table 2. Stationary Source Classification

| Classification | Major/Affected Source | Synthetic Minor | Minor |
|------------------------|------------------------------|--|--|
| PSD | | PM, PM ₁₀ , PM _{2.5} | SO ₂ , NO _x , CO, VOC and Pb |
| Part 70 Permit Program | | PM ₁₀ , PM _{2.5} | SO ₂ , NO _x , CO, VOC and Pb |
| Part 63 NESHAP | | | HAP |

2. Summary of Limits and Conditions Indicated in the General Permit

2.1 Table A.2: Total Facility Requirements

These are standard total facility requirements which are found in all state permits include requirements for recordkeeping, inspections and entry, deviations notification and report, requirements for procedures for notification in the event of equipment shutdown/breakdown, requirements to comply with the fugitive emissions standards and noise standards, opacity performance testing, annual compliance certification, emission fees, emission inventory report and name change of ownership or control of the stationary source. Under “Recordkeeping” the standard language was slightly modified to allow the Permittee to retain records required by the general permit at its central office, instead of at each stationary source location, if they so choose. This was allowed because of the high degree of portability of operations in this industry. At remote sites, there may not always be an appropriate place, or appropriate personnel needed for the keeping and retaining of records.

A tailored Deviation Identified Through Recordkeeping form (*NM-DRF*) for submitting the semiannual deviations reports was developed for use with this general permit. Similarly, the Annual Compliance Certification Report is to be done on form *NM-CR*. The Permittee need only submit one *NM-DRF* twice a year, and one *NM-CR* each year. These forms are arranged so the Permittee can report all of the deviations (or lack thereof) for all of its stationary sources covered by this general permit

Name change of ownership or control of the stationary source form (*GP-01*) is for submitting change in facility name, facility ownership, mailing address, or other contact information. For example, if Company ABC holds a general permit that covers Site 1, Site 2 and Site 3, and if there is a change at one of the sites under the general permit, *form GP-01* should not be used but instead the Permittee should use *form NM-RE- “Location Notification”*.

The language “This is a state-only requirement and is not enforceable by the EPA Administrator and citizens under the Clean Air Act” refers to permit requirements that are mandated by state law rather than by the federal Clean Air Act. The requirement in this general permit is the noise rule. The language is to clarify the distinction between permit conditions that are required by federal law and those that are required by state law. State law requirements are not enforceable by EPA or by citizens under the federal Clean Air Act, but are fully enforceable by the MPCA and citizens under provisions of state law.

2.2 Table A.3: Requirements and Limits that Apply to the Entire Stationary Source

Requirement or Condition:

- 1. Material Moisture Content**
- 2. Stationary Source Designation and Capacity Limits**
- 3. Non-Process Dust Control Options**
- 4. Equipment List Inventory**
- 5. Labeling Requirements**
- 6. Location Notification**
- 7. Source Specific Requirement**

Factual or Legal Basis:

1. Title I Condition: Limit to avoid classification as major source and modification under 40 CRF Section 52.21 and Minn. R. 7007.3000; Limit to avoid major source classification under 40 CRF Section 70.2 and Minn. R. 7007.0200; Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100.
2. Same as 1. above, as well as Minn. R. 7011.0150.
- 3-4. Minn. Stat. Section 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2 and Minn. R. 7007.1100.
5. Same as 3-4 above, as well as Minn. R. 7007.0800, subp. 12.

Discussion:

1. The requirement to keep the moisture content of feed material greater than or equal to 1.5 percent is needed because the underlying emissions calculations and basis for the permit limits are based on this moisture content level. AP-42 (referenced above) has a set of process emission factors for material with moisture content greater than or equal to 1.5 percent and another set for material with moisture content less than 1.5 percent. The testing and/or recordkeeping is required to demonstrate compliance with this permit condition. In Minnesota, most sources of natural feed material are usually over 1.5 percent. The second alternative compliance demonstration method for this permit condition includes Recycled Asphalt Pavement (RAP). In producing asphalt pavement, there are often specifications for moisture content in excess of 1.5 percent. In addition, there is a presence of the asphalt cement itself with a binding effect which mitigates dust emissions. Based on the combination of these two considerations, it was concluded to be appropriate to include RAP in alternative 2. In addition, supplemental water application to RAP might have an inadvertent negative environmental effect. This is because it is often fed back into an asphalt plant where it is heated. Excess water requires the combustion of additional fuel with the associated air emissions of the products of combustions. The two compliance demonstration alternatives for this general permit condition provide adequate assurance that material moisture content is greater than or equal to 1.5 percent without being unnecessarily burdensome.

2. Three options for capacity limitations and non-process dust control are provided in the general permit. ("Non-process" means those sources of fugitive PM/PM_{2.5}/PM₁₀ emissions, such as unpaved roads and storage piles. This is opposed to such non fugitive PM/PM_{2.5}/PM₁₀ emissions from process equipment, such as crushers, screens, and conveyor transfer points.)

Only one of the options (Small, Medium and Large) at a time applies at each stationary source covered by this general permit. The option that is to apply to a particular stationary source is selected by the Permittee from the Stationary Source Designations Matrix (found in Appendix I), either Table A or Table B. The option, limit on number of units or cumulative capacity, along with the annual throughput limit, is indicated by the Permittee on the Location Notification form (*NM-RE*) required to be submitted by this general permit.

When Stationary Source Designation Matrix Table B is used, in order to demonstrate compliance with the cumulative capacity limitation, the Permittee needs to keep an up-to-date record (e.g., a site plan or process flow diagram) for each stationary source covered by this general permit. This record does not need to identify specific unique identifying number for pieces of equipment. It may be generic in nature, but must be sufficiently detailed to determine the cumulative capacity of all equipment types at the stationary source. Cumulative capacity means adding up the ton-per-hour capacity – as installed at a given stationary source location, meaning bottlenecks can be considered (as long as they are reflected in the required records) – of all equipment of a given type. For example, if there are three 200 ton-per-hour crushers, regardless of whether they are primary, secondary, or tertiary, they cumulative capacity is 600 tons per hour. This holds true for the other types of equipment as well. Wet screening operations do not need to be included because the emissions from them are negligible.

Although Table A is simpler, the cumulative capacity limitations in Table B are provided as an alternative for some Permittees who may prefer it. They were developed to allow a more flexible option for stationary sources that may have a larger number of pieces of equipment than those listed in table A, but do not run all material over all equipment. The additional equipment is on site to allow for production of a variety of products. Emissions calculations underlying Table A conservatively assume that all material is processed over all pieces of equipment. (This is rarely, if ever, the case). Therefore, for example, the category of 3 crushers, 3 screens and 3 conveyors, and 1,000,000 tons, effectively assumes that 3,000,000 tons of material is crushed, screened and transferred. In actuality, a much lower total is crushed, screened or transferred in normal operations. A site designated according to Table A could have any sizes of equipment. For example, the 3/3/30 option could have 3-500 tph crushers and 3-600 tph screens. The limit on annual production conservatively limits the emissions. In the Table B ton-per-hour capacity option, one need to estimate the total number or times that material is processed. It has been concluded that the three capacity options are equivalent to the following Table A options: 750/750/7500 – 3/3/30, 1250/1250/12500 – 4/4/40, and 2500/2500/25000 – 5/5/50. At a 3/3/30 site, as a noted above, the material overall is likely only crushed 2 times, not 3. Therefore, 2 crushers, each crushing 50 percent of the material throughput could be added without increasing the emissions as calculated. An additional 4 screens each processing 20 percent of the material could be added without increasing the emissions as calculated. As the number of pieces of equipment goes up, so does the ability to add units that process subsets of the material without increasing emissions. The capacity, Table B, option allows for this activity without strictly dictating a process layout and design. The three capacity options are in the mid-range of Table A. This helps to insure that the appropriate non-process (fugitive) dust controls are implemented at capacity-based sites. To further insure this, as an additional step to be more conservative, the rows in Table B begin with the designation “small” for the 750/750/7500 option (the same as for 3/3/30), but “medium” for 1250/1250/12500, and “large” for 2500/2500/25000.

To demonstrate compliance with the annual production limit at each stationary source location, the Permittee is required to keep a daily record of the production, in tons, and monthly calculate and record a 12-month rolling sum (i.e., the current month plus the eleven preceding months). For those Permittees using rolling sums, the method for determining compliance during the first year if the stationary source has less than 12 months of operational data, the Permittee must use the formula

on Stationary Internal Combustion Engines Fuel Use Form (*NM-EN*). At its option, the Permittee may calculate and record monthly sums, in lieu of 12-month rolling sums, for stationary source location such that the annual production limit divided by 12 is not exceeded. These calculations and records must be made by the 15th of the following month.

To clarify, at a site where multiple spreads are operated under common ownership or control (including the Permittee's contractors or subcontractors) – or are supporting each other – the number of units (Table A) or the cumulative capacities (Table B) of the equipment types of all spreads must be compared to the limitations, likewise for the overall production.

3. A Small Stationary Source has lower (compared to Medium and Large) potential PM/PM_{2.5}/PM₁₀ emissions from process equipment and, thus, does not require as rigorous a program of fugitive dust control (i.e., non-process dust control) in order to stay below the 100 tons per year threshold. The calculations summarized in the attachment to this TSD indicate this. For this option, no emission reduction effect (or control efficiency “credit”) is included in the calculations associated with the empirical equation for estimating PM/PM_{2.5}/PM₁₀ emissions from unpaved roads.

Medium and Large Stationary Sources have progressively greater potential PM/PM_{2.5}/PM₁₀ emissions and, thus, require progressively more rigorous non-process dust control measures in order to stay below the 100 ton per year threshold. The non-process dust control requirements indicated in the general permit for a Medium Stationary Source were determined to be reflective of a 50 percent emissions reduction effect, and those for a Large Stationary Source, 75 percent. This is consistent with information contained in the EPA's guidance document entitled “Control of Open Fugitive Dust Sources” (EPA-450/3-88-008, September 1988). The calculations are summarized in the attachment to this TSD. [If a Permittee operates a site that fits in the small category, for example, yet typically performs the requirements of medium or large sites, it may be to its advantage to indicate the larger option and keep the associated records and perform the necessary actions, as lower emissions could then be reflected in its annual emission inventory.]

4. The requirement to generate an equipment inventory list must be done to qualify for this general permit. The list must be updated before any change is made at the stationary source. The list must be kept on site or the Permittee's central office for a period of 5 years and available for inspections by the MPCA staff. The Permittee may use Equipment Description and Notification Form NM-EQ as an equivalent for the equipment inventory list but you must include the an evaluation based a modification or change to the stationary source.

5. The requirement to uniquely label equipment is needed so that compliance determinations can be made. The system of uniquely identifying each piece of equipment will also assist the Permittee in making sure that all the proper notices and initial performance tests are made.

6. This requirement is needed in order to assure that the Permittee attains and maintains compliance with the NSPS, subp. 000. Even though the Permittee may already be in compliance with Subpart 000, having submitted the notices and done the testing, this information is needed at the time of general permit application (and ongoing if additional equipment is acquired or used) to

obtain an inventory of the Permittee's NSPS affected facilities. For individual permits, Permittees are required, however, to retain sufficient records (cross-referenced with unique identifying number) to demonstrate that a piece of equipment is not subject to Subpart OOO even though this information is not submitted. *Form NM-EQ* is provided in the application forms and to the Permittee for ongoing use, along with instructions, to facilitate the submittal and tracking of this information, both between the Permittee and the MPCA, as well as between the Permittee and any of its contractors or subcontractors.

7. The Permittee is required to notify the MPCA, using the *form NM-RE* found in the application forms and provided to the Permittee for ongoing use with the general permit, of each change in location of a stationary source, establishment of a new stationary source location, or change in a capacity/dust control option at an individual stationary source. [To clarify, the Permittee is required to submit *form(s) NM-RE* at the time of application and then ongoing. The Permittee can indicate an anticipated date range in the form. If the Permittee remains beyond the date range, then another *NM-RE form* needs to be submitted.]

2.3 Table A.4: Eligibility Requirements

Requirement or Condition:

1. **Emission Units Allowed** (As listed in the general permit)
2. **Emission Units Not Allowed** (As listed in the general permit)
3. **Other NSPS Affected Facilities Not Allowed** (Those subject to NSPS other than Subparts OOO, IIII and JJJJ are not allowed, with the exception of certain storage tanks)
4. **Other NESHAP Affected Facilities Not Allowed** (Those subject to NESHAP other than Subpart ZZZZ)
5. **Revised NSPS** (Certain part of Subpart OOO was revised)
6. **Material Allowed** (As indicated in the general permit)
7. **Control Equipment Allowed** (But requirements must be met without considering the effect of add-on controls or location of processes indoors with no credit for reduced emissions)
8. **Geographic Areas of Operation Allowed** (Anywhere in the state except for maintenance PM₁₀ maintenance areas)

Factual or Legal Basis

1.-5 Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100.
6. Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, Minn. R. 7007.0800, subp. 12, and Minn. R. 7007.1100.

Discussion:

1. The purpose of these eligibility requirements is to suitably scope the general permit to effectively and efficiently cover the majority (or at least a large portion) of the industry in the state with a single general permit. This needs to be done in a manner consistent with Minn. R. 7007.1100, subp. 1, which allows the MPCA to issue a general permit if “numerous and similar stationary sources are subject to substantially similar regulatory requirements.” Some companies in the nonmetallic mineral processing industry (aggregate processing, sand and gravel, crushed limestone, etc.) operate equipment at some of their sites which is not eligible for coverage under this general permit, and will need to obtain an individual state, registration, or part 70 permit for those stationary source locations. The emission units allowed under this general permit are the most common and widespread in the industry. [This portion of the general permit lists such sources of fugitive dust emissions as storage pile, roads, parking lots, loaders, etc. and is intended to include the actions needed to remove the material from the mine or pit and to transport and feed it into the nonmetallic mineral processing plant itself, as well as load out for off-site shipment.]

2. Crushers have the qualification indicated in “Material Allowed” because of a higher emission factor – lb PM (or PM₁₀) per ton of material processed – associated with fines crushing. The size cutoff for fines crushing is 3/16 inch based on the narrative found in Chapter 11.19.2-2 Crushed Stone Processing of AP-42 (Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources, updated August 2004). For crushers, as well as screens and transfer operations emission factors, AP-42, Chapter 11.19.2-2 was used.

Internal combustion engines refers to stationary internal combustion engines (as opposed to mobile sources, such as trucks and loaders, which are also allowed) which drive the process equipment or produce electricity needed for the site operations.

Air Separators are enclosed system; therefore no emissions are expected from these units.

This is a clarification, not an exhaustive list, to provide Permittees examples of equipment sometimes found in the industry which are not allowed to be operated at stationary sources covered by this general permit. They are not allowed because they are not as common, may be subject to other regulatory requirements, or may have higher emission rates which would be difficult to accommodate in a single general permit. In the application’s Qualifications Review Checklist, *form NM-00*, under question 2, the following clarification is provided: “Question 2 relates to the equipment to be covered under the nonmetallic mineral processing general permit. If you have equipment which is covered under an individual permit (part 70, state, or registration) or general permit for an asphalt plant, it is allowed as long as it follows the

nonmetallic mineral processing plant process, and is operated in accordance with its corresponding asphalt plant permit.” In mid-1995, it was decided in COOP (an MPCA Air Quality Division decision –making forum of supervisor and managers) that for purposes of defining a stationary source for permitting, asphalt plants would be a separate stationary source from the aggregate processing operations preceding it. (Because the situation is analogous for concrete mixing plants, the same consideration holds for them.)

3. Clarification to assure that emission units do not operate at stationary sources covered by this general permit if, in so doing, they are affected facilities under another NSPS besides 40 CFR pt. 60, subp. OOO, IIII and JJJJ (with the exception of certain tanks subject to a recordkeeping requirement under 40 CFR pt. 60, subp. Kb). The general permit only contains the requirements associated with Subpart OOO, IIII and JJJJ.

4. Clarification to assure that emission units will meet the requirements of NESHAP, 40 CFR pt. 63, subp. ZZZZ. The general permit do not have requirements for Subpart ZZZZ because if the affected facilities can meet the requirements of 40 CFR pt. 60, subp. IIII or JJJJ, as appropriate then the facilities would be in compliance with Subpart ZZZZ, for new and reconstructed engines.

5. On April 16, 2008, the EPA proposed to revise the NSPS for nonmetallic minerals processing plants. The revisions would reduce the emission limits for PM. The stack PM concentration would be reduced from 0.022 grams per dry standard cubic foot (gr/dscf) to 0.014 gr/dscf for new, modified, and reconstructed. These limit will not affected this general permit. The proposed opacity limits and performance test requirements will affect this general permit. EPA has proposed reduction for crushers from 15 percent to 12 percent; and 10 percent to 7 percent for other types of fugitive affected facilities. Also, proposed revisions requiring repeat performance testing once every five years for facilities that do not have ongoing monitoring requirements. After the rule is finalized, general permit Permittee affected by the rule must comply by the compliance date.

6. This condition is included in the general permit to make sure that the producing or processing of material at stationary sources covered by this general permit are appropriately characterized by the emission factors used as the basis for the emission calculations and limitations in this general permit. The exceptions are included to allow stationary sources to produce or process small amounts of material not listed and still qualify for coverage under the general permit. All general permit conditions must continue to be met (e.g., the Permittee, if contemplating doing so, must be sure that producing or processing de minimis quantities of particular material is not subject to another NSPS besides Subpart OOO). The Permittee is required to keep daily records as described in the general permit, along with appropriate emissions calculations which must include an explanation of the suitability of the emission factors used. The limit of one ton of PM per year per stationary source location was chosen because it parallels the level in Minn. R. 7007.1300, subp. 4, under insignificant activities, and because it can be accommodated within the overall limitations of the general permit.

The fines crushing exception is provided acknowledging that in certain situations Permittees might produce or process small amounts of material below the 3/16 inch size even though the production of manufactured sand is not the main purpose of the stationary source. Frequently jaw crushers are the primary crushers in aggregate processing plants which are often followed by cone crushers in secondary and/or tertiary crushing steps. Some cone crushers are able to size material below 3/16 inch. Because the emission factor for fines crushing is higher than that for primary through tertiary crushing, the limitation of 50,000 tons per years per stationary source location is needed. This level corresponds to emissions of 3 tons PM per year which is accommodated within the overall limitations contained in the general permit. [Though grinding mills are potentially affected facilities under Subpart OOO, they are not allowed under the general permit; however, there is some overlap in the definitions of “grinding mill” and “crusher” in Subpart OOO. To clarify, the appropriate distinction ought to be based on whether the piece of equipment in question is solely capable of processing material below the 3/16 inch size. A cone crusher, for example, typically can size material above and below the 3/16 inch size.]

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7. Add-on pollution control equipment and location of processes indoors, as described in the general permit is allowed, but all emission limits and other requirements in the general permit must be met without considering the effect of such controls. Subpart OOO, for example, contains additional limits and monitoring and recordkeeping requirements for such control equipment as baghouses and scrubbers. This condition was included in the general permit to allow those Permittees (regardless of their reasons) to install and operate add-on control without taking on the additional monitoring and recordkeeping burden if they are able to meet the requirements and limits of this general permit without considering the effect of such controls. Any reductions in emissions, however, will not be accounted for in the annual emissions inventory.

8. The Permittee may construct, modify, and operate stationary sources under this general permit, provided all conditions are met, anywhere in the state of Minnesota except areas designated maintenance for PM₁₀. Currently, the state of Minnesota is required to implement the federal rule for PM_{2.5} until the State can finalize its own rule. Even though the PM, PM_{2.5} and

PM₁₀ emissions from stationary sources are limited to under 100 tons per year by this general permit, stationary sources located in maintenance areas for PM₁₀ may be subject to other requirements, such as the need to perform refined dispersion modeling, or other conditions contained in a State Implementation Plan order, for instance.

1.4 Table A.4: Limits that Apply to NSPS Crushers

Requirement or Condition:

Opacity: less than 15 percent opacity

Factual or Legal Basis:

40 CFR § 60.672(c) and Minn. R. 7011.3350

Discussion:

The applicability of Subpart OOO is explained in the instructions to *form NM-EQ* found in the application package and provided to the Permittee for ongoing use with the general permit. Crushers not subject to NSPS are subject to the limits in Table A.6.

2.5 Table A.5: Limits that Apply to Other Equipment Subject to NSPS

Requirement or Condition:

Opacity: less than 10 percent opacity

Factual or Legal Basis:

40 CFR § 60.672(b) and Minn. R. 7011.3350

Comments:

The applicability of Subpart OOO is explained in the instructions to *form NM-EQ*. Equipment not subject to the NSPS are subject to the limits in Table A.6.

2.6 Table A.6: Limits that Apply to Equipment Not Subject to NSPS

Requirement or Condition:

Opacity:

- For equipment put in operation on or after July 9, 1969: less than 20 percent opacity.
- For equipment put in operation before July 9, 1969: less than 20 percent opacity except that a maximum of 60 percent opacity shall be permissible for four minutes in any 60-minute

period and 40 percent opacity shall be permissible for four additional minutes in any 60-minute period.

Factual or Legal Basis:

Minn. R. 7011.0715, subp. 1(B) and Minn. R. 7011.0710, subp. 1(B), respectively.

Discussion:

These are the opacity limits contained in the Minnesota industrial process equipment rule.

2.7 Table A.7: NSPS Notification and Testing Requirements for Equipment Newly Subject to NSPS (Subpart OOO) and Submittal Requirements for Replacements

Requirement or Condition:

- 1. Construction or Reconstruction**
- 2. Actual Initial Startup**
- 3. Initial Performance Testing**
- 4. Performance Test Notification**
- 5. Replacement**
- 6. Notification of Any Physical Change or Operational Change**

Factual or Legal Basis:

1. 40 CFR Section 60.7(a)(1) and Minn. R. 7019.0100
2. 40 CFR Section 60.7(a)(3) and Minn. R. 7019.0100
3. 40 CFR Sections 60.8(a), 60.675, 60.676, Minn. R. 7017.2015 and Minn. R. 7011.3350
4. 40 CFR Section 60.8(d), and Minn. R. 7017.2015
5. 40 CFR Sections 60.670(d), 60.676, and Minn. R. 7011.3350
6. 40 CFR Section 60.7(a) and Minn. R. 7019.0100

Discussion:

These are the standard NSPS notification and initial performance test requirements which are required. (The EPA has made revisions to Subpart OOO at the time of drafting this general permit. Among the possible changes could be the removal of some of the initial notifications for Subpart OOO affected facilities. If and when these changes are promulgated, the general permit will be revised to reflect the changes.) *Form NM-EQ*, included in the application package and provided to the Permittee for ongoing use with the general permit, is to be used for these notifications. A standardized test plan (*form NM-TP*) has been developed for use by the Permittee with this general permit.

Performance tests must be completed according to the standards outlined in 40 CFR pt. 60, subp. OOO and Minn. R. 7017.2000-2060. Pretest requirements include submittal of test notification and a complete test plan, scheduling of a pretest meeting, and receipt of a test plan approval from the MPCA. One complete test report (one hardcopy) shall be submitted within 45 days after the date of the test. A copy of the microfiche or CD report shall be submitted within 105 days after the date of the test.

The MPCA will accept performance test results for units that have been tested to show compliance with 40 CFR pt. 60 subp. OOO in another State provided that the testing met all stipulations of the standard and followed proper test methodology. The facility must provide documentation of the review and acceptance of the test results by another regulatory authority. Failure to provide such documentation will result in the MPCA requesting to review the test results and validate compliance status. If the facility is unable to supply previous test results, additional testing will be necessary. The MPCA retains the right to require performance testing at any given time.

2.8 Table A.8: Requirements and Limits that Apply to Stationary Internal Combustion Engines at Each Stationary Source

Requirement or Condition:

1. **Allowed Fuels:** Diesel fuel, natural gas, liquefied petroleum gas (LPG)/propane, biodiesel and gasoline, subject to the limitation described in the general permit. No other fuels shall be used.
2. **SO₂:** Not to exceed 0.5 lbs/mmBtu heat input based on a 3-hour rolling average.
3. **Opacity:** Not to exceed 20 percent opacity for more than 10 consecutive seconds once operating temperatures have been obtained.
4. **Fuel Supplier Certification:** The Permittee must obtain and maintain a fuel supplier certification for each shipment of diesel fuel that certified that the sulfur content less than 0.50 percent by weight.
5. **Sitting Conditions:** The Permittee must maintain the sitting conditions for the internal combustion engines and generators.

Factual or Legal Basis:

1. Title I Condition. Limit to avoid classification as major source and modification under 40 CFR § 52.21 and Minn. R. 7007.3000; limit to avoid major source classification under 40 CFR § 70.2 and Minn. R. 7007.0200; to ensure compliance with Minn. R. 7011.2300, subp. 2; Minn. Stat. § 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100
2. Minn. R. 7011.2300, subps. 1 and 2
3. Minn. R. 7007.1100; Minn. R. 7007.0800, subps. 2, 4 and 5

Discussion:

1. For each stationary source location covered by this general permit, the Permittee needs to monthly record the amount of each fuel used during the previous month and do the calculation on the Stationary Internal Combustion Engines Fuel Use *form NM-EN* in Appendix I by the 15th of the following month. The result must be less than 90 if the Permittee does the calculation on a 12-month rolling basis, or 90/12 on an individual monthly sum. For those Permittees doing rolling sums, the method of compliance demonstration during the first 12 months is as described above for the annual production limit. The Permittee may elect to make and record this calculation in a different format, but it must include the same information. As indicated on *NM-EN*, the Permittee may also elect to just sum fuel use itself, without the calculation, if only one fuel is used. This fuel use limitation keeps the PTE of NO_x, SO₂, CO and VOC's for a stationary source covered by this general permit under 90 tons per years. CO is the controlling pollutant for gasoline, and NO_x control for the others. The fuel limitation also ensures compliance with SO₂ standard in the state standard of performance for internal combustion engines. The Permittee is required to keep records of vendor certification for diesel fuel. Burning diesel fuel up to its limit at a stationary source is the worst case for PM emissions from combustion sources and was accounted for in the overall emissions calculations for PM included in the attachments to this TSD.

2. The sulfur and visible air contaminants limit in the state standard of performance for stationary internal combustion engines.

3. There were concerns raised about number of generators being installed and the ambient air impact due to relatively short stack height. The MPCA policy required that all facilities installing non-emergency reciprocating internal combustion engines (RICE) to complete the SCREEN3 Exercise for each RICE facility. As results of this policy, there are many sources cover under the general permit that will be applicable to this requirement; therefore the MPCA staff ran the model based on three different sitting conditions for the generators in order to meet the NAAQS. The MPCA used the different capacity allowed to operate simultaneously, the minimum stack height allowed and minimum distance between the engines and site boundaries. These conditions are noted in Appendix I of the general permits.

2.9 Table A.9: Requirements and Limits that Apply to Stationary Emergency Internal Combustion Engines at Each Stationary Source

Requirement or Condition:

1. **SO₂:** Not to exceed 0.5 lbs/mmBtu heat input based on a 3-hour rolling average.
2. **Opacity:** Not to exceed 20 percent opacity for more than 10 consecutive seconds once operating temperatures have been obtained.
3. **Fuel Type:** Natural gas/propane/diesel/biodiesel by design only
4. **Hours of Operation:** Maintain documentation on site that the engine is emergency generator based on design.
5. **Fuel Supplier Certification:** The Permittee must obtain and maintain a fuel supplier certification for each shipment of diesel fuel that certified that the sulfur content less than 0.50 percent by weight.

Factual or Legal Basis:

1. Minn. R. 7011.2300, subps. 1 and 2
2. Minn. R. 7007.1100; Minn. R. 7007.0800, subps. 2, 4 and 5

Discussion:

The emergency engine is by design qualifies for its PTE to be based on 500 hours per year. This fuel type and hours of operation keeps the PTE of PM, NO_x, SO₂, CO and VOC's for a stationary source covered by this general permit under 90 tpy. The fuel limitation also ensures compliance with SO₂ standard in the state standard of performance for internal combustion engines. The Permittee is required to keep records of vendor certification for diesel fuel only.

2.10 Table A.10: Limits and Requirements that Apply to Volatile Organic Liquid Storage Tanks (Must be Insignificant Activities) Which are Subject to 40 CFR pt. 60, subp. Kb

Requirement or Condition:

- 1. Tank size:** Any volatile organic liquid storage tank constructed, reconstructed, or modified after July 23, 1984, must have a design capacity less than 75m³ (19,815 gallons).
- 2. Records:** For each tank, keep records showing the dimension of the storage vessel and an analysis showing the capacity of the storage vessel. Retain records for the life of the tank.

Factual or Legal Basis:

1. Minn. Stat. Section 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100
2. 40 CFR Section 60.116(b) and 60.116b(a), and Minn. R. 7011.1520(C)

Discussion:

1. and 2. All Storage tanks at a stationary source covered by this general permit must be insignificant activities as defined in Minn. R. 7007.1300, subp. 2 and 3. Some such tanks, however, are subject to this recordkeeping requirement under 40 CFR pt. 60, subp. Kb. Larger and newer tanks are subject to more complicated requirements and are not as common in the nonmetallic mineral processing industry. For these reasons, they are not eligible for coverage under this general permit.

As a footnote to Section 2 of this TSD, it warrants mentioning that although the ambient air quality standards, and increment and visibility requirements are not specifically mentioned in the general permit, the general permit considers them by not allowing them to be covered by the permit shield.

2.11. Table A.11: Limits and Requirements that Apply to New and Existing Sand Heaters
Requirement or Condition:

1. **PM:** Variable depending on the air flow
2. **Opacity:** Not to exceed 20 percent opacity except for one-minute period per hour of not more than 60 percent opacity
3. **SO₂:** less than 2.0 lbs/mmBtu with a 3-hour basis
4. **Maximum Capacity of total heaters:** Limited to 10 mmBtu/hr
5. **Fuel Type:** Natural gas and propane are the only fuels allowed. These fuels are subject to the limitation described in the general permit.

Factual or Legal Basis:

1. Minn. R. 7011.0610, subp. 1, and 2
2. Minn. Stat. Section 116.07, subd. 4a, Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.1100

Discussion: These units are subject to MN standards. Since these units will be fired with natural gas and propane, there should be no significant PM, SO₂ or visible emissions from these units.

2.12. Table A.12: Limits and Requirements that Apply to Stationary Compression Ignition Internal Combustion Engines (40 CFR pt. 60, subp. IIII) for Engines with less than 30 liters per cylinder and less than or equal to 1500 HP that were constructed, modified, or reconstructed after July 11, 2005

Discussion: On July 11, 2006, EPA promulgated the final rule to address the emissions from stationary compression ignition internal combustion engines. This NSPS standard applies to new stationary sources of emissions, such as, sources whose construction, reconstruction, or modification. The standard limits PM, CO, NO_x and non-methane hydrocarbons (NMHC). Emissions of SO₂ will also be reduced through the use of lower sulfur fuel.

Engines whose construction, reconstruction, or modification commenced after July 11, 2005, are subject to the standards. Stationary engines that were manufactured prior to April 1, 2006, that are not fire pump engines are not subject to the rule, unless the engines were modified or reconstructed after July 11, 2005.

Emergency Stationary Internal Combustion Engine (ICE) as defined in the NSPS as an engine whose operation is limited to emergency situations and required testing and maintenance. Examples include stationary ICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or stationary ICE used to pump water in the case of fire or flood, etc. Stationary CI ICE used to supply power to an electric grid or that supply power as part of a financial arrangement with another entity are not considered to be emergency engines.

Some of the stationary sources cover under this general permit may be subject to the standards; therefore the requirements were included in the general permit.

2.13. Table A.13: Limits and Requirements that Apply to Stationary Spark Ignition Internal Combustion Engines (40 CFR pt. 60, subp. JJJJ) for Engines with less than or equal to 500 brake horsepower and Table A. 14: Limits and Requirements that Apply to Reciprocating Internal Combustion Engines (40 CFR pt. 63, subp. ZZZZ)

Discussion: On December 20, 2007, EPA issued a rule that will reduce emissions of criteria and air toxic pollutants from stationary internal combustion engines. These engines are used at facilities such as power plants and chemical and manufacturing plants to generate electricity and power pumps and compressors. They are also used in emergencies to produce electricity and pump water for flood and fire control. These engines can be used at stationary sources cover under this general permit.

The final standards are in two parts. The first part, NSPS which limit emissions of NO_x, CO, and VOC from new stationary spark ignition internal combustion engines. A new stationary spark ignition engine is one that is manufactured or ordered after June 12, 2006, and manufactured after July 1, 2007, for engines greater than or equal to 500 horsepower, and after July 1, 2008, for engines less than 500 horsepower. Stationary spark ignition engines that begin modification or reconstruction after June 12, 2006, subject to the rule.

The second part, known as technology-based air toxics standards or the NESHAP, which limit air toxics emissions from new and reconstructed stationary reciprocating internal combustion engines that either are located at smaller-emitting sources of air toxics emissions called areas sources, or that have a site rating of less than or equal to 500 horsepower and are located at larger emitting, or major sources of air toxics emissions.

Some of the stationary sources cover under this general permit may be subject to the standards; therefore the requirements were included in the general permit.

3. Application Content

A tailored permit application has been developed, as provided by Minn. R. 7007.1100, subp. 5, for the purpose of this general permit. The following Table is a summary of how the standard application forms were modified, removed, or replaced for the general permit application.

| FORM | COMMENTS |
|--|---|
| CP-01 Cover Page | Retained but simplified to show the pre-filled response (applying for a state general permit). On all the forms the AQ File No. is requested, if known along with the Company name. This is a slight change from the standard forms to reflect that the general permit may cover multiple stationary sources that the Permittee may have which qualify. <i>The form name and number was changed to NM-01, Permit Application Cover Page.</i> |
| CR-01 Certification | Retained. <i>Form number was changed to NM-03.</i> |
| CR-02 Hood Certification | Removed as not applicable to this general permit. |
| CR-03 Confidentiality Certification | Retained. <i>Form number was changed to NM-04.</i> |
| IA-01 Insignificant Activities | Retained with those not required and those required to be listed indicated on a single form with space available for the applicant to list those required to be listed. <i>Form number was changed to NM-05.</i> |
| GI-01 Facility Information | Retained with certain answers pre-filled. <i>Form number was changed to NM-02.</i> |
| GI-02 Process Flow Diagram | Removed as not necessary at time of application. The general permit may cover multiple stationary sources which frequently change. The Permittee is limited to a certain number of equipment, or is required to keep an up-to-date record (e.g. a site plan or process flow diagram), for each stationary source covered by the general permit as described in the general permit. |
| GI-03 Facility and Stack/Vent Diagram | Removed as not necessary. (See comment for GI-02) |
| GI-04 Stack/Vent Information | Removed as not necessary. (See comment for GI-02) |
| GI-05A Emission Unit Information | Removed as not applicable to this general permit. |
| GI-05B Emission Unit Information | Not used. Information needed for this general permit is obtained from the <i>Equipment Description and Notification form NM-EQ.</i> |
| GI-05C Tank Information | Removed as not applicable to this general permit. The only tanks allowed are those which are insignificant activities. |
| GI-05D Fugitive Emission Source Information | Removed as not necessary for this general permit. The types of sources of fugitive emissions are known for those stationary sources eligible for this general permit and are described among the eligibility requirements. Fugitive emissions control requirements are included in the general permit. |
| GI-07 Facility Emissions Summary EC series of Emission Calculation Forms | Removed as not necessary for issuance of this general permit |

| | |
|--|--|
| GI-09 Requirements Form | Removed as not needed for this general permit. The applicable requirements were identified during the development of the general permit and are indicated in the general permit. The <i>NM-00 Qualifications Review Checklist</i> from used for this general permit can be considered a kind of replacement for this form. The <i>NM-00 form</i> walks the applicant through a series of questions to determine eligibility for this general permit. The questions relate to conditions, requirements, and limits contained in the general permit. |
| CD-01 Compliance Plan | Removed because required information is included in the general permit |
| CD-02 Compliance Certification | Retained but slightly tailored for use with this general permit. <i>The form name and number was changed to NM-06.</i> |
| CD-03 Compliance Schedule | Removed as not applicable to this general permit. For application received with noncompliance issue, the application will be forwarded to the Air Quality Compliance and Enforcement Section to resolve the noncompliance prior to issuance of the general permit to the Permittee. |
| ME-01 Continuous Monitoring System Information | Removed as not applicable to this general permit. |
| MI-01 Building and Structure Information | Removed as not applicable to this general permit. |

4. Other Requirements Which Were Determined Not to Apply to this General Permit

- National Emission Standards for Hazardous Air Pollutants (NESHAP) for Source Categories

Certain NESHAPs for source categories may apply to stationary sources having a PTE greater than 10 tpy of any single HAP or 25 tpy of any combination of HAPs, as provided in 40 CFR pt. 63. If stationary sources trigger these thresholds, they may be subject to these requirements. In addition, some NESHAPs apply to stationary sources with PTE less than 10 or 25 tpy of HAPs.

The EPA has identified a list of stationary sources known to emit HAPs, that will be subject to Maximum Achievable Control Technology (MACT) standards in 40 CFR pt. 63. The identified source categories that affect this general permit include stationary internal combustion engines. The stationary sources covered in this general are not a major source of HAPs; therefore there are no HAP emissions limits included in this general permit. Due to the limits on fuel use associated with stationary internal combustion engines in the general permit, stationary sources covered by this general permit will not be subject to that NESHAP for major sources categories but is subject to the area source categories.

Other NESHAPs requirements are provided in 40 CFR pt. 61 and in Minn. R. 7011.9900-7011.9990. Stationary sources with processes and equipment subject to these requirements are not eligible for this general permit. Therefore, these standards are not contained in the application or general permit.

- Prevention of Accidental Releases

The prevention of actual releases program requirements are provided in 40 CFR pt. 68 and Section 112(r) of the Clean Air Act. The EPA promulgated the list of regulated substances and threshold quantities in the *Federal Register* on January 31, 1994, and the proposed risk management plan regulation on October 20, 1993. It was concluded that the nonmetallic mineral processing stationary sources eligible for coverage under this general permit do not produce, process, handle, store, or use the listed substances in the quantities listed. Therefore, these requirements do not apply and were not included in the application or general permit.

- Ambient Air Quality Standards

National Ambient Air Quality Standards (NAAQS) and increment and visibility requirements are provided in the Clean Air Act, Section 109 and 160-169 (B). Minnesota Ambient Air Quality Standards are provided in Minn. R. 7009.0010-7009.0080. Minnesota standards do not allow anyone to emit any pollutants in such a manner that ambient levels of the pollutant are higher than the maximum allowed level. The permit considers these requirements by not allowing the permit shield to cover these standards.

- Acid Rain Program

Acid rain program requirements are provided in the 1990 Clean Air Act Amendments (CAAA), Sections 401-416. These requirements are for power utilities with a generating capacity of more than 25 megawatts are not applicable to the stationary sources that are eligible to receive this general permit. Therefore, these requirements are not included in the application or general permit.

- Stratospheric Ozone Protection

Stratospheric ozone protection requirements are for phasing out ozone-depleting chemical as provided in the 1990 CAAA, Sections 601-618. These requirements are for manufacturing, selling, distributing, or using ozone depleting halogenated chemicals. These requirements are not applicable to the stationary source that are eligible to receive this general permit. Therefore, these requirements are not included in the application or general permit.

- Compliance Assurance Monitoring (CAM)

The CAM rule (40 CFR pt. 64) applies to facilities that operate control devices subject to federally enforceable regulations promulgated prior to 1990. This enhanced monitoring does apply to stationary sources eligible for this general permit. Therefore, they are not included in the application of the general permit

- Periodic Monitoring

In accordance with the Clean Air Act, it is the responsibility of the owner or operator of a facility to have sufficient knowledge of the facility to certify that the facility is in compliance with all applicable requirements.

In evaluating the monitoring included in the permit, the MPCA considered the following:

- The likelihood of violating the applicable requirements;
- Whether add-on controls are necessary to meet the emission limit;
- The variability of emissions over time;
- The type of monitoring, process, maintenance, or control equipment data already available for the emission unit;
- The technical and economic feasibility of possible periodic monitoring method, and
- The kind of monitoring found on similar units.

The MPCA staff considered all relevant factors and incorporated all requirements into the general permit.

- Solid Waste Combustion

Solid waste combustion requirements are provided in the 1990 CAAA, Section 129. These requirements are to be for municipal solid waste incinerations and incinerators of hospital, medical, and infectious waste and are not applicable to nonmetallic mineral processing stationary sources. Therefore, they are not included in the application of the general permit.

- Federal Ozone Measure for the Control of Emissions from Certain Sources

Federal ozone measures for the control of emissions from certain sources are provided in the 1990 CAAA. These requirements are to be for manufacturing, processing, distributing, or importing consumer or commercial products that emit VOC's and are not applicable to nonmetallic mineral processing stationary sources. Therefore, they are not included in the application or general permit.

- Tank Vessel Standards

Tank vessel requirements are provided in the 1990 CAAA, Section 183(f). These requirements are to be for stationary sources loading or unloading floating tank vessels and are not applicable to nonmetallic mineral processing stationary sources. Therefore, they are not included in the application or general permit.

5. Comments Received

Public Notice Period: October 28, 2008 through November 26, 2008
EPA 30-day Review Period: October 28, 2008, through November 26, 2008

Comments were received from Minnesota Asphalt Pavement Association during the public notice. The comments received were clarification changes which were incorporated into the draft/proposed permit and TSD (see attachment III). These changes do not warrant a re-notice of the draft/proposed permit or its supporting documents.

6. Conclusion

The MPCA has reasonable assurance that the draft Air Emission General Permit for Nonmetallic Mineral Processing, as described in this TSD, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

Staff Members on the Permit Team:

Marilyn Wegwart/Permits

Andy Place/Compliance

Bob Beresford/ Enforcement

Jim Kolar/Small Business

Mike Nelson/Small Business Ombudsman

Amrill Okonkwo/ Permits

Attachment I: Stationary Source Designation Matrix

Attachment II: Emission Calculations and Summaries

Attachment III: Comments and Responses (Paper Copy Only)

Appendix II: Emission Calculations and Summaries for the Air Emission General Permit for Nonmetallic Mineral Processing

Permit Conditions for the Nonmetallic Mineral Processing Operations

Minimum Moisture Content of Materials Processed is 1.5 percent;
Minimum Surface Material Content for Road is 1.5 percent;
Process Limit on Fine Crushing and Fines Separation is 50,000 tpy;
Stationary Source Designation and Capacity Limits are defined in Tables 1 and 2 in Attachment I; and
Air Separators must be an enclosed system.

Permit Conditions on the Generators and Heaters

Limit of 10 mmBtu/hr total installed capacity for the heaters;
Heaters are limited to burning natural gas and propane;
Limit total capacity engine of 1500 hp;
Limit of 500 hours per year of operation for emergency generators;
Limit on sulfur content in diesel is 0.49 percent, or 0.5lb/mmBtu for generators subject to the state rules only;
Generator fuels are limited to diesel, diesel/biodiesel mixture, biodiesel, gasoline, natural gas and propane;
The total amount of each fuel allowed to be burned by the generators is shown in Table 15 and 16; and
Permit conditions regarding location of engines with respect to property boundaries are shown in Table 19.

ATTACHMENT I

NONMETALLIC MINERAL PROCESSING GENERAL PERMIT, STATIONARY SOURCE DESIGNATION MATRIX

TABLE 1 - Annual Production versus Numbers of Units

| Table 1. Stationary Source Category Annual Production (tons) - Up to: | | | | | | | | | | | | | |
|---|-----------------|---------|---------------------|---------|--|-----------|-----------|-------------|-------------|-------------|-------------|-------------|-------------|
| Category | Number of Units | | | | Stationary Source Annual Production (tons) | | | | | | | | |
| | Crushers | Screens | Transfer Operations | 500,000 | 1,000,000 | 1,250,000 | 1,500,000 | 1,750,000 | 2,000,000 | 2,250,000 | 2,500,000 | 2,750,000 | 3,000,000 |
| A | 1 | 1 | 10 | small | small | small | small | medium | medium | medium | medium | medium | large |
| B | 2 | 2 | 20 | small | small | small | small | medium | medium | medium | large | large | large |
| C | 3 | 3 | 30 | small | small | small | medium | medium | medium | large | large | large | not allowed |
| D | 4 | 4 | 40 | small | small | small | medium | medium | large | large | not allowed | not allowed | not allowed |
| E | 5 | 5 | 50 | small | small | medium | medium | large | large | not allowed | not allowed | not allowed | not allowed |
| F | 6 | 6 | 60 | small | small | medium | medium | large | not allowed | not allowed | not allowed | not allowed | not allowed |
| G | 7 | 7 | 70 | small | small | medium | large | not allowed | not allowed | not allowed | not allowed | not allowed | not allowed |
| H | 8 | 8 | 80 | medium | medium | medium | large | not allowed | not allowed | not allowed | not allowed | not allowed | not allowed |

TABLE 2 - Annual Production versus In-Place Capacity

| Table 2. Stationary Source Category Annual Production (tons) Versus In-Place Capacity | | | | | | | | | | | | | |
|---|------------------------------------|---------|---------------------|---------|---|-----------|-----------|-----------|-----------|-------------|-------------|-------------|-------------|
| Category | Cumulative In-Place Capacity (tph) | | | | Stationary Source Annual Production (tons) Up to: | | | | | | | | |
| | Crushers | Screens | Transfer Operations | 500,000 | 1,000,000 | 1,250,000 | 1,500,000 | 1,750,000 | 2,000,000 | 2,250,000 | 2,500,000 | 2,750,000 | 3,000,000 |
| I | 750 | 750 | 7500 | small | small | small | medium | medium | medium | large | large | large | not allowed |
| II | 1250 | 1250 | 12500 | medium | medium | medium | medium | medium | large | large | not allowed | not allowed | not allowed |
| III | 2500 | 2500 | 25000 | large | large | large | large | large | large | not allowed | not allowed | not allowed | not allowed |

Stationary sources, using Table 2, with cumulative capacities above 2,500 tons per hour (tph) for crushers or for screens or above 25,000 tph for transfer operations are not allowed under this general permit.

If Table 2 is used for determining the stationary source designation, in order to demonstrate compliance with the cumulative capacity limitation, the Permittee must keep an up-to-date record (e.g., a site plan or process flow diagram) showing the cumulative in-place capacity of each equipment type at the stationary source. This record does not need to identify specific unique identifying numbers for pieces of equipment. It may be generic in nature, but must be sufficiently detailed to determine the cumulative capacity of all equipment types at the stationary source.

Summary Emission Rates of PM, PM-2.5 and PM-10 for Sand and Gravel General Permits

| Table 3. PM Emission Rates (tons per year) for Sand and Gravel Operations | | | | | | | | | | | | |
|---|----------|--|-----------|----------|----------|----------|------------|-----------|------------|----------|------------|------------|
| Operation | Category | Stationary Source Annual Production (tons) | | | | | | | | | | |
| | | 500000 | 750000 | 1000000 | 1250000 | 1500000 | 1750000 | 2000000 | 2250000 | 2500000 | 2750000 | 3000000 |
| | A | | | | | | | | | | | |
| S&G Equipment | | 1.7125 | 2.25 | 2.7875 | 3.4125 | 3.8625 | 4.4 | 4.9375 | 5.475 | 6.0125 | 6.55 | 7.0875 |
| Fugitive Roads | | 9.031981 | 13.547972 | 18.06396 | 22.57995 | 27.09594 | 31.6119338 | 36.127924 | 40.6439149 | 45.15991 | 49.6758959 | 54.1918865 |
| Fugitive Piles | | 2.180595 | 3.2708919 | 4.361189 | 5.451487 | 6.541784 | 7.6320811 | 8.7223784 | 9.8126757 | 10.90297 | 11.9932703 | 13.0835676 |
| Combustion | | 6.376588 | 6.3765878 | 6.376588 | 6.376588 | 6.376588 | 6.37658783 | 6.3765878 | 6.37658783 | 6.376588 | 6.37658783 | 6.37658783 |
| SUM | | 19.30166 | 25.445451 | 31.58924 | 37.82053 | 43.87681 | 50.0206027 | 56.164391 | 62.3081784 | 68.45197 | 74.5957541 | 80.7395419 |
| | | | | | | | | | | | | |
| | B | | | | | | | | | | | |
| S&G Equipment | | 2.7875 | 3.8625 | 4.9375 | 6.1875 | 7.0875 | 8.1625 | 9.2375 | 10.3125 | 11.3875 | 12.4625 | 13.5375 |
| Fugitive Roads | | 9.031981 | 13.547972 | 18.06396 | 22.57995 | 27.09594 | 31.6119338 | 36.127924 | 40.6439149 | 45.15991 | 49.6758959 | 54.1918865 |
| Fugitive Piles | | 2.180595 | 3.2708919 | 4.361189 | 5.451487 | 6.541784 | 7.6320811 | 8.7223784 | 9.8126757 | 10.90297 | 11.9932703 | 13.0835676 |
| Combustion | | 6.376588 | 6.3765878 | 6.376588 | 6.376588 | 6.376588 | 6.37658783 | 6.3765878 | 6.37658783 | 6.376588 | 6.37658783 | 6.37658783 |
| SUM | | 20.37666 | 27.057951 | 33.73924 | 40.59553 | 47.10181 | 53.7831027 | 60.464391 | 67.1456784 | 73.82697 | 80.5082541 | 87.1895419 |
| | | | | | | | | | | | | |
| | C | | | | | | | | | | | |
| S&G Equipment | | 3.8625 | 4.8405 | 6.4725 | 8.325 | 9.675 | 11.2875 | 12.9 | 14.5125 | 16.125 | 17.7375 | 19.35 |
| Fugitive Roads | | 9.031981 | 13.547972 | 18.06396 | 22.57995 | 27.09594 | 31.6119338 | 36.127924 | 40.6439149 | 45.15991 | 49.6758959 | 54.1918865 |
| Fugitive Piles | | 2.180595 | 3.2708919 | 4.361189 | 5.451487 | 6.541784 | 7.6320811 | 8.7223784 | 9.8126757 | 10.90297 | 11.9932703 | 13.0835676 |
| Combustion | | 6.376588 | 6.3765878 | 6.376588 | 6.376588 | 6.376588 | 6.37658783 | 6.3765878 | 6.37658783 | 6.376588 | 6.37658783 | 6.37658783 |
| SUM | | 21.45166 | 28.035951 | 35.27424 | 42.73303 | 49.68931 | 56.9081027 | 64.126891 | 71.3456784 | 78.56447 | 85.7832541 | 93.0020419 |
| | | | | | | | | | | | | |
| | D | | | | | | | | | | | |
| S&G Equipment | | 4.9375 | 7.0875 | 9.2375 | 11.7375 | 13.5375 | 15.6875 | 17.8375 | 19.9875 | 22.1375 | 24.2875 | 26.4375 |
| Fugitive Roads | | 9.031981 | 13.547972 | 18.06396 | 22.57995 | 27.09594 | 31.6119338 | 36.127924 | 40.6439149 | 45.15991 | 49.6758959 | 54.1918865 |
| Fugitive Piles | | 2.180595 | 3.2708919 | 4.361189 | 5.451487 | 6.541784 | 7.6320811 | 8.7223784 | 9.8126757 | 10.90297 | 11.9932703 | 13.0835676 |
| Combustion | | 6.376588 | 6.3765878 | 6.376588 | 6.376588 | 6.376588 | 6.37658783 | 6.3765878 | 6.37658783 | 6.376588 | 6.37658783 | 6.37658783 |
| SUM | | 22.52666 | 30.282951 | 38.03924 | 46.14553 | 53.55181 | 61.3081027 | 69.064391 | 76.8206784 | 84.57697 | 92.3332541 | 100.089542 |
| | | | | | | | | | | | | |
| | E | | | | | | | | | | | |
| S&G Equipment | | 6.0125 | 6.3375 | 8.2375 | 10.575 | 12.0375 | 13.9375 | 15.8375 | 17.7375 | 19.6375 | 21.5375 | 23.4375 |

Technical Support Document
Nonmetallic Mineral Processing General Permit
October 2008

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|----------------|---|----------|-----------|----------|----------|----------|------------|-----------|------------|----------|------------|------------|
| Fugitive Roads | | 9.031981 | 13.547972 | 18.06396 | 22.57995 | 27.09594 | 31.6119338 | 36.127924 | 40.6439149 | 45.15991 | 49.6758959 | 54.1918865 |
| Fugitive Piles | | 2.180595 | 3.2708919 | 4.361189 | 5.451487 | 6.541784 | 7.6320811 | 8.7223784 | 9.8126757 | 10.90297 | 11.9932703 | 13.0835676 |
| Combustion | | 6.376588 | 6.3765878 | 6.376588 | 6.376588 | 6.376588 | 6.37658783 | 6.3765878 | 6.37658783 | 6.376588 | 6.37658783 | 6.37658783 |
| SUM | | 23.60166 | 29.532951 | 37.03924 | 44.98303 | 52.05181 | 59.5581027 | 67.064391 | 74.5706784 | 82.07697 | 89.5832541 | 97.0895419 |
| | | | | | | | | | | | | |
| | F | | | | | | | | | | | |
| S&G Equipment | | 7.0875 | 7.4775 | 9.7575 | 12.5625 | 14.3175 | 16.5975 | 18.8775 | 21.1575 | 23.4375 | 25.7175 | 27.9975 |
| Fugitive Roads | | 9.031981 | 13.547972 | 18.06396 | 22.57995 | 27.09594 | 31.6119338 | 36.127924 | 40.6439149 | 45.15991 | 49.6758959 | 54.1918865 |
| Fugitive Piles | | 2.180595 | 3.2708919 | 4.361189 | 5.451487 | 6.541784 | 7.6320811 | 8.7223784 | 9.8126757 | 10.90297 | 11.9932703 | 13.0835676 |
| Combustion | | 6.376588 | 6.3765878 | 6.376588 | 6.376588 | 6.376588 | 6.37658783 | 6.3765878 | 6.37658783 | 6.376588 | 6.37658783 | 6.37658783 |
| SUM | | 24.67666 | 30.672951 | 38.55924 | 46.97053 | 54.33181 | 62.2181027 | 70.104391 | 77.9906784 | 85.87697 | 93.7632541 | 101.649542 |
| | | | | | | | | | | | | |
| | G | | | | | | | | | | | |
| S&G Equipment | | 8.1625 | 11.925 | 15.6875 | 20.0625 | 23.2125 | 26.975 | 30.7375 | 34.5 | 38.2625 | 42.025 | 45.7875 |
| Fugitive Roads | | 9.031981 | 13.547972 | 18.06396 | 22.57995 | 27.09594 | 31.6119338 | 36.127924 | 40.6439149 | 45.15991 | 49.6758959 | 54.1918865 |
| Fugitive Piles | | 2.180595 | 3.2708919 | 4.361189 | 5.451487 | 6.541784 | 7.6320811 | 8.7223784 | 9.8126757 | 10.90297 | 11.9932703 | 13.0835676 |
| Combustion | | 6.376588 | 6.3765878 | 6.376588 | 6.376588 | 6.376588 | 6.37658783 | 6.3765878 | 6.37658783 | 6.376588 | 6.37658783 | 6.37658783 |
| SUM | | 25.75166 | 35.120451 | 44.48924 | 54.47053 | 63.22681 | 72.5956027 | 81.964391 | 91.3331784 | 100.702 | 110.070754 | 119.439542 |
| | | | | | | | | | | | | |
| | H | | | | | | | | | | | |
| S&G Equipment | | 9.2375 | 13.5375 | 17.8375 | 22.8375 | 26.4375 | 30.7375 | 35.0375 | 39.3375 | 43.6375 | 47.9375 | 52.2375 |
| Fugitive Roads | | 9.031981 | 13.547972 | 18.06396 | 22.57995 | 27.09594 | 31.6119338 | 36.127924 | 40.6439149 | 45.15991 | 49.6758959 | 54.1918865 |
| Fugitive Piles | | 2.180595 | 3.2708919 | 4.361189 | 5.451487 | 6.541784 | 7.6320811 | 8.7223784 | 9.8126757 | 10.90297 | 11.9932703 | 13.0835676 |
| Combustion | | 6.376588 | 6.3765878 | 6.376588 | 6.376588 | 6.376588 | 6.37658783 | 6.3765878 | 6.37658783 | 6.376588 | 6.37658783 | 6.37658783 |
| SUM | | 26.82666 | 36.732951 | 46.63924 | 57.24553 | 66.45181 | 76.3581027 | 86.264391 | 96.1706784 | 106.077 | 115.983254 | 125.889542 |

Table 4. PM-10/PM-2.5 Emission Rates (tons per year) for Sand and Gravel Operations

| Operation | Category | Stationary Source Annual Production (tons) | | | | | | | | | | |
|----------------|----------|--|-----------|----------|----------|----------|------------|-----------|------------|----------|------------|------------|
| | | 500000 | 750000 | 1000000 | 1250000 | 1500000 | 1750000 | 2000000 | 2250000 | 2500000 | 2750000 | 3000000 |
| | A | | | | | | | | | | | |
| S&G Equipment | | 3.07 | 3.29 | 3.51 | 3.73 | 3.95 | 4.17 | 4.39 | 4.61 | 4.83 | 5.05 | 5.27 |
| Fugitive Roads | | 3.472056 | 5.2080844 | 6.944113 | 8.680141 | 10.41617 | 12.1521969 | 13.888225 | 15.6242532 | 17.36028 | 19.0963094 | 20.8323376 |
| Fugitive Piles | | 1.031362 | 1.5470435 | 2.062725 | 2.578406 | 3.094087 | 3.60976809 | 4.1254492 | 4.6411304 | 5.156812 | 5.67249271 | 6.18817387 |
| Combustion | | 6.376588 | 6.3765878 | 6.376588 | 6.376588 | 6.376588 | 6.37658783 | 6.3765878 | 6.37658783 | 6.376588 | 6.37658783 | 6.37658783 |

Technical Support Document
Nonmetallic Mineral Processing General Permit
October 2008

| | | | | | | | | | | | | |
|----------------|---|----------|-----------|----------|----------|----------|------------|-----------|------------|----------|------------|------------|
| SUM | | 13.95001 | 16.421716 | 18.89342 | 21.36513 | 23.83684 | 26.3085528 | 28.780262 | 31.2519714 | 33.72368 | 36.19539 | 38.6670992 |
| | B | | | | | | | | | | | |
| S&G Equipment | | 3.51 | 3.95 | 4.39 | 4.83 | 5.27 | 5.71 | 6.15 | 6.59 | 7.03 | 7.47 | 7.91 |
| Fugitive Roads | | 3.472056 | 5.2080844 | 6.944113 | 8.680141 | 10.41617 | 12.1521969 | 13.888225 | 15.6242532 | 17.36028 | 19.0963094 | 20.8323376 |
| Fugitive Piles | | 1.031362 | 1.5470435 | 2.062725 | 2.578406 | 3.094087 | 3.60976809 | 4.1254492 | 4.6411304 | 5.156812 | 5.67249271 | 6.18817387 |
| Combustion | | 6.376588 | 6.3765878 | 6.376588 | 6.376588 | 6.376588 | 6.37658783 | 6.3765878 | 6.37658783 | 6.376588 | 6.37658783 | 6.37658783 |
| SUM | | 14.39001 | 17.081716 | 19.77342 | 22.46513 | 25.15684 | 27.8485528 | 30.540262 | 33.2319714 | 35.92368 | 38.61539 | 41.3070992 |
| | C | | | | | | | | | | | |
| S&G Equipment | | 3.95 | 4.61 | 5.27 | 5.93 | 6.59 | 7.25 | 7.91 | 8.57 | 9.23 | 9.89 | 10.55 |
| Fugitive Roads | | 3.472056 | 5.2080844 | 6.944113 | 8.680141 | 10.41617 | 12.1521969 | 13.888225 | 15.6242532 | 17.36028 | 19.0963094 | 20.8323376 |
| Fugitive Piles | | 1.031362 | 1.5470435 | 2.062725 | 2.578406 | 3.094087 | 3.60976809 | 4.1254492 | 4.6411304 | 5.156812 | 5.67249271 | 6.18817387 |
| Combustion | | 6.376588 | 6.3765878 | 6.376588 | 6.376588 | 6.376588 | 6.37658783 | 6.3765878 | 6.37658783 | 6.376588 | 6.37658783 | 6.37658783 |
| SUM | | 14.83001 | 17.741716 | 20.65342 | 23.56513 | 26.47684 | 29.3885528 | 32.300262 | 35.2119714 | 38.12368 | 41.03539 | 43.9470992 |
| | D | | | | | | | | | | | |
| S&G Equipment | | 4.39 | 5.27 | 6.15 | 7.03 | 7.91 | 8.79 | 9.67 | 10.55 | 11.43 | 12.31 | 13.19 |
| Fugitive Roads | | 3.472056 | 5.2080844 | 6.944113 | 8.680141 | 10.41617 | 12.1521969 | 13.888225 | 15.6242532 | 17.36028 | 19.0963094 | 20.8323376 |
| Fugitive Piles | | 1.031362 | 1.5470435 | 2.062725 | 2.578406 | 3.094087 | 3.60976809 | 4.1254492 | 4.6411304 | 5.156812 | 5.67249271 | 6.18817387 |
| Combustion | | 6.376588 | 6.3765878 | 6.376588 | 6.376588 | 6.376588 | 6.37658783 | 6.3765878 | 6.37658783 | 6.376588 | 6.37658783 | 6.37658783 |
| SUM | | 15.27001 | 18.401716 | 21.53342 | 24.66513 | 27.79684 | 30.9285528 | 34.060262 | 37.1919714 | 40.32368 | 43.45539 | 46.5870992 |
| | E | | | | | | | | | | | |
| S&G Equipment | | 4.83 | 5.93 | 7.03 | 8.13 | 9.23 | 10.33 | 11.43 | 12.53 | 13.63 | 14.73 | 15.83 |
| Fugitive Roads | | 3.472056 | 5.2080844 | 6.944113 | 8.680141 | 10.41617 | 12.1521969 | 13.888225 | 15.6242532 | 17.36028 | 19.0963094 | 20.8323376 |
| Fugitive Piles | | 1.031362 | 1.5470435 | 2.062725 | 2.578406 | 3.094087 | 3.60976809 | 4.1254492 | 4.6411304 | 5.156812 | 5.67249271 | 6.18817387 |
| Combustion | | 6.376588 | 6.3765878 | 6.376588 | 6.376588 | 6.376588 | 6.37658783 | 6.3765878 | 6.37658783 | 6.376588 | 6.37658783 | 6.37658783 |
| SUM | | 15.71001 | 19.061716 | 22.41342 | 25.76513 | 29.11684 | 32.4685528 | 35.820262 | 39.1719714 | 42.52368 | 45.87539 | 49.2270992 |
| | F | | | | | | | | | | | |
| S&G Equipment | | 5.27 | 6.59 | 7.91 | 9.23 | 10.55 | 11.87 | 13.19 | 14.51 | 15.83 | 17.15 | 18.47 |
| Fugitive Roads | | 3.472056 | 5.2080844 | 6.944113 | 8.680141 | 10.41617 | 12.1521969 | 13.888225 | 15.6242532 | 17.36028 | 19.0963094 | 20.8323376 |
| Fugitive Piles | | 1.031362 | 1.5470435 | 2.062725 | 2.578406 | 3.094087 | 3.60976809 | 4.1254492 | 4.6411304 | 5.156812 | 5.67249271 | 6.18817387 |
| Combustion | | 6.376588 | 6.3765878 | 6.376588 | 6.376588 | 6.376588 | 6.37658783 | 6.3765878 | 6.37658783 | 6.376588 | 6.37658783 | 6.37658783 |

Technical Support Document
Nonmetallic Mineral Processing General Permit
October 2008

| | | | | | | | | | | | | |
|----------------|---|----------|-----------|----------|----------|----------|------------|-----------|------------|----------|------------|------------|
| SUM | | 16.15001 | 19.721716 | 23.29342 | 26.86513 | 30.43684 | 34.0085528 | 37.580262 | 41.1519714 | 44.72368 | 48.29539 | 51.8670992 |
| | | | | | | | | | | | | |
| | G | | | | | | | | | | | |
| S&G Equipment | | 5.71 | 7.25 | 8.79 | 10.33 | 11.87 | 13.41 | 14.95 | 16.49 | 18.03 | 19.57 | 21.11 |
| Fugitive Roads | | 3.472056 | 5.2080844 | 6.944113 | 8.680141 | 10.41617 | 12.1521969 | 13.888225 | 15.6242532 | 17.36028 | 19.0963094 | 20.8323376 |
| Fugitive Piles | | 1.031362 | 1.5470435 | 2.062725 | 2.578406 | 3.094087 | 3.60976809 | 4.1254492 | 4.6411304 | 5.156812 | 5.67249271 | 6.18817387 |
| Combustion | | 6.376588 | 6.3765878 | 6.376588 | 6.376588 | 6.376588 | 6.37658783 | 6.3765878 | 6.37658783 | 6.376588 | 6.37658783 | 6.37658783 |
| SUM | | 16.59001 | 20.381716 | 24.17342 | 27.96513 | 31.75684 | 35.5485528 | 39.340262 | 43.1319714 | 46.92368 | 50.71539 | 54.5070992 |
| | | | | | | | | | | | | |
| | H | | | | | | | | | | | |
| S&G Equipment | | 6.15 | 7.91 | 9.67 | 11.43 | 13.19 | 14.95 | 16.71 | 18.47 | 20.23 | 21.99 | 23.75 |
| Fugitive Roads | | 3.472056 | 5.2080844 | 6.944113 | 8.680141 | 10.41617 | 12.1521969 | 13.888225 | 15.6242532 | 17.36028 | 19.0963094 | 20.8323376 |
| Fugitive Piles | | 1.031362 | 1.5470435 | 2.062725 | 2.578406 | 3.094087 | 3.60976809 | 4.1254492 | 4.6411304 | 5.156812 | 5.67249271 | 6.18817387 |
| Combustion | | 6.376588 | 6.3765878 | 6.376588 | 6.376588 | 6.376588 | 6.37658783 | 6.3765878 | 6.37658783 | 6.376588 | 6.37658783 | 6.37658783 |
| SUM | | 17.03001 | 21.041716 | 25.05342 | 29.06513 | 33.07684 | 37.0885528 | 41.100262 | 45.1119714 | 49.12368 | 53.13539 | 57.1470992 |

Process Equipment Emission Calculations

| Table 5. Total Particulate Matter Emission Rates (tons per year) for Sand and Gravel Operations | | | | | | | | | | | | |
|--|-------------------------------|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Emission Unit | Emission Factor (1) lb/Ton | Stationary Source Annual Production (tons) | | | | | | | | | | |
| | | 5.00E+05 | 7.50E+05 | 1.00E+06 | 1.25E+06 | 1.50E+06 | 1.75E+06 | 2.00E+06 | 2.25E+06 | 2.50E+06 | 2.75E+06 | 3.00E+06 |
| Primary Crushing | 0.0007 | 0.175 | 0.2625 | 0.35 | 0.525 | 0.525 | 0.6125 | 0.7 | 0.7875 | 0.875 | 0.9625 | 1.05 |
| Screening (2) | 0.0022 | 0.55 | 0.825 | 1.1 | 1.375 | 1.65 | 1.925 | 2.2 | 2.475 | 2.75 | 3.025 | 3.3 |
| Transfer Operations (2) | 0.00014 | 0.035 | 0.0525 | 0.07 | 0.0875 | 0.105 | 0.1225 | 0.14 | 0.1575 | 0.175 | 0.1925 | 0.21 |

Notes:

(1) AP-42 Manual Table 11.19.2-2

(2) Controlled

| Table 6. PM-10/PM-2.5 Emission Rates (tons per year) for Sand and Gravel Operations | | | | | | | | | | | | |
|--|-------------------------------|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Emission Unit | Emission Factor (1) lb/Ton | Stationary Source Annual Production (tons) | | | | | | | | | | |
| | | 5.00E+05 | 7.50E+05 | 1.00E+06 | 1.25E+06 | 1.50E+06 | 1.75E+06 | 2.00E+06 | 2.25E+06 | 2.50E+06 | 2.75E+06 | 3.00E+06 |
| Primary Crushing | 0.00056 | 0.14 | 0.21 | 0.28 | 0.35 | 0.42 | 0.49 | 0.56 | 0.63 | 0.7 | 0.77 | 0.84 |
| Screening (2) | 0.00074 | 0.185 | 0.2775 | 0.37 | 0.4625 | 0.555 | 0.6475 | 0.74 | 0.8325 | 0.925 | 1.0175 | 1.11 |
| Transfer Operations (2) | 0.000046 | 0.0115 | 0.01725 | 0.023 | 0.02875 | 0.0345 | 0.04025 | 0.046 | 0.05175 | 0.0575 | 0.06325 | 0.069 |

Notes:

(1) AP-42 Manual Table 11.19.2-2

(2) Controlled

| Table 7. PM, PM-2.5 and PM-10 Emission Rates for Fines Crushing and Fines Air Separation at a Process Limit of 50,000 tpy | | | |
|--|----------------------------|--|--|
| Pollutant | Production Limit 50000 TPY | Emission Factor, fines crushing (1) lb/Ton | Emission Factor, fines air separators (1) lb/Ton |
| PM (2) | 0.6375 | 0.003 | 0.0225 |
| PM-2.5/PM-10 (2) | 2.63 | 0.0012 | 0.104 |

(1) AP-42 Manual Table 11.19.2-2

(2) Controlled

| Table 8. PM Emission Rates (tons per year) for Sand and Gravel Operations | | | | | | | | | | | | |
|--|-----|--|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Operation | No. | Stationary Source Annual Production (tons) | | | | | | | | | | |
| | | 500000 | 750000 | 1000000 | 1250000 | 1500000 | 1750000 | 2000000 | 2250000 | 2500000 | 2750000 | 3000000 |
| Crushers | 1 | 0.175 | 0.2625 | 0.35 | 0.525 | 0.525 | 0.6125 | 0.7 | 0.7875 | 0.875 | 0.9625 | 1.05 |
| Screens | 1 | 0.55 | 0.825 | 1.1 | 1.375 | 1.65 | 1.925 | 2.2 | 2.475 | 2.75 | 3.025 | 3.3 |
| Transfer Operations | 10 | 0.35 | 0.525 | 0.7 | 0.875 | 1.05 | 1.225 | 1.4 | 1.575 | 1.75 | 1.925 | 2.1 |
| Fines Crushing & Separation | | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 |
| SUM | | 1.7125 | 2.25 | 2.7875 | 3.4125 | 3.8625 | 4.4 | 4.9375 | 5.475 | 6.0125 | 6.55 | 7.0875 |
| Crushers | 2 | 0.35 | 0.525 | 0.7 | 1.05 | 1.05 | 1.225 | 1.4 | 1.575 | 1.75 | 1.925 | 2.1 |
| Screens | 2 | 1.1 | 1.65 | 2.2 | 2.75 | 3.3 | 3.85 | 4.4 | 4.95 | 5.5 | 6.05 | 6.6 |
| Transfer Operations | 20 | 0.7 | 1.05 | 1.4 | 1.75 | 2.1 | 2.45 | 2.8 | 3.15 | 3.5 | 3.85 | 4.2 |

Technical Support Document
Nonmetallic Mineral Processing General Permit
October 2008

| | | | | | | | | | | | | |
|--------------------------------------|----|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|
| Fines Crushing & Separation | | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 |
| SUM | | 2.7875 | 3.8625 | 4.9375 | 6.1875 | 7.0875 | 8.1625 | 9.2375 | 10.3125 | 11.3875 | 12.4625 | 13.5375 |
| | | | | | | | | | | | | |
| Crushers | 3 | 0.525 | 0.7875 | 1.05 | 1.575 | 1.575 | 1.8375 | 2.1 | 2.3625 | 2.625 | 2.8875 | 3.15 |
| Screens | 3 | 1.65 | 2.475 | 3.3 | 4.125 | 4.95 | 5.775 | 6.6 | 7.425 | 8.25 | 9.075 | 9.9 |
| Transfer Operation s | 30 | 1.05 | 1.575 | 2.1 | 2.625 | 3.15 | 3.675 | 4.2 | 4.725 | 5.25 | 5.775 | 6.3 |
| Fines Crushing & Separation | | 0.6375 | 0.003 | 0.0225 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUM | | 3.8625 | 4.8405 | 6.4725 | 8.325 | 9.675 | 11.2875 | 12.9 | 14.5125 | 16.125 | 17.7375 | 19.35 |
| | | | | | | | | | | | | |
| Crushers | 4 | 0.7 | 1.05 | 1.4 | 2.1 | 2.1 | 2.45 | 2.8 | 3.15 | 3.5 | 3.85 | 4.2 |
| Screens | 4 | 2.2 | 3.3 | 4.4 | 5.5 | 6.6 | 7.7 | 8.8 | 9.9 | 11 | 12.1 | 13.2 |
| Transfer Operation s | 40 | 1.4 | 2.1 | 2.8 | 3.5 | 4.2 | 4.9 | 5.6 | 6.3 | 7 | 7.7 | 8.4 |
| Fines Crushing & Separation | | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 |
| SUM | | 4.9375 | 7.0875 | 9.2375 | 11.7375 | 13.5375 | 15.6875 | 17.8375 | 19.9875 | 22.1375 | 24.2875 | 26.4375 |
| | | | | | | | | | | | | |
| Crushers | 5 | 0.875 | 1.3125 | 1.75 | 2.625 | 2.625 | 3.0625 | 3.5 | 3.9375 | 4.375 | 4.8125 | 5.25 |
| Screens | 5 | 2.75 | 4.125 | 5.5 | 6.875 | 8.25 | 9.625 | 11 | 12.375 | 13.75 | 15.125 | 16.5 |
| Transfer Operation s | 50 | 1.75 | 0.2625 | 0.35 | 0.4375 | 0.525 | 0.6125 | 0.7 | 0.7875 | 0.875 | 0.9625 | 1.05 |
| Fines Crushing & Separation | | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 |
| SUM | | 6.0125 | 6.3375 | 8.2375 | 10.575 | 12.0375 | 13.9375 | 15.8375 | 17.7375 | 19.6375 | 21.5375 | 23.4375 |

Technical Support Document
Nonmetallic Mineral Processing General Permit
October 2008

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|--------------------------------------|----|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Crushers | 6 | 1.05 | 1.575 | 2.1 | 3.15 | 3.15 | 3.675 | 4.2 | 4.725 | 5.25 | 5.775 | 6.3 |
| Screens | 6 | 3.3 | 4.95 | 6.6 | 8.25 | 9.9 | 11.55 | 13.2 | 14.85 | 16.5 | 18.15 | 19.8 |
| Transfer Operation s | 60 | 2.1 | 0.315 | 0.42 | 0.525 | 0.63 | 0.735 | 0.84 | 0.945 | 1.05 | 1.155 | 1.26 |
| Fines Crushing & Separation | | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 |
| SUM | | 7.0875 | 7.4775 | 9.7575 | 12.5625 | 14.3175 | 16.5975 | 18.8775 | 21.1575 | 23.4375 | 25.7175 | 27.9975 |
| Crushers | 7 | 1.225 | 1.8375 | 2.45 | 3.675 | 3.675 | 4.2875 | 4.9 | 5.5125 | 6.125 | 6.7375 | 7.35 |
| Screens | 7 | 3.85 | 5.775 | 7.7 | 9.625 | 11.55 | 13.475 | 15.4 | 17.325 | 19.25 | 21.175 | 23.1 |
| Transfer Operation s | 70 | 2.45 | 3.675 | 4.9 | 6.125 | 7.35 | 8.575 | 9.8 | 11.025 | 12.25 | 13.475 | 14.7 |
| Fines Crushing & Separation | | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 |
| SUM | | 8.1625 | 11.925 | 15.6875 | 20.0625 | 23.2125 | 26.975 | 30.7375 | 34.5 | 38.2625 | 42.025 | 45.7875 |
| Crushers | 8 | 1.4 | 2.1 | 2.8 | 4.2 | 4.2 | 4.9 | 5.6 | 6.3 | 7 | 7.7 | 8.4 |
| Screens | 8 | 4.4 | 6.6 | 8.8 | 11 | 13.2 | 15.4 | 17.6 | 19.8 | 22 | 24.2 | 26.4 |
| Transfer Operation s | 80 | 2.8 | 4.2 | 5.6 | 7 | 8.4 | 9.8 | 11.2 | 12.6 | 14 | 15.4 | 16.8 |
| Fines Crushing & Separation | | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 | 0.6375 |
| SUM | | 9.2375 | 13.5375 | 17.8375 | 22.8375 | 26.4375 | 30.7375 | 35.0375 | 39.3375 | 43.6375 | 47.9375 | 52.2375 |

| Table 9. PM-10/PM-2.5 Emission Rates (tons per year) for Sand and Gravel Operations | | |
|---|-----|--|
| Operation | No. | Stationary Source Annual Production (tons) |

Technical Support Document
Nonmetallic Mineral Processing General Permit
October 2008

| | | 500000 | 750000 | 1000000 | 1250000 | 1500000 | 1750000 | 2000000 | 2250000 | 2500000 | 2750000 | 3000000 |
|--------------------------------------|----|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Crushers | 1 | 0.14 | 0.21 | 0.28 | 0.35 | 0.42 | 0.49 | 0.56 | 0.63 | 0.7 | 0.77 | 0.84 |
| Screens | 1 | 0.185 | 0.2775 | 0.37 | 0.4625 | 0.555 | 0.6475 | 0.74 | 0.8325 | 0.925 | 1.0175 | 1.11 |
| Transfer Operation s | 10 | 0.115 | 0.1725 | 0.23 | 0.2875 | 0.345 | 0.4025 | 0.46 | 0.5175 | 0.575 | 0.6325 | 0.69 |
| Fines Crushing & Separation | | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 |
| SUM | | 3.07 | 3.29 | 3.51 | 3.73 | 3.95 | 4.17 | 4.39 | 4.61 | 4.83 | 5.05 | 5.27 |
| | | | | | | | | | | | | |
| Crushers | 2 | 0.28 | 0.42 | 0.56 | 0.7 | 0.84 | 0.98 | 1.12 | 1.26 | 1.4 | 1.54 | 1.68 |
| Screens | 2 | 0.37 | 0.555 | 0.74 | 0.925 | 1.11 | 1.295 | 1.48 | 1.665 | 1.85 | 2.035 | 2.22 |
| Transfer Operation s | 20 | 0.23 | 0.345 | 0.46 | 0.575 | 0.69 | 0.805 | 0.92 | 1.035 | 1.15 | 1.265 | 1.38 |
| Fines Crushing & Separation | | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 |
| SUM | | 3.51 | 3.95 | 4.39 | 4.83 | 5.27 | 5.71 | 6.15 | 6.59 | 7.03 | 7.47 | 7.91 |
| | | | | | | | | | | | | |
| Crushers | 3 | 0.42 | 0.63 | 0.84 | 1.05 | 1.26 | 1.47 | 1.68 | 1.89 | 2.1 | 2.31 | 2.52 |
| Screens | 3 | 0.555 | 0.8325 | 1.11 | 1.3875 | 1.665 | 1.9425 | 2.22 | 2.4975 | 2.775 | 3.0525 | 3.33 |
| Transfer Operation s | 30 | 0.345 | 0.5175 | 0.69 | 0.8625 | 1.035 | 1.2075 | 1.38 | 1.5525 | 1.725 | 1.8975 | 2.07 |
| Fines Crushing & Separation | | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 |
| SUM | | 3.95 | 4.61 | 5.27 | 5.93 | 6.59 | 7.25 | 7.91 | 8.57 | 9.23 | 9.89 | 10.55 |
| | | | | | | | | | | | | |
| Crushers | 4 | 0.56 | 0.84 | 1.12 | 1.4 | 1.68 | 1.96 | 2.24 | 2.52 | 2.8 | 3.08 | 3.36 |
| Screens | 4 | 0.74 | 1.11 | 1.48 | 1.85 | 2.22 | 2.59 | 2.96 | 3.33 | 3.7 | 4.07 | 4.44 |
| Transfer Operation | 40 | 0.46 | 0.69 | 0.92 | 1.15 | 1.38 | 1.61 | 1.84 | 2.07 | 2.3 | 2.53 | 2.76 |

Technical Support Document
Nonmetallic Mineral Processing General Permit
October 2008

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|--------------------------------------|----|-------|--------|------|--------|-------|--------|-------|--------|-------|--------|-------|
| s | | | | | | | | | | | | |
| Fines Crushing & Separation | | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 |
| SUM | | 4.39 | 5.27 | 6.15 | 7.03 | 7.91 | 8.79 | 9.67 | 10.55 | 11.43 | 12.31 | 13.19 |
| | | | | | | | | | | | | |
| Crushers | 5 | 0.7 | 1.05 | 1.4 | 1.75 | 2.1 | 2.45 | 2.8 | 3.15 | 3.5 | 3.85 | 4.2 |
| Screens | 5 | 0.925 | 1.3875 | 1.85 | 2.3125 | 2.775 | 3.2375 | 3.7 | 4.1625 | 4.625 | 5.0875 | 5.55 |
| Transfer Operation s | 50 | 0.575 | 0.8625 | 1.15 | 1.4375 | 1.725 | 2.0125 | 2.3 | 2.5875 | 2.875 | 3.1625 | 3.45 |
| Fines Crushing & Separation | | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 |
| SUM | | 4.83 | 5.93 | 7.03 | 8.13 | 9.23 | 10.33 | 11.43 | 12.53 | 13.63 | 14.73 | 15.83 |
| | | | | | | | | | | | | |
| Crushers | 6 | 0.84 | 1.26 | 1.68 | 2.1 | 2.52 | 2.94 | 3.36 | 3.78 | 4.2 | 4.62 | 5.04 |
| Screens | 6 | 1.11 | 1.665 | 2.22 | 2.775 | 3.33 | 3.885 | 4.44 | 4.995 | 5.55 | 6.105 | 6.66 |
| Transfer Operation s | 60 | 0.69 | 1.035 | 1.38 | 1.725 | 2.07 | 2.415 | 2.76 | 3.105 | 3.45 | 3.795 | 4.14 |
| Fines Crushing & Separation | | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 |
| SUM | | 5.27 | 6.59 | 7.91 | 9.23 | 10.55 | 11.87 | 13.19 | 14.51 | 15.83 | 17.15 | 18.47 |
| | | | | | | | | | | | | |
| Crushers | 7 | 0.98 | 1.47 | 1.96 | 2.45 | 2.94 | 3.43 | 3.92 | 4.41 | 4.9 | 5.39 | 5.88 |
| Screens | 7 | 1.295 | 1.9425 | 2.59 | 3.2375 | 3.885 | 4.5325 | 5.18 | 5.8275 | 6.475 | 7.1225 | 7.77 |
| Transfer Operation s | 70 | 0.805 | 1.2075 | 1.61 | 2.0125 | 2.415 | 2.8175 | 3.22 | 3.6225 | 4.025 | 4.4275 | 4.83 |
| Fines Crushing & | | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 |

Technical Support Document
Nonmetallic Mineral Processing General Permit
October 2008

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|--------------------------------------|----|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| Separation | | | | | | | | | | | | |
| SUM | | 5.71 | 7.25 | 8.79 | 10.33 | 11.87 | 13.41 | 14.95 | 16.49 | 18.03 | 19.57 | 21.11 |
| | | | | | | | | | | | | |
| Crushers | 8 | 1.12 | 1.68 | 2.24 | 2.8 | 3.36 | 3.92 | 4.48 | 5.04 | 5.6 | 6.16 | 6.72 |
| Screens | 8 | 1.48 | 2.22 | 2.96 | 3.7 | 4.44 | 5.18 | 5.92 | 6.66 | 7.4 | 8.14 | 8.88 |
| Transfer Operations | 80 | 0.92 | 1.38 | 1.84 | 2.3 | 2.76 | 3.22 | 3.68 | 4.14 | 4.6 | 5.06 | 5.52 |
| Fines Crushing & Separation | | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 |
| SUM | | 6.15 | 7.91 | 9.67 | 11.43 | 13.19 | 14.95 | 16.71 | 18.47 | 20.23 | 21.99 | 23.75 |

Fugitive Emission Calculations

Unpaved Roads, based on AP-42 Chapter

13.2.2

E = Emission Factor, lb/VMT , based on equation (1b)

VMT = vehicle miles

traveled

$E = \{ \{ [k(s/12)^a][(S/30)^d]/[(M/0.5)^c] \} - C \}$, lb/VMT

Eext = $E \cdot (365 - P / 365)$ lb/VMT = Emission Factor extrapolated for natural mitigation, lb/VMT , based on equations (1b) and (2)

| Parameter | PM | PM-10/PM-2.5 | Notes |
|--|--------------|--------------|--------------------|
| Silt, s, % | 6 | 6 | Table 13.2.2.-3 |
| Mean vehicle speed, S (mph) | 10 | 10 | Table 13.2.2.-3 |
| Empirical constant, k, lb/VMT | 6 | 1.8 | Table 13.2.2.-2 |
| Empirical constant, a, dimensionless | 1 | 1 | Table 13.2.2.-2 |
| Empirical constant, c, dimensionless | 0.3 | 0.2 | Table 13.2.2.-2 |
| Empirical constant, d, dimensionless | 0.3 | 0.5 | Table 13.2.2.-2 |
| No. of days/yr with precipitation of at least .254 mm, P | 110 | 110 | |
| Surface material moisture content % | 1.5 | 1.5 | |
| Emission Factor for exhaust, brake and tire wear | 0.00047 | 0.00047 | Table 13.2.2.-4 |
| E, lb/VMT | 1.55137 6 | 0.416647 | |
| Ext, lb/VMT | 1.08383 8 | 0.291082 | natural mitigation |
| VMT/load | 0.5 | 0.5 | |
| lb PM/load | 0.54191 9 | 0.208323 | |
| Ton/load | 15 | 15 | |
| lb pollutant/ton | 0.03612 8 | 0.013888 | |

Table 10. Emission Calculations, tons per year, for unpaved roads

| Pollutant | Stationary Source Annual Production (tons) | | | | | | | | | | |
|--------------|--|--------------|--------------|----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | 500000 | 750000 | 1000000 | 1250000 | 1500000 | 1750000 | 2000000 | 2250000 | 2500000 | 2750000 | 3000000 |
| PM | 9.031981 1 | 13.5479 7 | 18.0639 6 | 22.579952 7 | 27.0959 4 | 31.6119 3 | 36.1279 2 | 40.6439 1 | 45.1599 1 | 49.6759 | 54.1918 9 |
| PM-2.5/PM-10 | 3.472056 3 | 5.20808 4 | 6.94411 3 | 8.6801406 5 | 10.4161 7 | 12.1522 | 13.8882 3 | 15.6242 5 | 17.3602 8 | 19.0963 1 | 20.8323 4 |

Piles, based on AP-42 Chapter 13.2.4

E = Emission Factor, lb/ton, based on equation

$$E = k(0.0032)\{[(u/5)^{1.3}]/[(M/2)^{1.4}]\}$$

| Parameter | PM | PM-10 /PM-2.5 |
|--------------------------------------|----------------|---------------|
| Empirical constant, k, dimensionless | 0.74 | 0.35 |
| Average wind speed, U, mph | 10 | 10 |
| Moisture content, M, % | 1.5 | 1.5 |
| E, lb/ton | 0.0087223 8 | 0.00412 5 |

Table 11. Emission Calculations, tons per year, for piles

| Pollutant | Stationary Source Annual Production (tons) | | | | | | | | | | |
|-----------|--|--------------|--------------|-----------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | 500000 | 750000 | 1000000 | 1250000 | 1500000 | 1750000 | 2000000 | 2250000 | 2500000 | 2750000 | 3000000 |
| PM | 2.180594 6 | 3.27089 2 | 4.36118 9 | 5.4514865 | 6.54178 4 | 7.63208 1 | 8.72237 8 | 9.81267 6 | 10.9029 7 | 11.9932 7 | 13.0835 7 |

Technical Support Document
Nonmetallic Mineral Processing General Permit
October 2008

| | | | | | | | | | | | |
|--------------|---------------|--------------|--------------|----------------|--------------|--------------|--------------|---------|--------------|--------------|--------------|
| PM-2.5/PM-10 | 1.031362 3 | 1.54704 3 | 2.06272 5 | 2.5784057 8 | 3.09408 7 | 3.60976 8 | 4.12544 9 | 4.64113 | 5.15681 2 | 5.67249 3 | 6.18817 4 |
|--------------|---------------|--------------|--------------|----------------|--------------|--------------|--------------|---------|--------------|--------------|--------------|

Summary of Emissions from Combustion

| Table 12. Combustion Gases from Engines and Heaters - Worst Case Scenario | | | | | | |
|--|----------------|-------------|---------------|-------|-------|-------|
| Operation | Pollutant, TPY | | | | | |
| | PM | PM2.5/PM-10 | SOx | NOx | VOC | CO |
| Engines | 6.32 | 6.32 | 10.20 | 84.0 | 53.74 | 90.0 |
| Heaters | 0.50 | 0.50 | 0.025 | 6.70 | 0.024 | 0.23 |
| SUM | 6.38 | 6.38 | 10.20658 5 | 90.70 | 53.76 | 90.23 |

Emissions from Internal Combustion Engines /Generators

Table 13 Emission Rates and Allowable Fuels for Engines

| Fuel and Heat Content | Parameter | Pollutant | | | | | |
|---|--------------------------------|-----------|-----------|-----------|-----------|----------|-----------|
| | | PM | PM-10(2) | SO2 (3) | NOx | VOC | CO |
| Diesel, Heat content = 140000BTU/gal | Emission factor (lb/Mmbtu) (1) | 0.31 | 0.31 | 0.5 | 4.41 | 0.36 | 0.95 |
| | Emission rate, tons/year | 6.33 | 6.33 | 10.20 | 90 | 7.35 | 19.39 |
| | Allowable heat input MMBTU/yr | 40816.33 | 40816.323 | 40816.323 | 40816.33 | 40816.33 | 40816.33 |
| | Allowable fuel, gal/yr | 291545.20 | 291545.20 | 291545.20 | 291545.19 | 291545.2 | 291545.20 |
| | Multiplier | | | | 0.0003087 | | |
| Biodiesel 20%, Heat content = 127259BTU/gal | Emission factor (lb/Mmbtu) (1) | 0.3 | 0.3 | 0.5 | 4.45 | 0.36 | 0.9 |
| | Emission rate, tons/year | 6.067416 | 6.067416 | 10.11236 | 90 | 7.280899 | 18.20 |
| | Allowable heat input MMBTU/yr | 40449.44 | 40449.44 | 40449.44 | 40449.44 | 40449.44 | 40449.44 |
| | Allowable fuel, gal/yr | 317851.3 | 317851.3 | 317851.3 | 317851.3 | 317851.3 | 317851.30 |
| | Multiplier | | | | 0.0002832 | | |

| | | | | | | | |
|--|-----------------------------------|------------|-----------|-----------------|-----------|----------|-----------|
| Gasoline, Heat content = 135279.2 BTU/gal | Emission factor (lb/Mmbtu) (1) | 0.1 | 0.1 | 0.084 | 1.63 | 3.03 | 62.7 |
| | Emission rate, tons/year | 0.1435405 | 0.1435405 | 0.12057402 | 2.3397102 | 4.349277 | 90 |
| | Allowable heat input MMBTU/yr | 2870.81 | 2870.81 | 2870.81 | 2870.81 | 2870.81 | 2870.81 |
| | Allowable fuel, gal/yr | 21221.4 | 21221.4 | 21221.4 | 21221.4 | 21221.4 | 21221.40 |
| | Multiplier | | | | | | 0.0042 |
| Propane, Heat content = 91500 BTU/gal | Emission factor (lb/gal) (1) | 0.005 | 0.005 | 0.00035 | 0.139 | 0.083 | 0.129 |
| | Emission rate, tons/year | 3.23741008 | 3.2374101 | 0.22661870 5 | 90 | 53.74101 | 83.53 |
| | Allowable heat input MMBTU/yr | 118489.21 | 118489.21 | 118489.21 | 118489.21 | 118489.2 | 118489.21 |
| | Allowable fuel, gal/yr | 1294964.03 | 1294964 | 1294964.03 | 1294964 | 1294964 | 1294964 |
| | Multiplier | | | | 0.0000695 | | |
| Natural gas, Heat content = 1020 BTU/cf | Emission factor (lb/cf) (1) | 1.00E-05 | 1.00E-05 | 0.0000006 | 0.0034 | 8.29E-05 | 0.00043 |
| | Emission rate, tons/year | 0.26470588 | 0.2647059 | 0.01588235 3 | 90 | 2.194412 | 11.38 |
| | Allowable heat input MMBTU/yr | 54000 | 54000 | 54000 | 54000.00 | 54000 | 54000 |

| | | | | | | | |
|--|-----------------------|------------|----------|------------|-----------|----------|----------|
| | Allowable fuel, cf/yr | 52941176.5 | 52941177 | 52941176.5 | 52941176 | 52941177 | 52941177 |
| | Multiplier | | | | 0.0000017 | | |

(1) AP-42 Factors and Material Safety Data Sheets

(2) All particulate is assumed to be $\leq 1\mu\text{m}$ in size

(3)) Assumes SO₂ emission limit of 0.5 lb/MMBTU

1 hp = 2546.7 BTU/hr output = 0.7457 KW

Fuel consumption varies, a typical value is 7 gal/hr of diesel per 100 kw output at 140000BTU/gal =

Fuel Consumption for a 500 hp engine = 3653930 BTU/hr = 3.65393 MMBTU/hr

Fuel Consumption for a total capacity of 1500 hp engine = 10.96179 MMBTU/hr

Assume gasoline has the same efficiency

Table 14. Emission Rates from Generators - Combination Gasoline and Diesel/Biodiesel

| Pollutant | Heat Input, MMBTU/hr | Gasoline | | | Diesel / Biodiesel | | |
|-----------|----------------------|----------------------------|----------------------|---------------------|----------------------------|----------------------|---------------------|
| | | Emission factor (lb/Mmbtu) | Emission rate, lb/hr | Emission rate g/sec | Emission factor (lb/Mmbtu) | Emission rate, lb/hr | Emission rate g/sec |
| PM-10 | 3.65393 | 0.1 | 0.365393 | 0.046080117 | 0.3100 | 1.13 | 0.14 |
| SOX | 3.65393 | 0.084 | 0.3069301 | 0.038707298 | 0.5000 | 1.83 | 0.236 |
| NOX | 3.65393 | 1.63 | 5.9559059 | 0.751105911 | 4.4500 | 16.30 | 2.05 |
| CO | 3.65393 | 62.7 | 229.10141 | 28.8922335 | 0.9500 | 3.47 | 0.44 |
| PM-10 | 10.96179 | 0.1 | 1.096179 | 0.138240352 | 0.3100 | 3.40 | 0.43 |
| SOX | 10.96179 | 0.084 | 0.9207904 | 0.116121895 | 0.5000 | 5.48 | 0.69 |
| NOX | 10.96179 | 1.63 | 17.867718 | 2.253317732 | 4.4500 | 48.78 | 6.15 |
| CO | 10.96179 | 62.7 | 687.30423 | 86.6767005 | 0.9500 | 10.41 | 1.31 |

| Table 15. Annual Allowance of Fuels for Emergency Generators | | | Condition: only one fuel type used at the site | |
|--|------------------|--------------------|--|--------------|
| Fuel | Heat Content (1) | Heat Content Units | Allowable Use | Units |
| Diesel | 140000 | BTU/gal | 291545 | gallons/year |
| Diesel and Up to 20% Biodiesel | 127259 | BTU/gal | 317851 | gallons/year |
| Natural Gas | 1020 | BTU/cf | 52941176 | scf/yr |
| Propane | 91500 | BTU/gal | 1294964 | gallons/year |
| Gasoline | 135279 | BTU/gal | 21221.395 | gallons/year |

(1) Based on AP-42 data, Material Safety Data Sheets and National Biodiesel Board Website

| Table 16. Annual Allowance of Fuels for Emergency Generators | | | Condition: more than one fuel allowed per site | |
|--|---|------------|--|----------|
| Fuel Type | Amount Burned in Previous 12-Month Period at Stationary Source Location | Units | Multiplying Factor | Subtotal |
| Diesel | | Gallons | x 3.09 / 10,000 | |
| Diesel and Up to 20% Biodiesel | | Gallons | x 2.83 / 10,000 | |
| Natural Gas | | Cubic feet | x 1.7 / 1,000,000 | |
| Propane | | Gallons | x 6.95 / 100,000 | |
| Gasoline | | Gallons | x 4.24 / 1,000 | |
| Calculation Total | (Sum subtotals) | | Must not exceed 90 | |

As noted the part 70 permit threshold for all pollutants is 100 tons per year and no scaling factor is needed. The multiplying factor equals the emission factor of the controlling pollutant divided by 2000 pounds per ton. If a combination of fuels are used, calculation is required by Table 16. or *form MN-EN*, which leads to a very conservative limit.

| Table 17. SCREEN3 Model Inputs (1) | | |
|--|-------------|------------|
| | Engine Size | |
| Parameter | 500 hp | 1500 hp |
| flow rate, acfm | 7571 | 22713 |
| diameter, ft | 1.3 | 2.25181363 |
| area, sq. ft | 5.309304 | 15.93 |
| velocity ft/min | 1425.9873 | 1425.80038 |
| velocity, m/sec | 7.2440154 | 7.24306591 |
| diameter, meter | 0.39624 | 0.68635279 |
| height, ft | 14 | 14 |
| height, meters | 4.2672 | 4.2672 |
| temperature, F | 825 | 825 |
| temperature, C | 440.55556 | 440.55556 |
| temperature, K | 713.55556 | 713.55556 |
| (1) Instructions in MPCA form EC-03. No nearby building option | | |

| Table 18. Ambient Air Impact Levels and Distances | | | | | | | | |
|---|---------------------------------------|---------------------------------|-------------------------------------|---|---|--------------------------|---|---------------------------------------|
| Pollutant and Averaging Time | Maximum Uncontrolled Emissions, lb/hr | Pollution Control Efficiency, % | Maximum Controlled Emissions, lb/hr | Maximum Controlled Emissions, grams/sec | 1-hour Ambient Air Impact at 1 gm/sec, microgm/m ³ | Averaging Scaling Factor | Ambient Air Impact for stated Averaging Time microgm/m ³ | Target Levels, microgm/m ³ |
| PM10, 24 hr | 3.3981549 | 0 | 3.3981549 | 0.42854509 | 114 | 0.4 | 19.541656 | 150 |
| SO2, 3 hr | 5.480895 | 0 | 5.480895 | 0.691201758 | 114 | 0.9 | 70.9173 | 1300 |
| SO2, 24 hr | 5.480895 | 0 | 5.480895 | 0.691201758 | 114 | 0.4 | 31.5188 | 365 |
| NOx, 1 hr | 48.779966 | 0 | 48.779966 | 6.151695649 | 114 | 1 | 701.2933 | 1130 |
| NOx, 24 hr | 48.779966 | 0 | 48.779966 | 6.151695649 | 114 | 0.4 | 280.51732 | 282 |
| CO, 1 hr | 687.30423 | 0 | 687.30423 | 86.6767005 | 114 | 1 | 9881.1439 | 40000 |
| CO, 8 hr | 687.30423 | 0 | 687.30423 | 86.6767005 | 114 | 0.7 | 6916.8007 | 10000 |
| PM10, 24 hr | 1.1327183 | 0 | 1.1327183 | 0.142848363 | 343 | 0.4 | 19.598795 | 150 |

Technical Support Document
Nonmetallic Mineral Processing General Permit
October 2008

| | | | | | | | | |
|-------------|-----------|---|-----------|-------------|-----|-----|-----------|-------|
| SO2, 3 hr | 1.826965 | 0 | 1.826965 | 0.230400586 | 343 | 0.9 | 71.124661 | 1300 |
| SO2, 24 hr | 1.826965 | 0 | 1.826965 | 0.230400586 | 343 | 0.4 | 31.61096 | 365 |
| NOx, 1 hr | 16.259989 | 0 | 16.259989 | 2.050565216 | 343 | 1 | 703.34387 | 1130 |
| NOx, 24 hr | 16.259989 | 0 | 16.259989 | 2.050565216 | 343 | 0.4 | 281.33755 | 282 |
| CO, 1 hr | 229.10141 | 0 | 229.10141 | 28.8922335 | 343 | 1 | 9910.0361 | 40000 |
| CO, 8 hr | 229.10141 | 0 | 229.10141 | 28.8922335 | 343 | 0.7 | 6937.0253 | 10000 |
| PM10, 24 hr | 2.2654366 | 0 | 2.2654366 | 0.285696727 | 171 | 0.4 | 19.541656 | 150 |
| SO2, 3 hr | 3.65393 | 0 | 3.65393 | 0.460801172 | 171 | 0.9 | 70.9173 | 1300 |
| SO2, 24 hr | 3.65393 | 0 | 3.65393 | 0.460801172 | 171 | 0.4 | 31.5188 | 365 |
| NOx, 1 hr | 32.519977 | 0 | 32.519977 | 4.101130433 | 171 | 1 | 701.2933 | 1130 |
| NOx, 24 hr | 32.519977 | 0 | 32.519977 | 4.101130433 | 171 | 0.4 | 280.51732 | 282 |
| CO, 1 hr | 458.20282 | 0 | 458.20282 | 57.784467 | 171 | 1 | 9881.1439 | 40000 |
| CO, 8 hr | 458.20282 | 0 | 458.20282 | 57.784467 | 171 | 0.7 | 6916.8007 | 10000 |
| PM10, 24 hr | 1.6990775 | 0 | 1.6990775 | 0.214272545 | 229 | 0.4 | 19.627365 | 150 |
| SO2, 3 hr | 2.7404475 | 0 | 2.7404475 | 0.345600879 | 229 | 0.9 | 71.228341 | 1300 |
| SO2, 24 hr | 2.7404475 | 0 | 2.7404475 | 0.345600879 | 229 | 0.4 | 31.657041 | 365 |
| NOx, 1 hr | 24.389983 | 0 | 24.389983 | 3.075847825 | 229 | 1 | 704.36915 | 1130 |
| NOx, 24 hr | 24.389983 | 0 | 24.389983 | 3.075847825 | 229 | 0.4 | 281.74766 | 282 |
| CO, 1 hr | 343.65212 | 0 | 343.65212 | 43.33835025 | 229 | 1 | 9924.4822 | 40000 |
| CO, 8 hr | 343.65212 | 0 | 343.65212 | 43.33835025 | 229 | 0.7 | 6947.1375 | 10000 |

Table 19. Generator Sitting Conditions

| Capacity Allowed to Operate Simultaneously, hp | Minimum stack height, ft | Minimum distance between engines and site boundaries , yards |
|--|--------------------------|--|
| 500 | 14 | 20 |
| 750 | 14 | 45 |
| 1000 | 14 | 70 |

Emissions from Heaters

Technical Support Document
Nonmetallic Mineral Processing General Permit
October 2008

| Pollutant | Natural Gas | | | | Propane | | | |
|-----------|-------------------------------|-------------------------------|--------------------------|--------------------------|-------------------------------|--------------------------------|--------------------------------|--------------------------|
| | Allowable heat input MMBTU/hr | Fuel Consumption Rate (cf/hr) | Emission factor (cf) (1) | Emission rate, tons/year | Allowable heat input MMBTU/hr | Fuel Consumption Rate (gal/hr) | Emission factor (lb/MMbtu) (1) | Emission rate, tons/year |
| PM | 10 | 9523.809524 | 0.000012 | 0.500571 | 10 | 109.2896175 | 0.0004 | 0.191475 |
| PM-10 | 10 | 9523.809524 | 0.000012 | 0.500571 | 10 | 109.2896175 | 0.0004 | 0.191475 |
| SOX | 10 | 9523.809524 | 0.0000006 | 0.025029 | 10 | 109.2896175 | 0 | 0 |
| NOX | 10 | 9523.809524 | 0.0001 | 4.171429 | 10 | 109.2896175 | 0.014 | 6.701639 |
| VOC | 10 | 9523.809524 | 0.0000038 | 0.158514 | 10 | 109.2896175 | 0.0005 | 0.239344 |
| CO | 10 | 9523.809524 | 0.000021 | 0.876 | 10 | 109.2896175 | 0.0019 | 0.909508 |
| Lead | 10 | 9523.809524 | 0.0000 | 0 | 10 | 109.2896175 | | 0 |

(1) AP-42 Factors and Material Safety Data Sheets

Heat Content of Natural Gas = 1050 BTU/scf

Heat Content of Propane = 91500 BTU/gallon

Attachment III: Comments and Responses (Paper Copy Only)