

**AIR EMISSION PERMIT NO. 13700318-001**

**IS ISSUED TO**

**MESABI NUGGET LLC**

Erie Nugget Plant  
Hoyt Lakes Mining Area  
Hoyt Lakes, St. Louis County, MN 55750

The emission units, control equipment and emission stacks at the stationary source authorized in this permit are as described in the following permit application(s):

Permit Type	Application Date
Total Facility Operating Permit	11/11/2004

This permit authorizes the Permittee to operate and construct the stationary source at the address listed above unless otherwise noted in Table A. The Permittee must comply with all the conditions of the permit. Any changes or modifications to the stationary source must be performed in compliance with Minn. R. 7007.1150 to 7007.1500. Terms used in the permit are as defined in the state air pollution control rules unless the term is explicitly defined in the permit.

**Permit Type:** Federal; Pt 70/NSR Authorization

**Authorization to Construct and Operate (40 CFR § 52.21 and Clean Air Act Section 112(g)(2)(B))**

**Issuance Date:** July 29, 2005

**Authorization to Construct and Operate (40 CFR § 52.21 and Clean Air Act Section 112(g)(2)(B))**

**Effective Date:** August 31, 2005

**Final Permit Issuance Date:** January 25, 2007

**Expiration Date:** July 29, 2010

All Title I Conditions do not expire.

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Ann M. Foss, Director  
Metallic Mining Sector  
Industrial Division

for Brad Moore  
Commissioner

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**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:

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.

## **FACILITY DESCRIPTION:**

The Mesabi Nugget facility is a commercial-scale demonstration plant. It will be the first iron nugget production-scale plant to be built.

The raw materials for the process will consist of various coals, fluxes, and binders, as well as iron ore concentrate from the Northshore Mining Company facility in Silver Bay, Minnesota. Raw materials will be delivered by rail, truck, or in bulk supersacks. Iron ore concentrate will be stored in indoor storage piles, tanks or bins, while other raw materials will be stored in outdoor storage piles or storage bins. The coals and fluxes will be pulverized on-site.

Coals, fluxes, binders and iron ore concentrate will be mixed and formed into “green balls.” The balls will be dried and fed to a rotary hearth furnace, where they will be converted to metallic iron and slag material. The iron and slag are cooled and separated. The iron nuggets and slag materials will either be directly loaded into rail cars or stored in on-site piles for later shipment.

An emergency generator may be installed to provide power during disruptions in electrical power supply. A process water cooling tower may provide cooling for scrubber water and other contact cooling water. Blowdown from the process cooling water may be treated at the water treatment plant. A clean water cooling tower may provide cooling for equipment and other non-contact cooling requirements. Blowdown from the clean water cooling tower may be sent to the process cooling tower.

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-1**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Table A contains limits and other requirements with which your facility must comply. The 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. Appendices included as conditions of your permit are listed in Table A under total facility requirements.**

**Subject Item: Total Facility**

<b>What to do</b>	<b>Why to do it</b>
<b>SOURCE-SPECIFIC REQUIREMENTS</b>	hdr
The construction authorization expires 18 months after permit issuance. The Permittee must keep a record of the dates of installation and start-up on site.	Title I Condition: 40 CFR Section 52.21(r)(2): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g)(4): MACT and Minn. R. 7007.3010
Comply with Fugitive Emission Control Plan: The Permittee shall follow the actions and record keeping specified in the control plan. The plan may be amended by the Permittee with the Commissioner's approval. If the Commissioner determines the Permittee is out of compliance with Minn. R. 7011.0150 or the fugitive control plan, then the Permittee may be required to amend the control plan and/or to install and operate particulate matter ambient monitors as requested by the Commissioner.	Minn. Stat. Section 116.07, subd. 4a; Minn. R. 7007.0100; Minn. R. 7007.0800, subp. 2; Minn. R. 7011.0150; Minn. R. 7009.0020
Parameters Used in Modeling: Stack heights, emission rates, and other parameters used in the modeling for this permit (13700318-001) are listed in Appendix C of this permit. The Permittee must submit to the Commissioner for approval any revisions of these parameters and must wait for a written approval before making such changes. The information submitted must include, at a minimum, the locations, heights and diameters of the stacks, locations and dimensions of nearby buildings, the velocity and temperatures of the gases emitted, and the emission rates. The plume dispersion characteristics due to the revisions of the information must be equivalent to or better than the dispersion characteristics modeled for Air Emission Permit 13700318-001. The Permittee shall demonstrate this equivalency in the proposal. If the information does not demonstrate equivalent or better dispersion characteristics, or if a conclusion cannot readily be made about the dispersion, the Permittee must remodel.	Title I Condition: 40 CFR Section 52.21(k) and Minn. R. 7007.3000
For changes that do not involve an increase in an emission rate and that do not require a permit amendment, this proposal must be submitted as soon as practicable, but no less than 60 days before beginning actual construction of the stack or associated emission unit.	Title I Condition: 40 CFR Section 52.21(k) and Minn. R. 7007.3000
For changes involving increases in emission rates and that require a minor permit amendment, the proposal must be submitted as soon as practicable, but no less than 60 days before beginning actual construction of the stack or associated emission unit.	
For changes involving increases in emission rates and that require a permit amendment other than a minor amendment, the proposal must be submitted with the permit application.	
<b>OPERATIONAL REQUIREMENTS</b>	hdr
Ambient Air Quality Standards: The Permittee shall comply and demonstrate compliance on request with National Primary and Secondary Ambient Air Quality Standards, 40 CFR pt. 50 and the Minnesota Ambient Air Quality Standards, Minn. R. 7009.0010 to 7009.0800.	40 CFR pt. 50; Minn. Stat. Sec. 116.07, subds. 4a and 9; Minn. R. 7007.0100, subps. 7A, 7L and 7M; Minn. R. 7007.0800, subps. 1, 2, and 4; Minn. R. 7009.0010-7009.0080.
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
Air Pollution Control Equipment: Operate all pollution control equipment whenever the corresponding process equipment and emission units are operated, unless otherwise noted in Table A.	Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subp. 16(J)
Operation and Maintenance Plan: Prior to startup of the pollution control equipment, retain at the stationary source an operation and maintenance plan for all air pollution control equipment. At a minimum, the O & M plan shall identify all air pollution control equipment and control practices and shall include a preventative maintenance program for the equipment and practices, a description of (the minimum but not necessarily the only) corrective actions to be taken to restore the equipment and practices to proper operation to meet applicable permit conditions, a description of the employee training program for proper operation and maintenance of the control equipment and practices, and the records kept to demonstrate plan implementation.	Minn. R. 7007.0800, subp. 14 and Minn. R. 7007.0800, subp. 16(J)

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-2**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

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.	Minn. R. 7019.1000, subp. 4
Fugitive Emissions: Do 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 Permittee 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)
The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16.	Minn. R. 7007.0800, subp. 16
PERFORMANCE TESTING	hdr
Initial Performance Test Trigger Date: The Initial Performance Test Trigger date refers to the day on which the Erie Nugget Plant has produced 200,000 metric tons of iron nuggets since initial startup.	Minn. R. 7017.2020; Minn. R. 7007.0800, subp. 2 & 4
Notification of the Initial Performance Test Trigger Date: Not more than 15 days after the Initial Performance Test Trigger Date, the Permittee shall notify the Agency of the Initial Performance Test Trigger Date.	Minn. R. 7017.2020; Minn. R. 7007.0800, subp. 2 & 4
Performance Testing: Conduct all performance tests in accordance with Minn. R. ch. 7017 unless otherwise noted in Tables A, B, and/or C.	Minn. R. ch. 7017
Performance Test Notifications and Submittals:  Performance Tests are due as outlined in Tables A and B of the permit. See Table B for additional testing requirements.  Performance Test Notification (written): due 30 days before each Performance Test Performance Test Plan: due 30 days before each Performance Test Performance Test Pre-test Meeting: due 7 days before each Performance Test Performance Test Report: due 45 days after each Performance Test Performance Test Report - Microfiche 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.  NOTE: Performance tests required for compliance with MACT conditions have their own notification and submittal requirements. Those requirements are found in GP005.	Minn. Rs. 7017.2030, subp. 1-4, 7017.2018 and Minn. R. 7017.2035, subp. 1-2
Limits set as a result of a performance test (conducted before or after permit issuance) apply until superseded as specified by Minn. R. 7017.2025 following formal review of a subsequent performance test on the same unit.	Minn. R. 7017.2025
MONITORING REQUIREMENTS	hdr
Monitoring Equipment Calibration: Annually calibrate all required monitoring equipment (any requirements applying to continuous emission monitors are listed separately in this permit).	Minn. R. 7007.0800, subp. 4(D)
Operation of Monitoring Equipment: Unless otherwise noted in Tables A, B, and/or C, monitoring a process or control equipment connected to that process is not necessary during periods when the process is shutdown, or during checks of the monitoring systems, such as calibration checks and zero and span adjustments. If monitoring records are required, they should reflect any such periods of process shutdown or checks of the monitoring system.	Minn. R. 7007.0800, subp. 4(D)
QA Plan required: Prior to the startup of each CEM, develop and implement a written quality assurance plan that covers each CEMS. The plan shall be on site and available for inspection within 30 days after monitor certification. The plan shall contain the written procedures listed in Minn. R. 7017.1170, subp. 2.	Minn. R. 7017.1210, subp. 1; Minn. R. 7017.1170, subp. 2
PERMIT REOPENING	hdr
If a required stack test demonstrates that these emission limits are less stringent than what is achieved in practice, the Agency may, at its discretion, use the authority under Minn. R. 7007.1600, subp. 2.C to reopen and revise the emission limit(s) to more closely reflect the actual stack test results.	Minn. R. 7007.1600, subp. 2.C.

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-3**

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Facility Name: Mesabi Nugget LLC

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Because best available control technology (BACT) levels have not previously been established for an iron nugget production plant, if a required stack test demonstrates that the emission limit initially established in this permit is not achievable in practice, the Permittee may submit to the Agency an application for a revision to the permit to reflect the emission level achieved in the stack test. The Permittee has the burden of demonstrating that it took all steps necessary to ensure that the emissions levels achieved in the stack test were the lowest achievable.	40 CFR pt. 52.21 and Minn. R. 7007.3000
Any revision of the emission limits made as the result of this provision shall be subject to the best available control technology (BACT) review and air quality analysis, specified in 40 CFR pt 52.21 and Minn. R. 7007.3000.	
The Agency will provide an opportunity for public notice and comment under Minn. R. 7007.0850, subp. 2.A prior to finalizing any permit amendment. If the action involves a Title I condition, the procedures provided under Minn. R. 7007.0850, subp. 4 also apply to the permit amendment. Minn. R. 7007.0850, subp. 3 (Petitions for meetings and hearings) shall apply to the permit amendment.	Minn. R. 7007.0850, subps. 2, 3, and 4
<b>RECORDKEEPING</b>	hdr
Record keeping: Retain all records at the stationary source for a period of five (5) years from the date of monitoring, sample, measurement, or report. Records which must be retained at this location include all calibration and maintenance records, all original recordings for continuous monitoring instrumentation, and copies of all reports required by the permit. Records must conform to the requirements listed in Minn. R. 7007.0800, subp. 5(A).	Minn. R. 7007.0800, subp. 5(C)
Recordkeeping: Maintain records describing any insignificant modifications (as required by Minn. R. 7007. 1250, subp. 3) or changes contravening permit terms (as required by Minn. R. 7007.1350 subp. 2), including records of the emissions resulting from those changes.	Minn. R. 7007. 0800, subp. 5(B)
<b>REPORTING/SUBMITTALS</b>	hdr
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.  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.	Minn. R. 7019.1000, subp. 3
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.  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.	Minn. R. 7019.1000, subp. 2
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.	Minn. R. 7019.1000, subp. 1
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: 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.	Minn. R. 7019.1000, subp. 1

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-4**

01/25/07

Facility Name: Mesabi Nugget LLC

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Fugitive Emissions Control Plan: The Permittee shall submit a fugitive emissions control plan within 60 days of the date of permit issuance for review and approval by the Commissioner. The plan shall identify all fugitive emission sources, primary and contingent control measures, and record keeping. The Permittee shall follow the actions and record keeping specified in the control plan. The plan may be amended by the Permittee with the Commissioner's approval. If the Commissioner determines the Permittee is out of compliance with Minn. R. 7011.0150 or the fugitive emission control plan, then the Permittee may be required to amend the control plan and/or to install and operate particulate matter ambient monitors.	Title I Condition: 40 CFR 52.21(j); BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g); MACT and Minn. R. 3010; Minn. Stat. Section 116.07, subd. 4a; Minn. R. 7007.0800, subp. 2
Application for Permit Amendment: If a permit amendment is needed, submit an application in accordance with the requirements of Minn. R. 7007.1150 through Minn. R. 7007.1500. Submittal dates vary, depending on the type of amendment needed.	Minn. R. 7007.1150 through Minn. R. 7007.1500
Extension Requests: The Permittee may apply for an Administrative Amendment to extend a deadline in a permit by no more than 120 days, provided the proposed deadline extension meets the requirements of Minn. R. 7007.1400, subp. 1(H).	Minn. R. 7007.1400, subp. 1(H)
Emission Inventory Report: due 91 days after end of each calendar year following permit issuance (April 1). To be submitted on a form approved by the Commissioner.	Minn. R. 7019.3000 through Minn. R. 7019.3100
Emission Fees: due 60 days after receipt of an MPCA bill.	Minn. R. 7002.0005 through Minn. R. 7002.0095
DETERMINING IF A PROJECT/MODIFICATION IS SUBJECT TO NEW SOURCE REVIEW	hdr
These requirements apply where there is a reasonable possibility that a proposed project, analyzed using the actual-to-projected-actual (ATPA) test and found to not be part of a major modification, may result in a significant emissions increase. If the ATPA test is not used for a particular project, or if there is not a reasonable possibility that the proposed project could result in a significant emissions increase, then these requirements do not apply to that project.  Even though a particular modification is not subject to New Source Review, a permit amendment, recordkeeping, or notification may still be required under Minn. R. 7007.1150 - 7007.1500.	Title I Condition: 40 CFR Section 52.21(r)(6) and Minn. R. 7007.3000
Preconstruction Documentation -- Before beginning actual construction on a project, the Permittee shall document the following information:  1. A description of the project 2. Identification of the emission unit(s) whose emissions of an NSR pollutant could be affected 3. A description of the applicability test used to determine that the project is not a major modification for any regulated NSR pollutant, including the baseline actual emissions, the potential emissions, the projected actual emissions, the amount of emissions excluded due to increases not associated with the modification and that the unit(s) could have accommodated during the baseline period, an explanation of why the amounts were excluded, and any creditable contemporaneous increases and decreases that were considered in the determination.  The Permittee shall maintain records of this documentation.	Title I Condition: 40 CFR Section 52.21(r)(6) and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4 & 5
The Permittee shall monitor the actual emissions of any regulated NSR pollutant that could increase as a result of the project and that were analyzed using the ATPA test, and the potential emissions of any regulated NSR pollutant that could increase as a result of the project and that were analyzed using potential emissions. The Permittee shall calculate and maintain a record of the sum of the actual and potential (if used in the analysis) emissions of the regulated pollutant, in tons per year on a calendar year basis, for a period of 5 years following resumption of regular operations after the change, or for a period of 10 years following resumption of regular operations after the change if the project increases the design capacity of or potential to emit of any unit associated with the project.	Title I Condition: 40 CFR Section 52.21(r)(6) and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4 & 5
MERCURY REDUCTION EFFORTS	hdr
Design and construct air pollution control equipment such that sufficient space exists after the rotary hearth furnace for the installation of chemical addition or other pollution control equipment necessary to achieve further mercury reductions.  This is a state-only requirement and is not enforceable by the EPA Administrator and citizens under the Clean Air Act.	Minn. Laws Chap. 220 (2004) Sec. 1(d); Minn. R. 7007.0800, subp. 2
Submittal: due 540 days after the Initial Performance Test Trigger Date - a plan describing the campaign for identifying and testing options to control mercury from the rotary hearth furnace. The mercury reduction report must contain the information described in the facility-level requirements under Mercury Reduction Efforts.	Minn. Laws Chap. 220 (2004) Sec. 1(d); Minn. R. 7007.0800, subp. 2



**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-5**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

<p>The mercury reduction report must:</p> <p>1) Review technical developments in mercury control since the submittal of the facility's revised permit application in May 2005.</p> <p>2) Identify options targeting a reduction, from the baseline determined after initial startup, of at least fifty percent of the annual mercury emissions from the rotary hearth furnace (RHF).</p> <p>3) Evaluate the effectiveness of, at a minimum, the following options:</p> <p>a) Changing to raw materials with a lower mercury concentration.</p> <p>b) Installing additional control devices to the flue gas cleanup process, including the use of sorbent injection or the modification of existing control devices.</p> <p>c) Enhancing the existing flue gas cleanup process to remove mercury through process modifications or chemical addition to the furnace or flue gas.</p> <p>d) A combination of any or all of the above techniques.</p> <p>(CONTINUED)</p>	<p>Minn. Laws Chap. 220 (2004) Sec. 1(d); Minn. R. 7007.0800, subp. 2</p>
<p>(continued from above)</p> <p>4) Present three options to the Commissioner that can be implemented at the RHF to lower the amount of mercury emitted. To select these options, the first criterion shall be the potential for greatest removal of mercury, while the second criterion is technical feasibility.</p> <p>5) Include, for each option presented, a schedule for constructing or installing new needed equipment, operating the equipment (including shakedown), and testing the mercury reduction method selected by the Commissioner for further implementation.</p> <p>(Mercury performance testing of the selected option shall be conducted according to Minn. R. 7017.2001 to 7017.2060 for data submittal engineering tests, including the preparation of test plan and test reports, providing the MPCA adequate notice of the test, and submittal of test reports.)</p> <p>This is a state-only requirement and is not enforceable by the EPA Administrator and citizens under the Clean Air Act.</p>	<p>Minn. Laws Chap. 220 (2004) Sec. 1(d); Minn. R. 7007.0800, subp. 2</p>
<p>Upon the Commissioner's approval of the mercury reduction options report and the Commissioner's selection of a mercury control option, the Permittee shall follow the schedule in the mercury reduction report to initiate construction and operation of the selected option, and conduct data submittal and engineering tests of that option. (These performance tests will be conducted in addition to those required to demonstrate compliance with the case-by-case MACT limit for mercury.)</p> <p>This is a state-only requirement and is not enforceable by the EPA Administrator and citizens under the Clean Air Act.</p>	<p>Minn. Laws Chap. 220 (2004) Sec. 1(d); Minn. R. 7007.0800, subp. 2</p>
<p>Conduct a performance test for mercury at least 60 days after but not more than 180 after implementing the selected option to implement the goal of achieving at least a fifty percent reduction in baseline mercury emissions.</p> <p>This is a state-only requirement and is not enforceable by the EPA Administrator and citizens under the Clean Air Act.</p>	<p>Minn. Laws Chap. 220 (2004) Sec. 1(d); Minn. R. 7007.0800, subp. 2</p>
<b>PROTECTION OF VISIBILITY IN CLASS I AREAS</b>	hdr
<p>The Permittee must meet the Class I visibility requirements by (1) reducing visibility impairing emissions from the facility and demonstrating with USEPA approved modeling at the facility's maximum 24-hour average, allowed emission rate that the visibility impacts from the facility are less than a perceptible change over natural background; OR (2) the Permittee shall acquire and permanently retire sulfur dioxide allowances from the EPA Acid Rain Program sufficient to mitigate its visibility impacts, as described below; OR (3) The Permittee may propose an alternative means to reduce the visibility impacts, including emission reductions at other facilities.</p>	<p>Title I Condition: 40 CFR 52.21(p) and Minn. R. 7007.3000</p>
<p>(1) Emission Reductions and Modeling. The Permittee may propose to reduce the emission rate of visibility impairing pollutants from its facility and then make a demonstration of the impact of the new emission rate to visibility by submitting a permit amendment to the Agency. The proposal will be shared with the Federal Land Managers of Superior National Forest (for the Boundary Waters Canoe Area Wilderness) and of Voyageurs National Park. After considering the comments of the Federal Land Managers, the Commissioner may approve the submittal following the MPCA's procedure for modifying a Title I Condition.</p>	<p>Title I Condition: 40 CFR 52.21(p) and Minn. R. 7007.3000</p>

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-6**

01/25/07

Facility Name: Mesabi Nugget LLC

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(2) Retirement of Acid Rain Allowances. (a) Each calendar year, the Permittee shall determine the number of sulfur dioxide allowances or nitrogen oxides allowances (if available) needed to be permanently retired according to Appendix D.	Title I Condition: 40 CFR 52.21(p) and Minn. R. 7007.3000
(2)(b) - Acceptable sulfur dioxide allowances or nitrogen oxide allowances (if available) shall be acquired from facilities that were allocated allowances under 40 CFR Part 73 or under a future emissions trading program administered by USEPA to reduce acid rain and/or meet the NAAQS.	Title I Condition: 40 CFR 52.21(p) and Minn. R. 7007.3000
(2)(c) The vintage year of the allowances shall correspond to the calendar year that is being mitigated.	Title I Condition: 40 CFR 52.21(p) and Minn. R. 7007.3000
(2)(d) The Permittee shall transfer these allowances into an account in the Allowance Tracking System administered by the U.S. EPA for the Acid Rain Program (or a similar trading program), to be identified by the Commissioner. These retired allowances can never be used by the Permittee to meet any compliance requirement under the Clean Air Act or any State Implementation Plan.	Title I Condition: 40 CFR 52.21(p) and Minn. R. 7007.3000
(2)(e) The Permittee shall submit a report to the Commissioner no later than 60 days after the end of the calendar year. The report shall contain the amount of sulfur dioxide, nitrogen oxide, particulate matter, and sulfuric acid mist emitted by the Mesabi Nugget facility; the amount, facility name, location of facility (including the distances, in kilometers, from the Boundary Waters Canoe Area Wilderness and Voyageurs National Park), vintage year of allowances retired, proof that allowances have been transferred into the account identified by the Commissioner and any applicable serial or other identification associated with the retired allowances.	Title I Condition: 40 CFR 52.21(p) and Minn. R. 7007.3000
(3) Alternative Proposal. The Permittee may propose an alternative means to reduce the visibility impacts, including emission reductions at other facilities. Such an alternative proposal shall be made by submitting a permit amendment to the Agency that includes a modeling demonstration and proposed federally enforceable permit conditions. The proposal will be shared with the Federal Land Managers of Superior National Forest (for the Boundary Waters Canoe Area Wilderness) and of Voyageurs National Park. After considering the comments of the Federal Land Managers, the Commissioner may approve the submittal following the MPCA's procedure for modifying a Title I Condition.	Title I Condition: 40 CFR 52.21(p) and Minn. R. 7007.3000
AMBIENT BOUNDARY	hdr
1. This permit authorizes the Permittee to perform the activities identified on the cover page of this permit under the conditions and terms of this permit.  2. This permit does not authorize the Permittee to enter, invade or trespass on any property (e.g., surface estates, mineral estates, etc.), including but not limited to the property depicted within the ambient air boundary in Figure 2, Appendix G of the Permittee's PSD Permit Application for Mesabi Nugget LLC, Hoyt Lakes, Minnesota, May, 2005. This permit shall not be construed as authorizing the Permittee to enter, invade or trespass upon any property (e.g., surface estates, mineral estates, etc.), including but not limited to the property depicted within the ambient air boundary in Figure 2, Appendix G of the Permittee's PSD Permit Application for Mesabi Nugget LLC, Hoyt Lakes, Minnesota, May, 2005.	Title I Condition: 40 CFR 52.21(k); Minn. R. 7007.3000, Minn. R., 7007.0800, subp. 2
3. This permit does not authorize the Permittee to use, impair, injure, hinder, encumber or interfere with any property (e.g., surface estates, mineral estates, etc.), including but not limited to the property depicted within the ambient air boundary in Figure 2, Appendix G of the Permittee's PSD Permit Application for Mesabi Nugget LLC, Hoyt Lakes, Minnesota, May, 2005. This permit shall not be construed as authorizing the Permittee to use, impair, injure, hinder, encumber or interfere with any property (e.g., surface estates, mineral estates, etc.), including but not limited to the property depicted within the ambient air boundary in Figure 2, Appendix G of the Permittee's PSD Permit Application for Mesabi Nugget LLC, Hoyt Lakes, Minnesota, May, 2005.	Title I Condition: 40 CFR 52.21(k); Minn. R. 7007.3000, Minn. R., 7007.0800, subp. 2
4. The Permittee is solely responsible for obtaining from all property owners (e.g., surface estates, mineral estates, etc.) access to, possession and control of any and all property (e.g., surface estates, mineral estates, etc.) necessary to implement and comply with the terms and conditions of this permit.  5. The Permittee shall exercise the authorizations under this permit in compliance with the terms and conditions of all other conveyances of property interests (e.g., leases, etc.) to the Permittee.  6. The Permittee shall obtain and maintain exclusive possession of and control over all property (e.g., surface estates only) within the ambient air boundary of Figure 2, Appendix G of the Permittee's PSD Permit Application for Mesabi Nugget LLC, Hoyt Lakes, Minnesota, May, 2005.	Title I Condition: 40 CFR 52.21(k); Minn. R. 7007.3000, Minn. R., 7007.0800, subp. 2

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-7**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Subject Item: GP 001 Particulate MACT Monitoring Equipment****Associated Items:** MR 001 Coal 1 Pulverizer - Differential Pressure

MR 002 Coal 2 Pulverizer - Differential Pressure

MR 006 RHF - Differential Pressure

MR 007 RHF - Scrubber Water Flow

MR 009 RHF - Offgas Flow

MR 010 RHF - O2 content

MR 012 Flux 1 Pulverizer - Differential Pressure

MR 013 Coal Flux/Unload - Differential Pressure

MR 014 Rail Loadout - Differential Pressure

What to do	Why to do it
MONITORING REQUIREMENTS	xhdr
Prior to startup, install, calibrate, maintain, and operate a continuous parameter monitoring system for measuring and recording pressure drop across the control equipment by the startup date.	Title I Condition: 40 CFR 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 63.8(c)(1),(2),(3),(4)
Operation and Maintenance of the Pressure Drop Continuous Parameter Monitoring System (CPMS): Quantify and record the calibration drift (CD) for the pressure drop CPMS at zero (low level value) and high level value at least daily. After initial calibration per manufacturer's specifications, a quarterly test audit is required. Adjust the CPMS whenever the CD exceeds twice the limit of the performance standard.	Title I Condition: 40 CFR 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 63.8(c)(6),(7)
MONITORING AND COLLECTING DATA	hdr
Except for monitoring malfunctions, associated repairs, and required quality assurance or control activities (including as applicable, calibration checks and required zero and span adjustments), monitor continuously (or collect data at all required intervals) at all times an affected source is operating.	Title I Condition: 40 CFR 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR 63.43(g): MACT and Minn. R. 7007.3010
Do not use data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities in data averages and calculations used to report emission or operating levels, or to fulfill a minimum data availability requirement. All the data collected during all other periods must be used in assessing compliance.	Title I Condition: 40 CFR 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR 63.43(g): MACT and Minn. R. 7007.3010
A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring system to provide valid data. Monitoring failures that are caused in part by poor maintenance or careless operation are not considered malfunctions.	Title I Condition: 40 CFR 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR 63.43(g): MACT and Minn. R. 7007.3010

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-8**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Subject Item:** GP 002 Cooling Towers**Associated Items:** EU 014 Process Water Cooling Tower

EU 015 Clean Water Cooling Tower

What to do	Why to do it
EMISSION AND OPERATING LIMITS	hdr
Cooling tower drift rate: Less than or equal to 0.001 percent. [This is a design criterion, and a basis of the BACT determination.]	Title I Condition: 40 CFR 52.21(j): BACT and Minn. Rules 7007.3000
Cooling water flow rate: Less than or equal to 30,000 gpm. [Basis of BACT limit.]	Title I Condition: 40 CFR 52.21(j): BACT and Minn. Rules 7007.3000
Cooling water total dissolved solids content: Less than or equal to 15,100 parts per million. [Basis of BACT limit.]	Title I Condition: 40 CFR 52.21(j): BACT and Minn. Rules 7007.3000
MONITORING REQUIREMENTS	hdr
By the startup date of the cooling tower: Install, calibrate, maintain, and operate a continuous monitoring system for measuring and recording cooling water circulation.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. Rules 7007.3000
Measure and record the cooling tower flow rate of each cooling tower at least once per month.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. Rules 7007.3000
Measure and record the concentration of total dissolved solids in each cooling tower at least once per month.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. Rules 7007.3000

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-9**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Subject Item:** GP 003 Green Ball Dryer/Material Transfer Operations Baghouses**Associated Items:** CE 007 Fabric Filter - High Temperature, i.e., T>250 Degrees F

CE 009 Fabric Filter - Low Temperature, i.e., T&lt;180 Degrees F

CE 010 Fabric Filter - Low Temperature, i.e., T&lt;180 Degrees F

What to do	Why to do it
EMISSIONS LIMITATIONS AND OPERATING REQUIREMENTS	hdr
Operate and maintain the Green Ball Dryer/Material Transfer Operations (EU 002), including air pollution control and monitoring equipment, in a manner consistent with good air pollution control practices for minimizing emissions at least to the emission limitations.	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6; Minn. R. 7017.0200
Prepare, and at all times operate according to, a written operation and maintenance plan for each control device applied to meet the particulate matter emission limit developed for the Green Ball Dryer in the case-by-case MACT determination. Each site-specific operation and maintenance plan must be submitted to the Administrator on or before the initial startup date. The submitted plan must explain why the chosen practices (i.e., quantified objectives) are effective in performing corrective actions. The Administrator will review the adequacy of the site-specific practices and objectives to be followed and the records that will be kept to demonstrate compliance with the Plan. If the Administrator determines that any portion of the operation and maintenance plan is not adequate, those portions of the plan can be rejected and additional information addressing the relevant issues will need to be provided. In the interim of this process, continue to follow the current	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6; Minn. R. 7017.0200
(CONTINUED)	
(continued from above)	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6; Minn. R. 7017.0200
site-specific practices and objectives, as submitted until the revisions are accepted as adequate by the Administrator. Maintain a current copy of the operation and maintenance plan onsite. It must be available for inspection upon request. Keep the plan for the life of the affected source or until the affected source is no longer subject to the requirements of this subpart. Each operation and maintenance plan must address the elements in paragraphs (1) and (2), below.	
(1) Preventative maintenance for each control device, including a preventative maintenance schedule that is consistent with the manufacturer's instructions for routine and long-term maintenance.	
(2) Corrective action procedures for bag leak detection systems. In the event a bag leak detection system alarm is triggered, you must initiate corrective action to determine the cause of the alarm within 1 hour of the alarm, initiate corrective action to correct the cause of the	
(CONTINUED)	
(continued from above)	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6; Minn. R. 7017.0200
problem within 24 hours of the alarm, and complete the corrective action as soon as practicable. Corrective actions may include, but are not limited to, the actions in paragraphs (i) through (vi), below.	
(i) Inspecting the baghouse for air leaks, torn or broken bags or filter media, or any other condition that may cause an increase in emissions.	
(ii) Sealing off defective bags or filter media.	
(iii) Replacing defective bags or filter media or otherwise repairing the control device.	
(iv) Sealing off a defective baghouse compartment.	
(v) Cleaning the bag leak detection system probe, or otherwise repairing the bag leak detection system.	
(vi) Adjusting the process operation producing the particulate emissions.	
GENERAL COMPLIANCE REQUIREMENTS	hdr

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-10**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

<p>Comply with the work practice standards, operation and maintenance requirements, notification requirements, reporting requirements, and recordkeeping requirements for the Green Ball Dryer and its associated control equipment at all times, except during periods of startup, shutdown, and malfunction. The terms startup, shutdown, and malfunction are defined in 40 CFR Section 63.2.</p> <p>Between the date of initial startup and the date upon which continuous monitoring systems have been installed and certified and any applicable operating limits have been set, maintain a log detailing the operation and maintenance of the process and emissions control equipment. This includes the daily monitoring and recordkeeping of air pollution control device operating parameters as specified in this permit.</p>	<p>Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6; Minn. R. 7017.0200</p>
<b>MONITORING REQUIREMENTS</b>	hdr
<p>Install, calibrate, maintain, and operate a continuous monitoring system for measuring and recording particulate matter passing through the control equipment by the startup date.</p>	<p>Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6; Minn. R. 7017.0200; 40 CFR Section 63.8(c)(1),(2),(3),(4)</p>
<p>Install, operate, and maintain a bag leak detection system to monitor the relative change in particulate matter loadings according to the requirements in this permit, and conduct inspections at their specified frequencies according to the requirements in paragraphs (1) through (8), below.</p> <p>(1) Monitor the pressure drop across each baghouse cell each day to ensure pressure drop is within the normal operating range.</p> <p>(2) Confirm that dust is being removed from hoppers through weekly visual inspections or other means of ensuring the proper functioning of removal mechanisms.</p> <p>(3) Check the compressed air supply of pulse-jet baghouses each day.</p> <p>(4) Monitor cleaning cycles to ensure proper operation using an appropriate methodology.</p> <p>(5) Check bag cleaning mechanisms for proper functioning through monthly visual inspections or equivalent means.</p> <p>(CONTINUED)</p>	<p>Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6; Minn. R. 7017.0200</p>
<p>(continued from above)</p> <p>(5) Check bag cleaning mechanisms for proper functioning through monthly visual inspections or equivalent means.</p> <p>(6) Make monthly visual checks of bag tension on reverse air and shaker-type baghouses to ensure that bags are not kinked (knead or bent) or lying on their sides. If it is a shaker-type baghouses that has self-tensioning (spring-loaded) devices, this check is not needed.</p> <p>(7) Confirm the physical integrity of the baghouse through quarterly visual inspections of the baghouse interior for air leaks.</p> <p>(8) Inspect fans for wear, material buildup, and corrosion through quarterly visual inspections, vibration detectors, or equivalent means.</p>	<p>Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6; Minn. R. 7017.0200</p>
<b>OPERATION AND MAINTENANCE REQUIREMENTS - BAG LEAK DETECTION SYSTEM</b>	hdr

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-11**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

<p>For each negative pressure baghouse or positive pressure baghouse equipped with a stack, applied to meet any MACT-based particulate emission limit, install, operate, and maintain a bag leak detection system according to the requirements in paragraphs (1) through (8), below.</p> <p>(1) The system must be certified by the manufacturer to be capable of detecting emissions of particulate matter at concentrations of 10 milligrams per actual cubic meter (0.0044 grains per actual cubic foot) or less.</p> <p>(2) The system must provide output of relative changes in particulate matter loadings.</p> <p>(3) The system must be equipped with an alarm that will sound when an increase in relative particulate loadings is detected over the alarm level set point established according to paragraph (4) of this section. The alarm must be located such that it can be heard by the appropriate plant personnel.</p> <p>(CONTINUED)</p>	<p>Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6; Minn. R. 7017.0200</p>
<p>(continued from above)</p> <p>(4) For each bag leak detection system, develop and submit to the Administrator for approval, a site-specific monitoring plan that addresses the items identified in paragraphs (i) through (v), below. For each bag leak detection system that operates based on the triboelectric effect, the monitoring plan shall be consistent with the recommendations contained in the U.S. Environmental Protection Agency (U.S. EPA) guidance document, "Fabric Filter Bag Leak Detection Guidance" (EPA-454/R-98-015). This document is available on the EPA's Technology Transfer Network at <a href="http://www.epa.gov/ttn/emc/cem/tribo.pdf">http://www.epa.gov/ttn/emc/cem/tribo.pdf</a> (Adobe Acrobat version) or <a href="http://www.epa.gov/ttn/emc/cem/tribo.wpd">http://www.epa.gov/ttn/emc/cem/tribo.wpd</a> (WordPerfect version). Operate and maintain the bag leak detection system according to the site-specific monitoring plan at all times. The plan shall describe all of the items in paragraphs (i) through (v), below.</p> <p>(CONTINUED)</p>	<p>Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6; Minn. R. 7017.0200</p>
<p>(continued from above)</p> <p>(i) Installation of the bag leak detection system.</p> <p>(ii) Initial and periodic adjustment of the bag leak detection system including how the alarm set-point will be established.</p> <p>(iii) Operation of the bag leak detection system including quality assurance procedures.</p> <p>(iv) How the bag leak detection system will be maintained including a routine maintenance schedule and spare parts inventory list.</p> <p>(v) How the bag leak detection system output shall be recorded and stored.</p> <p>(CONTINUED)</p>	<p>Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6; Minn. R. 7017.0200</p>
<p>(continued from above)</p> <p>(5) To make the initial adjustment of the system, establish the baseline output by adjusting the sensitivity (range) and the averaging period of the device. Then, establish the alarm set points and the alarm delay time (if applicable).</p> <p>(6) Following initial adjustment, do not adjust averaging period, alarm set point, or alarm delay time, without approval from the Administrator except as provided for in the following paragraph.</p> <p>Once per quarter, you may adjust the sensitivity of the bag leak detection system to account for seasonal effects, including temperature and humidity, according to the procedures identified in the site-specific monitoring plan required under paragraph (4) of this section.</p> <p>(7) Where multiple detectors are required, the system's instrumentation and alarm may be shared among detectors.</p> <p>(8) The bag leak detector sensor must be installed downstream of the baghouse and upstream of any wet scrubber.</p>	<p>Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6; Minn. R. 7017.0200</p>
CONTINUOUS COMPLIANCE DEMONSTRATION - EMISSION LIMITS	hdr

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-12**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

Maintain the mean concentration of particulate matter below the MACT emission limit listed under EU002.	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6; Minn. R. 7017.0200
Conduct subsequent performance tests following the test frequency schedule.	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6; Minn. R. 7017.0200
<p>Demonstrate continuous compliance by completing the requirements in paragraphs (1) and (2), below.</p> <p>(1) Maintaining records of the time corrective actions were taken in the event of a bag leak detection system alarm, the corrective action(s) taken, and the date on which corrective action was completed.</p> <p>(2) Inspecting and maintaining each baghouse according to the requirements in this permit's operating and maintenance conditions and recording all information needed to document conformance with these requirements. If the sensitivity of the bag leak detection system is increased or decreased beyond the limits specified in your site-specific monitoring plan, include a copy of the required written certification by a responsible official in the next semiannual compliance report.</p>	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6; Minn. R. 7017.0200
<p>If the daily average operating parameter value for the Green Ball Dryer does not meet the corresponding established operating limit, follow the procedures in paragraphs (1) through (4), below.</p> <p>(1) Initiate and complete initial corrective action within 10 calendar days and demonstrate that the initial corrective action was successful. During any period of corrective action, continue to monitor and record all required operating parameters for equipment that remains in operation. After 10 calendar days, measure and record the daily average operating parameter value for the emission unit or group of similar emission units on which corrective action was taken. After the initial corrective action, if the daily average operating parameter value for the emission unit meets the operating limit established for the corresponding unit or group, then the corrective action was successful and the emission unit is in compliance with the established operating limits.</p> <p>(CONTINUED)</p>	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6; Minn. R. 7017.0200
<p>(continued from above)</p> <p>(2) If the initial corrective action required in paragraph (1) of this section was not successful, then complete an additional corrective action within 10 calendar days and demonstrate that the subsequent corrective action was successful. During any period of corrective action, continue to monitor and record all required operating parameters for equipment that remains in operation. After the second set of 10 calendar days allowed to implement corrective action, again measure and record the daily average operating parameter value for the emission unit. If the daily average operating parameter value for the emission unit meets the operating limit established for the corresponding unit or group, then the corrective action was successful and the emission unit is in compliance with the established operating limits.</p> <p>(CONTINUED)</p>	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6; Minn. R. 7017.0200
<p>(continued from above)</p> <p>(3) If the second attempt at corrective action required in paragraph (2) was not successful, then you must repeat the procedures of paragraph (2) of this section until the corrective action is successful. If the third attempt at corrective action is unsuccessful, you must conduct another performance test in accordance with the procedures in this permit and report to the Administrator as a deviation the third unsuccessful attempt at corrective action.</p> <p>(CONTINUED)</p>	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6; Minn. R. 7017.0200
<p>(continued from above)</p> <p>(4) After the third unsuccessful attempt at corrective action, you must submit to the Administrator the written report required in paragraph (3) of this section within 5 calendar days after the third unsuccessful attempt at corrective action. This report must notify the Administrator that a deviation has occurred and document the types of corrective measures taken to address the problem that resulted in the deviation of established operating parameters and the resulting operating limits.</p>	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6; Minn. R. 7017.0200
CONTINUOUS COMPLIANCE DEMONSTRATION - OPERATION AND MAINTENANCE REQUIREMENTS	hdr



**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-13**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

<p>Demonstrate continuous compliance with the operation and maintenance requirements in this permit by completing the requirements of paragraphs (1) and (2), below.</p> <p>(1) Performing preventative maintenance for each control device in accordance with this permit and recording all information needed to document conformance with these requirements;</p> <p>(2) Initiating and completing corrective action for a bag leak detection system alarm in accordance with this permit and recording all information needed to document conformance with these requirements.</p>	<p>Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6; Minn. R. 7017.0200</p>
<p>Maintain a current copy of the operation and maintenance plan onsite. It must be available for inspection upon request. Keep the plan for the life of the affected source or until the affected source is no longer subject to the requirements of this subpart.</p>	<p>Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6; Minn. R. 7017.0200</p>
<p>CONTINUOUS COMPLIANCE DEMONSTRATION - OTHER REQUIREMENTS</p>	<p>hdr</p>
<p>(a) Deviations. Report each instance in which an emission limitation was not met. This includes periods of startup, shutdown, and malfunction in accordance with the paragraph (b), below. Report each instance in which the work practice standards in this permit were not met and each instance in which the operation and maintenance requirement in this permit were not met. These instances are deviations from the emission limitations, work practice standards, and operation and maintenance requirements in this subpart. Report these deviations in accordance with the requirements in this permit.</p> <p>(CONTINUED)</p>	<p>Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R 7017.0200</p>
<p>(continued from above)</p> <p>(b) Startups, shutdowns, and malfunctions. During periods of startup, shutdown, and malfunction, operate in accordance with your startup, shutdown, and malfunction plan and the requirements in paragraphs (1) and (2), below.</p> <p>(1) Consistent with 40 CFR Section 63.6(e) and 63.7(e)(1), deviations that occur during a period of startup, shutdown, or malfunction are not violations if it is demonstrated to the Administrator's satisfaction that the emission unit and control equipment were operating in accordance with the startup, shutdown, and malfunction plan.</p> <p>(2) The Administrator will determine whether deviations that occur during a period of startup, shutdown, or malfunction are violations, according to the provisions in 40 CFR Section 63.6(e).</p> <p>[These startup, shutdown, and malfunction provisions apply only to the MACT (40 CFR 63.43(g)) limits. There is no startup, shutdown, and malfunction exception for the limits set under BACT (40 CFR 52.21).]</p>	<p>Title I Condition: 40 CFR Section 63.43(g): MACT; Minn. R. 7007.3010; 40 CFR Section 63.6(e) and 63.7(e)(1); 40 CFR Section 64.5</p>

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-14**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Subject Item: GP 004 Baghouses not subject to CAM**

**Associated Items:** CE 003 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 004 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 005 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 006 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 008 Fabric Filter - High Temperature, i.e., T>250 Degrees F

CE 011 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 012 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 013 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 014 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 015 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 016 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

What to do	Why to do it
EMISSIONS LIMITATIONS AND OPERATING REQUIREMENTS	hdr
The baghouses in this group (GP004) are not subject to the Compliance Assurance Monitoring requirements for large pollutant-specific emissions unit. However, they are subject to the monitoring requirements of GP001 (MACT).	Title I Condition: 40 CFR Section 63.43(g): case-by-case MACT; Minn. R. 7007.3010; 40 CFR Section 64.6; Minn. R. 7017.0200
Operate and maintain the baghouses and associated monitoring equipment in a manner consistent with good air pollution control practices for minimizing emissions at least to the emission limitations.	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
For baghouses without bag leak detection systems, the continuous parameter monitoring system (CPMS) is the system that measures the differential pressure drop across the baghouse.	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 63.8(c)(1), (3), (4)(ii), (7), and (8)
For each required CPMS, develop and make available for inspection upon request by the permitting authority a site-specific monitoring plan that addresses the requirements in paragraphs (1) through (7), below.	
(1) Installation of the CPMS sampling probe or other interface at a measurement location relative to each affected emission unit such that the measurement is representative of control of the exhaust emissions (e.g., on or downstream of the last control device).	
(2) Performance and equipment specifications for the sample interface, the parametric signal analyzer, and the data collection and reduction system.	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 63.8(d); 40 CFR Section 63.10(c), (e)(1), and (e)(2)(i)
(CONTINUED)	
(continued from above)	
(3) Performance evaluation procedures and acceptance criteria (e.g., calibrations).	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 63.8(d); 40 CFR Section 63.10(c), (e)(1), and (e)(2)(i)
(4) Ongoing operation and maintenance procedures in accordance with the general requirements of 40 CFR Section 63.8(c)(1), (3), (4)(ii), (7), and (8).	
(5) Ongoing data quality assurance procedures in accordance with the general requirements of 40 CFR Section 63.8(d).	
(6) Ongoing recordkeeping and reporting procedures in accordance with the general requirements of 40 CFR Section 63.10(c), (e)(1), and (e)(2)(i).	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
(7) Corrective action procedures that you will follow in the event an air pollution control device exceeds an established operating limit.	
Unless otherwise specified, each CPMS must meet the requirements in paragraphs (1) and (2), below.	
(1) Each CPMS must complete a minimum of one cycle of operation for each successive 15-minute period while the associated emission unit(s) is in operation and must have valid data for at least 95 percent of every daily averaging period.	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
(2) Each CPMS must determine and record the daily average of all recorded readings while the associated emission unit(s) was in operation.	

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-15**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

Conduct a performance evaluation of each CPMS in accordance with the site-specific monitoring plan.	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Operate and maintain the CPMS in continuous operation according to the site-specific monitoring plan.	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
<b>MONITORING AND COLLECTING DATA</b>	hdr
Except for monitoring malfunctions, associated repairs, and required quality assurance or control activities (including as applicable, calibration checks and required zero and span adjustments), monitor continuously (or collect data at all required intervals) at all times an affected source is operating.	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Do not use data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities in data averages and calculations used to report emission or operating levels, or to fulfill a minimum data availability requirement. All the data collected during all other periods must be used in assessing compliance.	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring system to provide valid data. Monitoring failures that are caused in part by poor maintenance or careless operation are not considered malfunctions.	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Prepare and at all times operate according to a written operation and maintenance plan for each control device applied to meet the particulate matter emission limit for the baghouses in GP004. Submit the site-specific operation and maintenance plan to the Administrator on or before the start of operation. The plan you submit must explain why the chosen practices (i.e., quantified objectives) are effective in performing corrective actions. Maintain a current copy of the operation and maintenance plan onsite. It must be available for inspection upon request. Keep the plan for the life of the affected source or until the affected source is no longer subject to the requirements of this subpart. Each operation and maintenance plan must address the elements in paragraphs (1) and (2), below.	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
(CONTINUED)	
(Continued from above)	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
(1) Preventative maintenance for each control device, including a preventative maintenance schedule that is consistent with the manufacturer's instructions for routine and long-term maintenance.	
(2) In the event an established operating limit for a baghouse is exceeded, initiate corrective action to determine the cause of the operating limit exceedance and complete the corrective action within 10 calendar days. The corrective action procedures taken must be consistent with the installation, operation, and maintenance procedures listed in the facility's site-specific CPMS monitoring plan.	
<b>MONITORING REQUIREMENTS</b>	hdr
Install, calibrate, maintain, and operate a continuous parameter monitoring system (CPMS) for measuring and recording pressure drop across the control equipment by the startup date.	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 63.8(c)(1),(2),(3),(4)
Operation and Maintenance of the Pressure Drop Continuous Parameter Monitoring System (CPMS): Quantify and record the calibration drift (CD) for the pressure drop CPMS at zero (low level value) and high level value at least daily. After initial calibration per manufacturer's specifications, a quarterly test audit is required. Adjust the CPMS whenever the CD exceeds twice the limit of the performance standard.	Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 63.8(c)(6),(7)

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-16**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

<p>Install, operate, and maintain a pressure drop monitoring system to monitor the relative change in pressure drop according to the requirements in this permit. Conduct inspections at their specified frequencies according to the requirements in paragraphs (1) through (8), below.</p> <p>(1) Monitor the pressure drop across each baghouse cell each day to ensure pressure drop is within the normal operating range.</p> <p>(2) Confirm that dust is being removed from hoppers through weekly visual inspections or other means of ensuring the proper functioning of removal mechanisms.</p> <p>(3) Check the compressed air supply of pulse-jet baghouses each day.</p> <p>(4) Monitor cleaning cycles to ensure proper operation using an appropriate methodology.</p> <p>(5) Check bag cleaning mechanisms for proper functioning through monthly visual inspections or equivalent means.</p> <p>(CONTINUED)</p>	<p>Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010</p>
<p>(continued from above)</p> <p>(5) Check bag cleaning mechanisms for proper functioning through monthly visual inspections or equivalent means.</p> <p>(6) Make monthly visual checks of bag tension on reverse air and shaker-type baghouses to ensure that bags are not kinked (knead or bent) or lying on their sides. If it is a shaker-type baghouses that has self-tensioning (spring-loaded) devices, this check is not needed.</p> <p>(7) Confirm the physical integrity of the baghouse through quarterly visual inspections of the baghouse interior for air leaks.</p> <p>(8) Inspect fans for wear, material buildup, and corrosion through quarterly visual inspections, vibration detectors, or equivalent means.</p>	<p>Title I Condition: 40 CFR Section 52.21: BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010</p>
RECORDKEEPING	hdr
<p>QA Plan: Develop and implement a written quality assurance plan that covers the pressure drop CPMS. The plan shall be on site and available for inspection within 30 days after monitor certification. The plan shall contain all of the information required by 40 CFR Section 63.8(d).</p>	40 CFR Section 63.8(d)(2); Minn. R. 7017.1170, subp. 2
<p>Recordkeeping: The owner or operator must retain records of all pressure drop CPMS monitoring data and support information for a period of five years from the date of the monitoring, sample, measurement, or report. Records shall be kept at the source.</p>	40 CFR Section 63.10(b); Minn. R. 7017.1130

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-17**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Subject Item: GP 005 Emission Units subject to MACT**

**Associated Items:** EU 001 Rotary Hearth Furnace (RHF)

EU 002 Green Ball Dryer/Material Transfer Operations

EU 003 Product Separator

EU 004 Coal 1 Pulverizer

EU 005 Coal 2 Pulverizer

EU 006 Flux 1 Pulverizer

EU 007 Coal Flux/Unload Baghouse

EU 008 Rail Loadout Baghouse/Material Transfer Operations

EU 010 Material Transfer Operations

EU 011 Back-up Generator 3

EU 012 Flux 2 Pulverizer

EU 013 Product Cooler

What to do	Why to do it
NOTIFICATION & REPORTING REQUIREMENTS	hdr
STARTUP, SHUTDOWN, AND MALFUNCTION REQUIREMENTS	hdr
At all times the Permittee shall operate and maintain the emission unit subject to the MACT standard and its associated air pollution control equipment in a manner consistent with good air pollution control practices for minimizing emissions at least to the levels required by all relevant standards, as described at 40 CFR Section 63.6(e)(1)(i).	40 CFR Section 63.6(e)(1)(i)
During periods of startup, shutdown, and malfunction, the owner or operator of an affected source must operate and maintain such source (including associated air pollution control and monitoring equipment) in accordance with the procedures specified in the startup, shutdown, and malfunction plan developed under 40 CFR Section 63.6(e)(3)(i). Malfunctions shall be corrected as soon as practicable after their occurrence in accordance with the startup, shutdown, and malfunction plan.	40 CFR Section 63.6(e)(1)(ii); 40 CFR Section 63.6(e)(3)(ii); 40 CFR Section 63.6(e)(3)(iii)
The Permittee shall prepare and implement a Startup, Shutdown, and Malfunction Plan (SSMP) for each of the emission units subject to Maximum Control Technology Standards by the start of operation. The SSMP is a federally enforceable part of the permit and shall be prepared in accordance with 40 CFR Section 63.6(e)(3) and include requirements specified therein. The SSMP must be located at the plant site and must be kept updated. When the SSMP is updated, the Permittee must keep all previous versions of the SSMP for a period of 5 years. The Permittee must submit the SSMP when required.	40 CFR Section 63.6(e)(3)(i); 40 CFR Section 63.6(e)(3)(v)
If the Permittee deviates from the startup, shutdown, and malfunction plan (SSMP) during a startup, shutdown or malfunction, the Permittee shall record the actions taken for that event and report such actions within 2 working days after commencing actions inconsistent with the plan, followed by a letter within 7 working days after the end of the event. The report must contain name, title, and signature of a responsible official who is certifying its accuracy, explaining the circumstances of the event, the reasons for not following the SSMP, and whether any excess emissions and/or parameter monitoring exceedances are believed to have occurred.	40 CFR Section 63.6(e)(3)(iv); 40 CFR Section 63.10(d)(5)(ii)
A written SSMP must contain the minimum of the following information:  1. A procedure that documents how any startup, shutdown, or malfunction event that has occurred will be addressed and documented;  2. Information regarding the operation of the source and its associated pollution control devices during a startup, shutdown, or malfunction event in a manner consistent with good air pollution control practices for minimizing emissions at least to the levels required by all relevant standards; and  3. Adequate procedures for correcting malfunctioning process and/or air pollution control equipment as quickly as practicable.	40 CFR Section 63.6(e)(3)(vii)

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-18**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

<p>The Permittee shall maintain files of all information required by this part in a form suitable and readily available for expeditious inspection and review.</p> <p>The files should be retained for at least 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. Only the most recent two years of information must be kept on site.</p>	40 CFR Section 63.10(b)(1)
<p>The Permittee shall maintain, at a minimum, the following information in the files:</p> <p>1) the occurrence and duration of each startup, shutdown, or malfunction of operation;</p> <p>2) the occurrence and duration of each malfunction of the air pollution control equipment;</p> <p>3) all maintenance performed on the pollution control equipment;</p> <p>4) actions taken during periods of startup, shutdown, and malfunction when such actions are different from the procedures specified in the affected source's startup, shutdown, and malfunction plan (SSMP). In this case, the Permittee shall report this action within 2 days of occurrence and follow by a written notification within 7 days of occurrence.</p> <p>5) all information necessary to demonstrate conformance with the affected source's SSMP and actions taken in accordance with SSMP;</p> <p>(CONTINUED)</p>	40 CFR Section 63.10(b)(2)
<p>(continued from above)</p> <p>6) each period during which a continuous monitoring system (CMS) is malfunctioning or inoperative;</p> <p>7) all required measurements needed to demonstrate compliance with a relevant standard;</p> <p>8) all results of performance test, CMS performance evaluations, and opacity and visible emission observations;</p> <p>9) all measurements as may be necessary to determine the conditions of performance tests and performance evaluations;</p> <p>10) all CMS calibration checks;</p> <p>11) all adjustments and maintenance performed on CMS;</p> <p>12) any information demonstrating whether a source is meeting the requirements for a waiver of record keeping or reporting requirements under this part;</p> <p>13) all documents supporting initial notifications and notifications of compliance status.</p>	40 CFR Section 63.10(b)(2)
<p>Startup, shutdown, and malfunction reports shall be submitted only if there is an occurrence of startup, shutdown, or malfunction during the reporting period and shall be delivered or postmarked by the 30th day following the end of each calendar half year.</p>	40 CFR Section 63.10(d)(5)(i)
TEST METHODS AND OTHER PROCEDURES - MACT EMISSION LIMITS	hdr

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-19**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

<p>Determine compliance with each MACT emission limit for particulate matter according to the requirements in 40 CFR Section 63.7(e)(1) and by following the test methods and procedures in paragraphs (1) and (2), below.</p> <p>(1) Determine the concentration of particulate matter for each stack according to the test methods in 40 CFR part 60, appendix A. The applicable test methods are listed in paragraphs (i) through (v), below.</p> <p>(i) Method 1 or 1A to select sampling port locations and the number of traverse points. Sampling ports must be located at the outlet of the control device and prior to any releases to the atmosphere.</p> <p>(ii) Method 2, 2A, 2C, 2D, 2F, or 2G, as applicable, to determine the volumetric flow rate of the stack gas.</p> <p>(iii) Method 3, 3A, or 3B to determine the dry molecular weight of the stack gas.</p> <p>(iv) Method 4 to determine the moisture content of the stack gas.</p> <p>(v) Method 5, 5D, or 17 to determine the concentration of particulate matter.</p> <p>(CONTINUED)</p>	40 CFR part 60, appendix A; 40 CFR Section 63.7(e)(1); 40 CFR Section 63.43(g)
<p>(Continued from above)</p> <p>(2) Each Method 5, 5D, or 17 performance test must consist of three separate runs. Each run must be conducted for a minimum of 2 hours. (The duration of the runs may be changed with the approval of the Commissioner.) The average particulate matter concentration from the three runs will be used to determine compliance.</p>	40 CFR part 60, appendix A; 40 CFR Section 63.7(e)(1); 40 CFR Section 63.43(g)
PERFORMANCE TESTING NOTIFICATIONS	hdr

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-20**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Subject Item: GP 007 Material Handling Operations - Fugitives****Associated Items:** FS 001 Material Handling Operation, Coal

FS 003 Material Handling Operation, Flux (Limestone, Dolomite)

FS 005 Material Handling Operation, Slag

FS 007 Material Handling Operation, Nuggets

What to do	Why to do it
EMISSION LIMITATIONS	hdr
Opacity: less than or equal to 5 percent opacity using 6-minute Average	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
WORK PRACTICE STANDARDS	hdr
Prior to startup, prepare, and at all times operate according to, a fugitive dust emissions control plan that describes in detail the measures that will be put in place to control fugitive dust emissions from the locations listed in paragraphs (1) through (5), below.  (1) Stockpiles (includes, but is not limited to, stockpiles of uncrushed coal, crushed coal, or slag);  (2) Material transfer points;  (3) Plant roadways;  (4) Nugget loading areas; and  (5) Yard areas.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Maintain a current copy of the fugitive dust emissions control plan onsite. It must be available for inspection upon request. Keep the plan for the life of the affected source or until the affected source is no longer subject to the requirements of this subpart.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Follow fugitive dust emissions control plan for applicable recordkeeping requirements. Perform weekly visibility checks for the stockpiles and maintain watering records for stockpile operations.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 63.6(e); 40 CFR Section 63.8(b)); Minn. R. 7007.0800, subp. 6(A)(2)
For each work practice standard and operation and maintenance requirement that applies where initial compliance is not demonstrated using a performance test, demonstrate initial compliance within 30 calendar days after initial startup.  Demonstrate continuous compliance with the work practice standard requirements by operating in accordance with the fugitive dust emissions control plan at all times.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Clean up all coal spilled on roads or access areas as soon as practicable using methods that minimize the amount of dust suspended.  Control fugitive particulate emissions by dust suppression methods on such operations so that fugitive particulate emissions are minimized.  However, during freezing temperatures, owners or operators shall not be required to apply water or dust suppressants.  No nonessential coal handling operations shall be conducted that are not shielded from the wind or enclosed in a building when steady wind speeds exceed 30 miles per hour as determined at the nearest official station of the United States Weather Bureau or by wind speed instruments on or adjacent to the site.  This does not authorize the use of surface hardening agents, wetting or chemical agents, foam agents, and oils that may cause ground water or surface water contamination in violation of any applicable water pollution law.	Minn. R. 7011.1105.A.; Minn. R. 7011.1120; Minn. R. 7011.1125; Minn. R. 7011.1140
Hold initial notifications, all other reports, testing and compliance data for at least five years.	40 CFR Section 63.10(b)); Minn. R. 7007.0800, subp. 6(A)(2)
COMPLIANCE DEMONSTRATION	hdr
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate compliance with the BACT opacity limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Opacity Performance Test: due before end of each 60 months following Initial Performance Test	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4



**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-21**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

CONTROL EQUIPMENT REQUIREMENTS	hdr
Check for visible emissions (during daylight hours) from the material handling operations once each calendar week while in operation.	Minn. R. 7007.0800, subp. 4
Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs. Corrective action may be in the form of discontinuing material transfer operations.	Minn. R. 7007.0800, subp. 2
Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken.	Minn. R. 7007.0800, subp. 5
Maintain watering records for material handling operations.	

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-22**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Subject Item: GP 008 Storage Piles - Fugitives****Associated Items:** FS 002 Wind Erosion, Coal

FS 004 Wind Erosion, Flux (Limestone, Dolomite)

FS 006 Wind Erosion, Slag

FS 008 Wind Erosion, Nuggets

<b>What to do</b>	<b>Why to do it</b>
<b>EMISSION LIMITATIONS</b>	hdr
Opacity: less than or equal to 5 percent opacity using 6-minute Average	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
<b>WORK PRACTICE STANDARDS</b>	hdr
Prepare, and at all times operate according to, a fugitive dust emissions control plan that describes in detail the measures that will be put in place to control fugitive dust emissions from the locations listed in paragraphs (1) through (5), below.  (1) Stockpiles (includes, but is not limited to, stockpiles of uncrushed coal, crushed coal, or slag);  (2) Material transfer points;  (3) Plant roadways;  (4) Nugget loading areas; and  (5) Yard areas.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Maintain a current copy of the fugitive dust emissions control plan onsite. It must be available for inspection upon request. Keep the plan for the life of the affected source or until the affected source is no longer subject to the requirements of this subpart.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
For each work practice standard and operation and maintenance requirement that applies where initial compliance is not demonstrated using a performance test, demonstrate initial compliance within 30 calendar days after initial startup.  Demonstrate continuous compliance with the work practice standard requirements by operating in accordance with the fugitive dust emissions control plan at all times.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Clean up all coal spilled on roads or access areas as soon as practicable using methods that minimize the amount of dust suspended.  Control fugitive particulate emissions by dust suppression methods on such operations so that fugitive particulate emissions are minimized.  However, during freezing temperatures, owners or operators shall not be required to apply water or dust suppressants.  No nonessential coal handling operations shall be conducted that are not shielded from the wind or enclosed in a building when steady wind speeds exceed 30 miles per hour as determined at the nearest official station of the United States Weather Bureau or by wind speed instruments on or adjacent to the site.  This does not authorize the use of surface hardening agents, wetting or chemical agents, foam agents, and oils that may cause ground water or surface water contamination in violation of any applicable water pollution law.	Minn. R. 7011.1105.A.; Minn. R. 7011.1120; Minn. R. 7011.1125; Minn. R. 7011.1140
Hold initial notifications, all other reports, testing and compliance data for at least five years.	40 CFR Section 63.10(b)); Minn. R. 7007.0800, subp. 6(A)(2)
<b>COMPLIANCE DEMONSTRATION</b>	hdr
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate compliance with the BACT opacity limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Opacity Performance Test: due before end of each 60 months following Initial Performance Test	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
<b>VISIBLE EMISSION REQUIREMENTS</b>	hdr
Check for visible emissions (during daylight hours) from the storage piles once each calendar week.	Minn. R. 7007.0800, subp. 4
Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs.	Minn. R. 7007.0800, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Mesabi Nugget LLC  
Permit Number: 13700318 - 001

Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken.	Minn. R. 7007.0800, subp. 5
Maintain watering records for storage piles.	

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-24**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Subject Item: GP 009 Continuous Monitors subject to BACT and MACT****Associated Items:** MR 003 RHF - SO2 Monitor

MR 005 RHF - CO Monitor

MR 009 RHF - Offgas Flow

MR 010 RHF - O2 content

What to do	Why to do it
MONITORING AND COLLECTING DATA	hdr
Do not use data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities in data averages and calculations used to report emission or operating levels, or to fulfill a minimum data availability requirement. All the data collected during all other periods must be used in assessing compliance.	Minn. R. 7007.0800, subp. 2
Installation Notification: due 60 days before installing the continuous emissions monitoring system. The notification shall include plans and drawings of the system.	Minn. R. 7017.1040, subp. 1
CEMS Installation: install CEMS such that representative measurements of emissions or process parameters from the source are obtained. In addition the CEMS shall be located according to procedures contained in the applicable performance specifications of 40 CFR pt. 60, Appendix B.	Minn. R. 7017.1040, subp. 2 ; 40 CFR Section 63.8(c)(2)(i)
When two or more emission units required to be monitored with a CEMS are not subject to the same emission limit, a separate CEMS shall be installed on each emission unit.	Minn. R. 7017.1040, subp. 3
CEMS Certification Test: due within 60 days after the due date of the first excess emissions report required for the CEMS. Follow the Performance Specifications listed in 40 CFR pt. 60, Appendix B.	Minn. R. 7017.1050, subp. 1; 40 CFR Section 63.8(e)(5)
CEMS Certification Test Plan: due 60 days before CEMS Certification Test	Minn. R. 7017.1060, subp.1 & 2; 40 CFR Section 63.8(e)(3)
CEMS Certification Test Pretest Meeting: due 7 days before CEMS Certification Test.	Minn. R. 7017.1060, subp. 3
All CEMS must be certified according to the appropriate performance specifications listed in 40 CFR pt. 60, Appendix B.	Minn. R. 7017.1070, subp. 1
CEMS Certification Test Report: due 45 days after CEMS Certification Test	Minn. R. 7017.1080, subp. 1, 2, & 4
CEMS Certification Test Report - Microfiche Copy: due 105 days after CEMS Certification Test	Minn. R. 7017.1080, subp. 3
Continuous Operation: CEMS must be operated and data recorded during all periods of emission unit operation including periods of emission unit start-up, shutdown, or malfunction except for periods of acceptable monitor downtime. This requirement applies whether or not a numerical emission limit applies during these periods. A CEMS must not be bypassed except in emergencies where failure to bypass would endanger human health, safety, or plant equipment.	Minn. R. 7017.1090, subp. 1; 40 CFR Section 63.8(c)(4)
Acceptable monitor downtime includes reasonable periods as listed in Items A, B, C and D of Minn. R. 7017.1090, subp. 2.	
Excess Emissions/Downtime Reports (EERs): due 30 days after end of each calendar quarter following CEMS Certification Test (Submit Deviations Reporting Form DRF-1 as amended). The EER shall indicate all periods of monitor bypass and all periods of exceedances of the limit including exceedances allowed by an applicable standard, i.e. during startup, shutdown, and malfunctions.	Minn. R. 7017.1110, subp. 1 & 2; 40 CFR Section 63.8(c)(8); 40 CFR Section 63.10(e)(3)
Recordkeeping: The owner or operator must retain records of all CEMS monitoring data and support information for a period of five years from the date of the monitoring sample, measurement or report. Records shall be kept at the source.	Minn. R. 7007.1130

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-25**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

<p>All data points collected by a CEMS shall be used to calculate individual hourly emission averages unless another applicable requirement or compliance document requires more frequent averaging. Each hourly average starts at the beginning of the hour and ends at the beginning of the following hour.</p> <p>In order for an hour of data to be considered valid, it must contain the following minimum number of data points during the hour:</p> <ul style="list-style-type: none"> <li>- four data points, equally spaced, if the emission unit operated during the entire hour;</li> <li>- two data points, at least 15 minutes apart, during periods of monitor calibration, and periods of time to conduct quality control audits or routine maintenance; and</li> <li>- one data point if the emission unit operated for 15 minutes or less during the hour.</li> </ul> <p>Monitoring data shall be recorded in the same units of measurement and averaging period as the facility's emission standard.</p>	Minn. R. 7017.1160; 40 CFR 63.8(c)(4)
QA Plan: Develop and implement a written quality assurance plan that covers each CEMS. The plan shall be on site and available for inspection within 30 days after monitor certification. The plan shall contain all of the information required by 40 CFR pt. 60, App. F, section 3.	Minn. R. 7017.1170, subp. 2; 40 CFR Section 63.8(d)
CEMS Daily Calibration Drift (CD) Test: The CD shall be quantified and recorded at zero (low-level) and upscale (high-level) gas concentrations at least once daily. The CEMS shall be adjusted whenever the CD exceeds twice the specification of 40 CFR pt. 60, Appendix B. 40 CFR pt. 60, Appendix F, shall be used to determine out-of-control periods for CEMS. Follow the procedures in 40 CFR pt. 60, Appendix F.	Minn. R. 7017.1170, subp. 3; 40 CFR Section 63.8(c)(6)
Cylinder Gas Audit (CGA): due before end of each calendar half-year following CEMS Certification Test. Conduct CGA at least 3 months apart and not greater than 8 months apart. Follow the procedures in 40 CFR pt. 60, Appendix F.	Minn. R. 7017.1170, subp. 4
Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar half-year following Cylinder Gas Audit (CGA).	Minn. R. 7017.1180, subp. 1
CEMS Relative Accuracy Test Audit (RATA): due before end of each calendar year following CEMS Certification Test. Follow the procedures in 40 CFR pt. 60, Appendix F, as amended.	Minn. R. 7017.1170, subp. 5
Relative Accuracy Test Audit (RATA) Notification: due 30 days before CEMS Relative Accuracy Test Audit (RATA)).	Minn. R. 7017.1180, subp. 2
Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which the CEMS RATA was conducted.	Minn. R. 7017.1180, subp. 3
CEM Certification Test: Written notification of the planned test date shall be postmarked or received at least 60 days before the planned test date.	Minn. R. 7017.2030, subp. 1; 40 CFR Section 63.8(e)(2)

# TABLE A: LIMITS AND OTHER REQUIREMENTS

A-26

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Subject Item:** EU 001 Rotary Hearth Furnace (RHF)

**Associated Items:** CE 001 Wet Scrubber - High Efficiency

CE 002 Air Infiltration

GP 005 Emission Units subject to MACT

MR 003 RHF - SO2 Monitor

MR 004 RHF - NOx Monitor

MR 005 RHF - CO Monitor

MR 006 RHF - Differential Pressure

MR 007 RHF - Scrubber Water Flow

MR 008 RHF - pH

MR 009 RHF - Offgas Flow

MR 010 RHF - O2 content

SV 001 Rotary Hearth Furnace Stack Vent

SV 008 Rotary Hearth Furnace Bypass Stack Vent

What to do	Why to do it
EMISSION & OPERATING LIMITS	hdr
Sulfur Dioxide: less than or equal to 75.0 lbs/hour using 3-hour Block Average [With the use of natural gas in the RHF, compliance with this limit demonstrates compliance with Minn. R. 7011.0610, Subp. 2.B.]	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7011.0610, Subp. 2.B.
Sulfur Content of Coal: Less than or equal to 0.85 percent by weight	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Sulfur Dioxide: greater than or equal to 90 percent control efficiency using 3-hour Block Average	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Opacity: less than or equal to 10 percent opacity using 6-minute Average Compliance with this limit also fulfills the requirements of Minn. R. 7011.0610, subp. 1(A)(2).	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7011.0610, subp. 1(A)(2)
Front-half Particulate Matter: less than or equal to 0.015 grains/dry standard cubic foot using 3-hour Rolling Average at 7% oxygen using Method 5. [Front-catch particulate Matter is a surrogate for the control of metal HAPs.]  Because PM emissions (as measured by Method 5) from commercial-scale iron nugget rotary hearth furnaces have not been quantified, the actual emissions may exceed the above emission rate. If the Permittee cannot meet the above limit during normal operation, the MPCA may adjust the PM emission rate to a level not to exceed 0.020 gr/dscf at 7% oxygen using Method 5, following the MPCA's review of the stack test results. The Permittee has the burden of demonstrating that it took all steps necessary to ensure that the emissions levels achieved in the stack test were the lowest achievable. This change in the permit will be accomplished administratively.  [This fulfills the requirements of Minn. R. 7011.0610, subp. 1(A)(1).]	Title I Condition: 40 CFR Section 52.21(j): BACT; Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g) and Minn. R. 3010; Minn. R. 7011.0610, subp. 1(A)(1).
Front-half Particulate Matter: less than or equal to 44.3 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR Section 52.21(j): BACT; Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 3010
Front-half Particulate Matter: greater than or equal to 92 percent control efficiency using 3-hour Block Average	Title I Condition: 40 CFR Section 52.21(j): BACT; Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 3010

**TABLE A: LIMITS AND OTHER REQUIREMENTS**
**A-27**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

Particulate Matter < 10 micron: less than or equal to 0.020 grains/dry standard cubic foot using 3-hour Block Average at 7% oxygen.  Because PM10 emissions from commercial-scale iron nugget rotary hearth furnaces have not been quantified, the actual emissions may exceed the above emission rate. If the the Permittee cannot meet the above limit during normal operation, the MPCA may adjust the PM10 emission rate to a level not to exceed 0.025 gr/dscf at 7% oxygen, following the MPCA's review of the stack test results. The Permittee has the burden of demonstrating that it took all steps necessary to ensure that the emissions levels achieved in the stack test were the lowest achievable. This change in the permit will be accomplished administratively.  [PM10 is also a surrogate for the control of inorganic HAPs.]	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Particulate Matter < 10 micron: less than or equal to 44.3 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Particulate Matter < 10 micron: greater than or equal to 92 percent control efficiency using 3-hour Block Average	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Carbon Monoxide: less than or equal to 60 parts per million using 3-hour Block Average dry at 7% oxygen.  [Carbon monoxide concentration is a surrogate for the control of volatile HAPs.]	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Carbon Monoxide: less than or equal to 58.2 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Volatile Organic Compounds: less than or equal to 4.86 lbs/hour using 3-hour Rolling Average at maximum capacity	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Volatile Organic Compounds: less than or equal to 1.0 parts per million using 3-hour Block Average wet, at 7% oxygen (as propane, using Method 25A)	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Nitrogen Oxides: less than or equal to 125 parts per million using 3-hour Rolling Average dry by volume at 7% oxygen	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Nitrogen Oxides: less than or equal to 205.8 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Lead: less than or equal to 0.96 lbs/hour at maximum capacity	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Lead: greater than or equal to 90 percent control efficiency using 3-hour Block Average	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Fluorides: less than or equal to 24.6 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Fluorides: greater than or equal to 97 percent control efficiency using 3-hour Block Average	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Sulfuric Acid Mist: less than or equal to 20.2 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Sulfuric Acid Mist: greater than or equal to 90 percent control efficiency using 3-hour Block Average	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Mercury: less than or equal to 0.0086 lbs/hour at maximum capacity calculated as a two-hour average	Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Always operate and maintain the rotary hearth furnace (EU001), including air pollution control and monitoring equipment, in a manner consistent with good air pollution control practices for minimizing emissions at least to the levels required.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 63.6(e)(1)(i); 40 CFR Section 64.5
Operate a wet scrubber at all times the emission unit is operating to control emissions of sulfur dioxide, particulate matter, particulate matter less than ten microns in diameter, lead, fluorides, and sulfuric acid mist.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Operate a wet scrubber at all times the emission unit is operating to control emissions of metal HAPs and acid gas HAPs.	Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Operate an air infiltration system at all times the emission unit is operating to control emissions of carbon monoxide and volatile organic compounds.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Operate an air infiltration system at all times the emission unit is operating to control emissions of volatile organic HAPs.	Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
MONITORING REQUIREMENTS	hdr
Coal Properties Monitoring: The Permittee shall obtain, from the supplier of each coal shipment, a certificate that specifies the sulfur content (in percent sulfur by weight). For any shipment received without the certificate, the Permittee shall obtain a representative sample from the shipment for analysis of sulfur content and heating value.	Minn. R. 7011.0610, Subp. 2.B.
For compliance assurance monitoring provisions, EU001 is a large emission pollutant-specific unit for SO <sub>2</sub> , PM, PM <sub>10</sub> , CO, fluorides, and sulfuric acid mist.	40 CFR Section 64.6 and Minn. R. 7017.0200

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-28**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

Emissions Monitoring: The owner or operator shall install and operate a CO CEMS to measure CO emissions from the rotary hearth furnace and to be used as a surrogate monitoring parameter for VOCs and volatile organic HAPs.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6 and Minn. R. 7017.0200; Minn. R. 7017.1006
Emissions Monitoring: The owner or operator shall install and operate an SO2 CEMS to measure SO2 emissions from the rotary hearth furnace and to be used as a surrogate monitoring parameter for sulfuric acid mist.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6 and Minn. R. 7017.0200; Minn. R. 7017.1006
Emissions Monitoring: The owner or operator shall install and operate a NOx CEMS to measure NOx emissions from the rotary hearth furnace.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7017.1006
Emissions Monitoring: The owner or operator shall install and operate an offgas flow monitor to measure offgas flow from the rotary hearth furnace.  (Basis: This is needed to determine lbs of emissions from concentration measurements.)	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6 and Minn. R. 7017.0200; Minn. R. 7017.1006
Emissions Monitoring: The owner or operator shall install and operate an oxygen monitor to measure the oxygen content in the offgas flow from the rotary hearth furnace.  (Basis: This is needed to correct concentrations to a specific oxygen content.)	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.6 and Minn. R. 7017.0200; Minn. R. 7017.1006
Conduct Visual Emissions checks once weekly.	Minn. R. 7007.0800, subp. 4
NOTIFICATION REQUIREMENTS	hdr
TESTING REQUIREMENTS	hdr
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT PM limit and with the case-by-case MACT limit for metals HAPs (for which PM is a surrogate).	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT PM10 limit and with the case-by-case MACT limit for acid gas HAPs (for which PM10 is a surrogate).	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT limits for opacity, volatile organic compounds, lead, fluorides, and sulfur acid mist.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the MACT limit for mercury.	Title I Condition: 40 CFR 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.0800, subp. 4
SO2 CEM Certification Test: due 90 days after Initial Performance Test Trigger Date.	Title I Condition: 40 CFR Section 52.21(j): MACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.0800, subp. 4
CO CEM Certification Test: due 90 days after Initial Performance Test Trigger Date.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.0800, subp. 4
NOx CEM Certification Test: due 90 days after Initial Performance Test Trigger Date.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
O2 CEM Certification Test: due 90 days after Initial Performance Test Trigger Date.	Title I Condition: 40 CFR Section 52.21(j): MACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.0800, subp. 4
Offgas flow CEM Certification Test: due 90 days after Initial Performance Test Trigger Date.	Title I Condition: 40 CFR Section 52.21(j): MACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.0800, subp. 4
Mercury Performance Test: due 270 days before Application for Permit Reissuance	Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Mercury Performance Test: due 730 days after the previous performance test for mercury	Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.0800, subp. 2
WET SCRUBBER OPTIMIZATION STUDY	hdr



**TABLE A: LIMITS AND OTHER REQUIREMENTS**
**A-29**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

<p>Submittal: Due within 365 days of permit issuance - a plan to study the operation of the wet scrubber at the RHF during normal operation with the goal of achieving the maximum sustained removals of SO<sub>2</sub>, PM, PM<sub>10</sub>, lead, fluorides, and sulfuric acid mist by the wet scrubber (i.e., "optimizing" the wet scrubber). Parameters to be monitored include the liquid flow rate, pressure drop, and pH.</p> <p>The plan must include:</p> <ol style="list-style-type: none"> <li>1) A description of the methods by which the parameter data and pollutant emission data will be collected;</li> <li>2) A description of the experimental design that will be used; and</li> <li>3) The number and type of pollutant tests that will be performed.</li> </ol> <p>The MPCA may request changes to the plan.</p>	<p>Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR 63.43(g); MACT and Minn. R. 7007.3010; Minn. R. 7007.0800, subp. 4</p>
<p>Wet scrubber optimization study: Within 180 days after the Initial Performance Test Trigger Date, the Permittee shall complete a study of the wet scrubber according to the plan submitted to the MPCA.</p>	<p>Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR 63.43(g); MACT and Minn. R. 7007.3010; Minn. R. 7007.0800, subp. 4</p>
<p>Wet scrubber optimization study report: Within 90 days of completing the wet scrubber optimization study, the Permittee shall submit a report to the MPCA. The report must contain:</p> <ol style="list-style-type: none"> <li>1) All parameter data and pollutant emission data gathered during the process;</li> <li>2) A description of any deviations from the plan submitted to the MPCA;</li> <li>3) A description of the variability and uncertainty using a significance level of five percent;</li> <li>4) Proposed limits (maximum pound per hour; minimum removal efficiency or pound per ton of product) for SO<sub>2</sub>, PM, PM<sub>10</sub>, lead, fluorides, and sulfuric acid mist with the rationale for those limits;</li> <li>5) Proposed ranges for operating parameters to monitor the performance of the wet scrubber; and</li> <li>6) A demonstration that the Permittee took all steps necessary to ensure that the emissions levels achieved in the stack test were the lowest achievable.</li> </ol> <p>(CONTINUED)</p>	<p>Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR 63.43(g); MACT and Minn. R. 7007.3010; Minn. R. 7007.0800, subp. 4</p>
<p>(continued from above)</p> <p>The MPCA may use the information provided in the report on the wet scrubber optimization study as described under PERMIT REOPENING in the facility conditions.</p> <p>The Permittee may use the information provided by the report on the wet scrubber optimization study to request changes to emission rates as described under PERMIT REOPENING in the facility conditions.</p>	<p>Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR 63.43(g); MACT and Minn. R. 7007.3010; Minn. R. 7007.0800, subp. 4</p>
<p><b>MACT GENERAL COMPLIANCE REQUIREMENTS</b></p>	<p>hdr</p>
<p>Comply with the emission limitations, work practice standards, operation and maintenance requirements, notification requirements, reporting requirements, and recordkeeping requirements for the wet scrubber at all times, except during periods of startup, shutdown, and malfunction. The terms startup, shutdown, and malfunction are defined in 63.2.</p> <p>During the period between initial startup and the date upon which continuous monitoring systems have been installed and certified and any applicable operating limits have been set, maintain a log detailing the operation and maintenance of the process and emissions control equipment. This includes the daily monitoring and recordkeeping of air pollution control device operating parameters.</p> <p>[These startup, shutdown, and malfunction provisions apply only to the MACT (40 CFR 63.43(g)) limits. There is no startup, shutdown, and malfunction exception for the limits set under BACT (40 CFR 52.21).]</p>	<p>Title I Condition: 40 CFR Section 63.43(g); MACT and Minn. R. 7007.3010; 40 CFR Section 64.6 and Minn. R. 7017.0200</p>
<p>Prior to startup, develop and implement a written startup, shutdown, and malfunction plan according to the provisions in 63.6(e)(3).</p>	<p>Title I Condition: 40 CFR Section 63.43(g); MACT and Minn. R. 7007.3010; 40 CFR Section 63.6(e)(3); ; 40 CFR Section 64.6 and Minn. R. 7017.0200</p>
<p><b>NO<sub>x</sub> CONTROL STUDY</b></p>	<p>hdr</p>
<p>The Permittee shall design and complete a study of NO<sub>x</sub> control for the RHF.</p>	<p>Minn. R. 7007.0800, subp. 2</p>

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-30**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

<p>The Permittee shall:</p> <ol style="list-style-type: none"> <li>1. Within 60 days of the Initial Performance Trigger Date, design, install and operate a selective noncatalytic reduction (SNCR) system for the RHF for the purposes of determining the emission rate and reduction achievable, reliability and feasibility of SNCR;</li> <li>2. Within 365 days of the Initial Performance Trigger Date, submit a report to the Commissioner of the results of the SNCR NOx emissions control study. The report shall, at a minimum, describe in detail the following: <ol style="list-style-type: none"> <li>a. the system installed;</li> <li>b. operating conditions of the RHF and the affects of varying these conditions;</li> <li>c. operating parameters of SNCR and the affects of varying these parameters;</li> <li>d. problems and efforts taken to address those problems;</li> <li>e. reliability of the SNCR;</li> <li>f. efforts taken to optimize the system; and</li> <li>g. feasibility of the controls.</li> </ol> </li> </ol> <p>(CONTINUED)</p>	Minn. R. 7007.0800, subp. 2
<p>(continued from above)</p> <ol style="list-style-type: none"> <li>3. If the Commissioner determines that selective noncatalytic reduction is feasible, the Commissioner shall notify the Permittee and the Permittee shall submit an application for a permit amendment to incorporate the emission limits reflective of the control efficiency and/or emission rate achieved with SNCR, and the operating and monitoring conditions, as appropriate, within 180 days of the notification of the feasibility of SNCR.</li> </ol>	Minn. R. 7007.0800, subp. 2
<p>If the commissioner determines that SNCR is not feasible, upon notification by the Commissioner, the Permittee may shutdown the SNCR system and the Permittee shall design and complete a study of alternative NOx control for the RHF.</p>	Minn. R. 7007.0800, subp. 2
<p>The study shall consist of the following steps:</p> <ol style="list-style-type: none"> <li>1. A literature search of other NOx control technologies including non-thermal plasma control;</li> <li>2. Selection of a technology for a pilot-scale demonstration;</li> <li>3. Submittal, within 180 days of the Commissioner's notification of the infeasibility of SNCR, of a plan and schedule for a pilot-scale project for the control of NOx for approval by the commissioner;</li> <li>4. Implementation of a pilot-scale NOx emission reduction project for the RHF for the purposes of determining the emission rate and reduction achievable, the dollar costs per ton of NOx reduced, reduction and increases of other pollutants associated with the technology, reliability and feasibility of selected technology;</li> <li>5. Submittal, within 540 days of Commissioner's notification of the infeasibility of SNCR, of a report to the commissioner of the results of the NOx emissions control study. The report shall, at a minimum, describe in detail the following:</li> </ol> <p>(CONTINUED)</p>	Minn. R. 7007.0800, subp. 2
<p>(continued from above)</p> <ol style="list-style-type: none"> <li>a) The system installed;</li> <li>b) Operating conditions of the RHF and the affects of varying these conditions;</li> <li>c) Operating parameters of the system and the affects of varying these parameters;</li> <li>d) Problems and efforts taken to address those problemsproblems and efforts taken to address those problems;</li> <li>e) Reliability of the system;</li> <li>f) Efforts taken to optimize the system; and</li> <li>g) Feasibility of the controls.</li> </ol>	Minn. R. 7007.0800, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Mesabi Nugget LLC  
Permit Number: 13700318 - 001

If the commissioner determines that the alternative technology is cost effective and feasible, the Commissioner shall notify the Permittee and the Permittee shall submit an application for a permit amendment to incorporate the emission limits reflective of the control efficiency and/or emission rate achieved with the alternative technology, and the operating and monitoring conditions, as appropriate, within 180 days of the Commissioner's notification of the determination of the feasibility and cost effectiveness of the alternative technology.	Minn. R. 7007.0800, subp. 2
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**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-32**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Subject Item:** EU 002 Green Ball Dryer/Material Transfer Operations**Associated Items:** CE 007 Fabric Filter - High Temperature, i.e., T>250 Degrees F

CE 009 Fabric Filter - Low Temperature, i.e., T&lt;180 Degrees F

CE 010 Fabric Filter - Low Temperature, i.e., T&lt;180 Degrees F

GP 005 Emission Units subject to MACT

MR 011 Green Ball Dryer - Bag Alarm

SV 001 Rotary Hearth Furnace Stack Vent

What to do	Why to do it
EMISSION AND OPERATING LIMITS	hdr
Opacity: less than or equal to 10 percent opacity using 6-minute Average Compliance with this limit also fulfills the requirements of Minn. R. 7011.0610, subp. 1.A(2)	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7011.0610, subp. 1.A(2)
Front-half Particulate Matter: less than or equal to 0.010 grains/dry standard cubic foot using 3-hour Average Compliance with this limit also fulfills the requirements of Minn. R. 7011.0610, subp. 1.A(1) [Front-half particulate matter is a surrogate for the capture of metals HAPs]	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7011.0610, subp. 1.A(1)
Front-half Particulate Matter: less than or equal to 35.2 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Front-half Particulate Matter: greater than or equal to 92 percent control efficiency using 3-hour Block Average .	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Particulate Matter < 10 micron: less than or equal to 0.015 grains/dry standard cubic foot using 3-hour Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Particulate Matter < 10 micron: less than or equal to 35.2 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Particulate Matter < 10 micron: greater than or equal to 92 percent control efficiency using 3-hour Block Average .	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Volatile Organic Compounds: less than or equal to 19.4 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Volatile Organic Compounds: less than or equal to 0.094 lbs/million Btu heat input using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Nitrogen Oxides: less than or equal to 6.8 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Nitrogen Oxides: less than or equal to 0.09 lbs/million Btu heat input using 3-hour Block Average at 7% oxygen	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Carbon Monoxide: less than or equal to 37.2 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Carbon Monoxide: less than or equal to 60 parts per million using 3-hour Block Average at 7% oxygen	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Fuel Usage: Limited to natural gas or propane (as backup) only. Complying with this restriction also fulfills the requirements of Minn. R. 7011.0610, subp. 2.B. [Basis for BACT for sulfur dioxide.]	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7011.0610, subp. 2.B
Fuel Usage: less than or equal to 352 million cubic feet/year using 12-month Rolling Sum [This is a basis for the BACT analysis.]	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Operate with low-NOx burners only. [Basis for BACT for nitrogen oxides.]	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Operate the baghouses (CE007, CE009, and CE010) at all times the emission unit is operating to control particulate emissions.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-33**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

Operate and maintain the Green Ball Dryer (EU 002), including air pollution control and monitoring equipment, in a manner consistent with good air pollution control practices for minimizing emissions at least to the emission limitations.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
See GP005 for additional requirements.	
<b>MONITORING AND RECORDKEEPING REQUIREMENTS</b>	hdr
For compliance assurance monitoring provisions, EU002 is a large emission pollutant-specific unit for PM10.	40 CFR Section 64.6 and Minn. R. 7017.0200
Conduct Visual Emissions checks once weekly.	Minn. R. 7007.0800, subp. 4
Recordkeeping: Record and maintain records of the amount of natural gas combusted on a monthly basis. These records may consist of purchase records or receipts.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
<b>COMPLIANCE DEMONSTRATIONS</b>	hdr
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate compliance with the BACT opacity limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT PM limit and with the case-by-case MACT limit for metals HAPs (for which PM is a surrogate).	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT PM10 limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to measure emissions of VOCs. This test will verify permit application assumptions about VOC emissions.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT NOx limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT CO limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
12-Month Rolling Sum calculation of Natural Gas Consumption: Calculate the 12-month rolling sum of the volume of natural gas consumed (in million cubic feet) by summing the monthly volume of natural gas consumed for the previous 12 operating months.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-34**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Subject Item:** EU 003 Product Separator**Associated Items:** CE 008 Fabric Filter - High Temperature, i.e., T>250 Degrees F

GP 005 Emission Units subject to MACT

SV 001 Rotary Hearth Furnace Stack Vent

What to do	Why to do it
EMISSION AND OPERATING LIMITS	hdr
Front-half Particulate Matter: less than or equal to 0.010 grains/dry standard cubic foot using 3-hour Average  Compliance with this limit also fulfills the requirements of Minn. R. 7011.0610, subp. 1.A(1)  [Front-half particulate matter is a surrogate for the capture of metals HAPs]	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7011.0610, subp. 1.A(1)
Particulate Matter < 10 micron: less than or equal to 0.015 grains/dry standard cubic foot using 3-hour Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Opacity: less than or equal to 10 percent opacity using 6-minute Average  Compliance with this limit also fulfills the requirements of Minn. R. 7011.0610, subp. 1.A(2)	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7011.0610, subp. 1.A(2)
Volatile Organic Compounds: less than or equal to 0.13 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Volatile Organic Compounds: less than or equal to 0.0054 lbs/million Btu heat input using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Nitrogen Oxides: less than or equal to 1.2 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Nitrogen Oxides: less than or equal to 0.049 lbs/million Btu heat input using 3-hour Block Average at 7% oxygen	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Carbon Monoxide: less than or equal to 2.1 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Carbon Monoxide: less than or equal to 0.082 lbs/million Btu heat input using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Fuel Usage: Limited to natural gas or propane (as backup) only.  Complying with this restriction also fulfills the requirements of Minn. R. 7011.0610, subp. 2.B.  [Basis for BACT for sulfur dioxide.]	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7011.0610, subp. 2.B
Operate and maintain the Product Separator (EU 003), including air pollution control and monitoring equipment, in a manner consistent with good air pollution control practices for minimizing emissions at least to the emission limitations.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Operate the baghouse (CE008) at all times the emission unit is operating to control particulate emissions. Also, operate in compliance with the requirements in GP004.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
MONITORING REQUIREMENTS	hdr
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate initial compliance with the BACT opacity limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate initial compliance with the BACT particulate matter limit and with the case-by-case MACT limit for metals HAPs (for which PM is a surrogate).	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT PM10 limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT VOC limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT NOx limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT CO limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Conduct Visual Emissions checks once weekly.	Minn. R. 7007.0800, subp. 4

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-35**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Subject Item:** EU 004 Coal 1 Pulverizer**Associated Items:** CE 005 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

GP 005 Emission Units subject to MACT

MR 001 Coal 1 Pulverizer - Differential Pressure

SV 002 Pulverizer Stack Vent

What to do	Why to do it
EMISSION AND OPERATING LIMITS	hdr
Opacity: less than or equal to 10 percent using 6-minute Average from any coal processing and conveying equipment, coal storage system, or coal transfer and loading system processing coal  [Compliance with this limit indicates compliance with the opacity limits in 40 CFR Section 60.252(c); Minn. R. 7011.0610; Minn. R. 7011.1115, Subp. 2.B; Minn. R. 7011.1150]	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Front-half Particulate Matter: less than or equal to 0.010 grains/dry standard cubic foot using 3-hour Average  Compliance with this limit also fulfills the requirements of Minn. R. 7011.0610, subp. 1.A(1)  [Front-half particulate matter is also a surrogate for (particulate) metals HAPs.]	Title I Condition: 40 CFR 52.21(j); BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7011.0610, subp. 1.A(1)
Particulate Matter < 10 micron: less than or equal to 0.015 grains/dry standard cubic foot using 3-hour Average	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Volatile Organic Compounds: less than or equal to 0.19 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Volatile Organic Compounds: less than or equal to 0.0054 lbs/million Btu heat input using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Nitrogen Oxides: less than or equal to 1.8 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Nitrogen Oxides: less than or equal to 0.049 lbs/million Btu heat input using 3-hour Block Average at 7% oxygen	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Carbon Monoxide: less than or equal to 3.0 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Carbon Monoxide: less than or equal to 0.082 lbs/million Btu heat input using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Fuel Usage: Limited to natural gas or propane (as backup) only.  Complying with this restriction also fulfills the requirements of Minn. R. 7011.0610, subp. 2.B.  [Basis for BACT for sulfur dioxide.]	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7011.0610, subp. 2.B.
Operate with low-NOx burners only.  Complying with this restriction also fulfills the requirements of Minn. R. 7011.0610, subp. 2.B.  [Basis for BACT for nitrogen oxides.]	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Operate and maintain the Coal 1 Pulverizer (EU 004), including air pollution control and monitoring equipment, in a manner consistent with good air pollution control practices for minimizing emissions at least to the emission limitations.	Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. Rules 7007.3010
Operate the baghouse (CE005) at all times the emission unit is operating to control particulate emissions. Also, operate in compliance with the requirements in GP004.	Title I Condition: 40 CFR 52.21(j); BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
OPERATIONAL & CONTROL REQUIREMENTS	hdr
Install thermal dryers in a manner that performance tests for particulate matter can be run in accordance with applicable procedures and methods.	Minn. R. 7011.1115, Subp. 3.
VISIBLE EMISSIONS REQUIREMENTS	hdr
Check for visible emissions (during daylight hours) from the control equipment (CE005) once each calendar week while EU004 is in operation.	40 CFR Section 60.252(c); Minn. R. 7011.0600 - 7011.0610; Minn. R. 7007.0800, subp. 4

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-36**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs. Corrective action may be in the form of discontinuing venting emissions to the atmosphere through CE005.	Minn. R. 7007.0800, subp. 2
Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken.	Minn. R. 7007.0800, subp. 5
<b>MONITORING REQUIREMENTS</b>	hdr
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate compliance with the BACT opacity limit.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate initial compliance with the BACT particulate matter limit and with the case-by-case MACT limit for metals HAPs (for which PM is a surrogate).	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT PM10 limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT VOC limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT NOx limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT CO limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Prior to startup, install and operate a monitoring device for the measurement of the temperature of the gas stream at the exit of the thermal dryer on a continuous basis. The monitoring device shall be certified by the manufacturer to be accurate within three degrees Fahrenheit.	Minn. R. 7011.1115, Subp. 4.A.
Recalibrate each device required by Minn. R. 7011.1115 annually in accordance with the manufacturer's written requirements for checking the operation and calibration of the device.	Minn. R. 7011.1115, Subp. 4.C.
<b>RECORDKEEPING</b>	hdr
QA Plan: Develop and implement a written quality assurance plan that covers the pressure drop CMS. The plan shall be on site and available for inspection within 30 days after monitor certification. The plan shall contain all of the information required by 40 CFR Section 63.8(d).	Title I Condition: 40 CFR 52.21(j): BACT; 40 CFR Section 63.8(d)(2); Minn. R. 7017.1170, subp. 2
Recordkeeping: The owner or operator must retain records of all pressure drop CMS monitoring data and support information for a period of five years from the date of the monitoring, sample, measurement, or report. Records shall be kept at the source.	Title I Condition: 40 CFR 52.21(j): BACT; 40 CFR Section 63.10(b); Minn. R. 7017.1130



**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-37**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Subject Item:** EU 005 Coal 2 Pulverizer**Associated Items:** CE 006 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

GP 005 Emission Units subject to MACT

MR 002 Coal 2 Pulverizer - Differential Pressure

SV 002 Pulverizer Stack Vent

What to do	Why to do it
EMISSION AND OPERATING LIMITS	hdr
Opacity: less than or equal to 10 percent using 6-minute Average from any coal processing and conveying equipment, coal storage system, or coal transfer and loading system processing coal  [Compliance with this limit indicates compliance with the opacity limits in 40 CFR Section 60.252(c); Minn. R. 7011.0610; Minn. R. 7011.1115, Subp. 2.B; Minn. R. 7011.1150]	Title I Condition: 40 CFR 52.21(j); BACT and Minn. R. 7007.3000;
Front-half Particulate Matter: less than or equal to 0.010 grains/dry standard cubic foot using 3-hour Average  Compliance with this limit also fulfills the requirements of Minn. R. 7011.0610, subp. 1.A(1)  [Front-half particulate matter is also a surrogate for (particulate) metals HAPs.]	Title I Condition: 40 CFR 52.21(j); BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g); MACT and Minn. R. 7007.3010; Minn. R. 7011.0610, subp. 1.A(1)
Particulate Matter < 10 micron: less than or equal to 0.015 grains/dry standard cubic foot using 3-hour Average	Title I Condition: 40 CFR Section 52.21(j); BACT and Minn. R. 7007.3000
Volatile Organic Compounds: less than or equal to 0.05 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j); BACT and Minn. R. 7007.3000
Volatile Organic Compounds: less than or equal to 0.0054 lbs/million Btu heat input using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j); BACT and Minn. R. 7007.3000
Nitrogen Oxides: less than or equal to 0.45 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j); BACT and Minn. R. 7007.3000
Nitrogen Oxides: less than or equal to 0.049 lbs/million Btu heat input using 3-hour Block Average at 7% oxygen	Title I Condition: 40 CFR 52.21(j); BACT and Minn. R. 7007.3000
Carbon Monoxide: less than or equal to 0.76 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j); BACT and Minn. R. 7007.3000
Carbon Monoxide: less than or equal to 0.082 lbs/million Btu heat input using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j); BACT and Minn. R. 7007.3000
Fuel Usage: Limited to natural gas or propane (as backup) only.  Complying with this restriction also fulfills the requirements of Minn. R. 7011.0610, subp. 2.B.  [Basis for BACT for sulfur dioxides.]	Title I Condition: 40 CFR 52.21(j); BACT and Minn. R. 7007.3000; Minn. R. 7011.0610, subp. 2.B.
Operate with low-NOx burners only.  [Basis for BACT for nitrogen oxides.]	Title I Condition: 40 CFR 52.21(j); BACT and Minn. R. 7007.3000
Operate and maintain the Coal 2 Pulverizer (EU 005), including air pollution control and monitoring equipment, in a manner consistent with good air pollution control practices for minimizing emissions at least to the emission limitations.	Title I Condition: 40 CFR 52.21(j); BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g); MACT and Minn. R. 7007.3010
Operate the baghouse (CE006) at all times the emission unit is operating to control particulate emissions. Also, operate in compliance with the requirements in GP004.	Title I Condition: 40 CFR 52.21(j); BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g); MACT and Minn. R. 7007.3010
OPERATIONAL & CONTROL REQUIREMENTS	hdr
Install thermal dryers in a manner that performance tests for particulate matter can be run in accordance with applicable procedures and methods.	Minn. R. 7011.1115, Subp. 3.
VISIBLE EMISSIONS REQUIREMENTS	hdr
Check for visible emissions (during daylight hours) from the control equipment (CE006) once each calendar week while EU005 is in operation.	40 CFR Section 60.252(c); Minn. R. 7011.0600 - 7011.0610; Minn. R. 7007.0800, subp. 4
Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs. Corrective action may be in the form of discontinuing venting emissions to the atmosphere through CE006.	Minn. R. 7007.0800, subp. 2

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-38**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken.	Minn. R. 7007.0800, subp. 5
MONITORING REQUIREMENTS	hdr
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate compliance with the BACT opacity limit.	Title I Condition: 40 CFR 52.21(j); BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate initial compliance with the BACT particulate matter limit and with the case-by-case MACT limit for metals HAPs (for which PM is a surrogate).	Title I Condition: 40 CFR 52.21(j); BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g); MACT and Minn. R. 7007.3010; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT PM10 limit.	Title I Condition: 40 CFR 52.21(j); BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT VOC limit.	Title I Condition: 40 CFR 52.21(j); BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT NOx limit.	Title I Condition: 40 CFR 52.21(j); BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT CO limit.	Title I Condition: 40 CFR 52.21(j); BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Prior to startup, install and operate a monitoring device for the measurement of the temperature of the gas stream at the exit of the thermal dryer on a continuous basis. The monitoring device shall be certified by the manufacturer to be accurate within three degrees Fahrenheit.	Minn. R. 7011.1115, Subp. 4.A.
Recalibrate each device required by Minn. R. 7011.1115 annually in accordance with the manufacturer's written requirements for checking the operation and calibration of the device.	Minn. R. 7011.1115, Subp. 4.C.
RECORDKEEPING	hdr
QA Plan: Develop and implement a written quality assurance plan that covers the pressure drop CMS. The plan shall be on site and available for inspection within 30 days after monitor certification. The plan shall contain all of the information required by 40 CFR Section 63.8(d).	Title I Condition: 40 CFR 52.21(j); BACT; 40 CFR Section 63.8(d)(2); Minn. R. 7017.1170, subp. 2
Recordkeeping: The owner or operator must retain records of all pressure drop CMS monitoring data and support information for a period of five years from the date of the monitoring, sample, measurement, or report. Records shall be kept at the source.	Title I Condition: 40 CFR 52.21(j); BACT; 40 CFR Section 63.10(b); Minn. R. 7017.1130

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-39**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Subject Item:** EU 006 Flux 1 Pulverizer**Associated Items:** CE 004 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

GP 005 Emission Units subject to MACT

MR 012 Flux 1 Pulverizer - Differential Pressure

SV 002 Pulverizer Stack Vent

What to do	Why to do it
<b>EMISSION AND OPERATING LIMITS</b>	hdr
Opacity: less than or equal to 10 percent opacity using 6-minute Average  Compliance with this limit also fulfills the requirements of Minn. R. 7011.0610, subp. 1.A(2)	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7011.0610, subp. 1.A(2)
Front-half Particulate Matter: less than or equal to 0.010 grains/dry standard cubic foot using 3-hour Average  Compliance with this limit also fulfills the requirements of Minn. R. 7011.0610, subp. 1.A(1)  [Front-half particulate matter is a surrogate for the capture of metals HAPs]	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7011.0610, subp. 1.A(1)
Particulate Matter < 10 micron: less than or equal to 0.015 grains/dry standard cubic foot using 3-hour Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Volatile Organic Compounds: less than or equal to 0.08 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Volatile Organic Compounds: less than or equal to 0.0054 lbs/million Btu heat input using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Nitrogen Oxides: less than or equal to 0.71 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Nitrogen Oxides: less than or equal to 0.049 lbs/million Btu heat input using 3-hour Block Average at 7% oxygen	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Carbon Monoxide: less than or equal to 1.2 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Carbon Monoxide: less than or equal to 0.082 lbs/million Btu heat input using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Fuel Usage: Limited to natural gas or propane (as backup) only.  Complying with this restriction also fulfills the requirements of Minn. R. 7011.0610, subp. 2.B.  [Basis for BACT for sulfur dioxide.]	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7011.0610, subp. 2.B
Operate and maintain the Flux 1 Pulverizer (EU006), including air pollution control and monitoring equipment, in a manner consistent with good air pollution control practices for minimizing emissions at least to the emission limitations.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Operate the baghouse (CE004) at all times the emission unit is operating to control particulate emissions. Also, operate in compliance with the requirements in GP004.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
<b>VISIBLE EMISSIONS REQUIREMENTS</b>	hdr
Check for visible emissions (during daylight hours) from the control equipment (CE004) once each calendar week while EU006 is in operation.	Minn. R. 7007.0800, subp. 4
Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs. Corrective action may be in the form of discontinuing venting emissions to the atmosphere through CE004.	Minn. R. 7007.0800, subp. 2
Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken.	Minn. R. 7007.0800, subp. 5
<b>MONITORING REQUIREMENTS</b>	hdr
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate compliance with the BACT opacity limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate initial compliance with the BACT particulate matter limit and with the case-by-case MACT limit for metals HAPs (for which PM is a surrogate).	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.0800, subp. 4

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-40**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT PM10 limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT VOC limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT NOx limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT CO limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-41**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Subject Item:** EU 007 Coal Flux/Unload Baghouse**Associated Items:** CE 003 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

GP 005 Emission Units subject to MACT

MR 013 Coal Flux/Unload - Differential Pressure

SV 003 Coal/Flux Unloading Stack Vent

What to do	Why to do it
EMISSION AND OPERATING LIMITS	hdr
Front-half Particulate Matter: less than or equal to 0.005 grains/dry standard cubic foot using 3-hour Rolling Average for rail unloading and conveyor systems	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Particulate Matter < 10 micron: less than or equal to 0.005 grains/dry standard cubic foot using 3-hour Block Average	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Opacity: less than or equal to 10 percent opacity using 6-minute Average [This condition fulfills the opacity-related requirements of Minn. R. 7011.1105.H.]	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Coal unloading stations. Control fugitive particulate emissions from the unloading of trucks, haulers, and railcars by dust suppression methods so that emissions from such sources are minimized.	Minn. R. 7011.1105.B
Unload railcars only within a permanent building or structure.	Minn. R. 7011.1105.H
Operate and maintain the Coal Flux/Unload Baghouse operations (EU007), including air pollution control and monitoring equipment, in a manner consistent with good air pollution control practices for minimizing emissions at least to the emission limitations.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Operate the fabric filter (CE003) at all times the emission unit is operating to control particulate emissions. Also, operate in compliance with the requirements in GP004.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
VISIBLE EMISSION REQUIREMENTS	hdr
Check for visible emissions (during daylight hours) from the control equipment (CE003) once each calendar week, while EU 007 is in operation.	Minn. R. 7007.0800, subp. 4
Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs. Corrective action may be in the form of discontinuing venting emissions to the atmosphere through CE003.	Minn. R. 7007.0800, subp. 2
Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken.	Minn. R. 7007.0800, subp. 5
MONITORING REQUIREMENTS	hdr
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate initial compliance with the BACT opacity limit.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate initial compliance with the BACT particulate matter limit and with the case-by-case MACT limit for metals HAPs (for which PM is a surrogate).	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate compliance with the BACT PM10 limit.	Title I Condition: 40 CFR Section 52.21(j): BACT; Minn. R. 7007.3000

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-42**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Subject Item: EU 008 Rail Loadout Baghouse/Material Transfer Operations****Associated Items:** CE 014 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 015 Fabric Filter - Low Temperature, i.e., T&lt;180 Degrees F

GP 005 Emission Units subject to MACT

MR 014 Rail Loadout - Differential Pressure

SV 004 Railcar Loadout Stack Vent

What to do	Why to do it
EMISSION & OPERATING LIMITS	hdr
Front-half Particulate Matter: less than or equal to 0.005 grains/dry standard cubic foot using 3-hour Average [Front-half Particulate Matter is also a surrogate for the control of metal HAPs.]	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Particulate Matter < 10 micron: less than or equal to 0.005 grains/dry standard cubic foot using 3-hour Block Average	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Opacity: less than or equal to 10 percent using 6-minute Average . If opacity exceeds 10 percent, then action must be taken to control exhaust gases so that particulate matter emissions do not exceed 0.020 gr/dscf.. [Compliance with this condition fulfills the requirements of 40 CFR Section 60.252(c) and Minn. R. 7011.1105 (G)]	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; 40 CFR Section 60.252(c); Minn. R. 7011.1105 (G)
Do not build, erect, install, or use any article, machine, equipment, or process, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard.	40 CFR Section 60.12
Operate and maintain the Rail Loadout Baghouse/Material Transfer Operations (EU008), including air pollution control and monitoring equipment, in a manner consistent with good air pollution control practices for minimizing emissions at least to the emission limitations.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Operate the baghouses (CE014 and CE015) at all times the emission unit is operating to control particulate emissions. Also, operate in compliance with the requirements in GP004.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
NOTIFICATION REQUIREMENTS	hdr
Notification of Anticipated Date for Conducting Opacity Observations: due 30 days prior to observation date.	40 CFR Section 60.7(a)(4); Minn. R. 7019.0100, subp. 1
Notification of any physical change or operational change which increases emissions rate: due 60 days (or as soon as practicable) before the change is commenced. Within 180 days of completion of any physical or operational change subject to the control measures specified in 40 CFR Section 60.14(a), compliance with all applicable standards must be achieved.	40 CFR Section 60.7(a)(4); Minn. R. 7019.0100, subp. 1
VISIBLE EMISSION REQUIREMENTS	hdr
Check for visible emissions (during daylight hours) from the control equipment (CE014 and CE015) once each calendar week, while EU 008 is in operation.	Minn. R. 7007.0800, subp. 4
Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs. Corrective action may be in the form of discontinuing venting emissions to the atmosphere through CE014 or CE015.	Minn. R. 7007.0800, subp. 2
Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken.	Minn. R. 7007.0800, subp. 5
TESTING REQUIREMENTS	hdr
Initial Performance Test: due 60 days after achieving maximum capacity but not more than 180 days after initial startup of the rail loadout to measure opacity.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; 40 CFR Section 60.8
Initial Performance Test: due 60 days after achieving maximum capacity but not more than 180 days after initial startup. This test is to demonstrate initial compliance with the NSPS particulate matter limit, the BACT particulate matter limit and with the case-by-case MACT limit for metals HAPs (for which PM is a surrogate).	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 60.8; 40 CFR Section 63.7(a)(2), (e); Minn. R. 7017.2020, subp. 1; Minn. R. 7017.2030, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate compliance with the BACT PM10 limit.	Title I Condition: 40 CFR Section 52.21(j): BACT; Minn. R. 7007.3000
RECORDKEEPING REQUIREMENTS	hdr

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Mesabi Nugget LLC  
Permit Number: 13700318 - 001

Maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of the facility including any malfunction of the air pollution control equipment, or any periods during which a continuous monitoring system or monitoring device is inoperable.	40 CFR Section 60.7(b); Minn. R. 7019.0100, subp. 1
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**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-44**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Subject Item:** EU 009 RHF Roof Monitor/Heat Control**Associated Items:** SV 005 RHF Roof Monitor Stack Vent

What to do	Why to do it
EMISSION LIMITS AND OPERATING REQUIREMENTS	hdr
Opacity: less than or equal to 20 percent opacity	Minn. R. 7007.0800, subp. 2
COMPLIANCE DEMONSTRATION	hdr
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate compliance with the BACT opacity limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Opacity Performance Test: due before end of each 60 months following Initial Performance Test	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
VISIBLE EMISSIONS REQUIREMENTS	hdr
Check for visible emissions (during daylight hours) from the RHF roof monitor once each calendar week while the RHF is in operation.	Minn. R. 7007.0800, subp. 4
Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs. Corrective action may be in the form of discontinuing venting emissions to the atmosphere through SV 005.	Minn. R. 7007.0800, subp. 2
Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken.	Minn. R. 7007.0800, subp. 5



**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-45**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Subject Item: EU 010 Material Transfer Operations****Associated Items:** CE 011 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 012 Fabric Filter - Low Temperature, i.e., T&lt;180 Degrees F

CE 013 Fabric Filter - Low Temperature, i.e., T&lt;180 Degrees F

GP 005 Emission Units subject to MACT

SV 007 Material Transfer Operations Stack Vent

What to do	Why to do it
<b>EMISSION AND OPERATING LIMITS</b>	hdr
Front-half Particulate Matter: less than or equal to 0.005 grains/dry standard cubic foot using 3-hour Average  [Front-half Particulate Matter is also a surrogate for the control of metal HAPs.]	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Particulate Matter < 10 micron: less than or equal to 0.005 grains/dry standard cubic foot using 3-hour Block Average	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Opacity: less than or equal to 10 percent opacity using 6-minute Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Operate and maintain the Material Transfer Operations (EU 010), including air pollution capture, control and monitoring equipment, in a manner consistent with good air pollution control practices for minimizing emissions at least to the emission limitations.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Operate the baghouses (CE011, CE012, and CE013) at all times the emission unit is operating to control particulate emissions. Also, operate in compliance with the requirements in GP004.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
<b>VISIBLE EMISSIONS REQUIREMENTS</b>	hdr
Check for visible emissions (during daylight hours) from the control equipment (CE011, CE012, and CE013) once each calendar week while EU010 is in operation.	Minn. R. 7007.0800, subp. 4
Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs. Corrective action may be in the form of discontinuing venting emissions to the atmosphere through CE011, CE012, or CE013.	Minn. R. 7007.0800, subp. 2
Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken.	Minn. R. 7007.0800, subp. 5
<b>MONITORING REQUIREMENTS</b>	hdr
Initial Hood Certification and Evaluation: The control device hood shall conform to the requirements listed in Minn. R. 7011.0070, subp. 1, and the Permittee shall certify this as specified in Minn. R. 7011.0070, subps. 1 and 3. The Permittee shall maintain a copy of the evaluation and certification on site.	Minn. R. 7011.0070, subps. 1 & 3
Annual Hood Evaluation: The Permittee shall measure and record at least once every 12 months the fan rotation speed, fan power draw, or face velocity of each hood, or other comparable air flow indication method as required by Minn. R. 7011.0080. The Permittee shall maintain a copy of the annual evaluation on site.	Minn. R. 7011.0080
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate initial compliance with the BACT opacity limit.	Title I Condition: 40 CFR Section 52.21(j): BACT; Minn. R. 7007.3000
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate initial compliance with the BACT particulate matter limit and with the case-by-case MACT limit for metals HAPs (for which PM is a surrogate).	Title I Condition: 40 CFR Section 52.21(j): BACT; Minn. R. 7007.3000
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate compliance with the BACT PM10 limit.	Title I Condition: 40 CFR Section 52.21(j): BACT; Minn. R. 7007.3000

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-46**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Subject Item:** EU 011 Back-up Generator 3**Associated Items:** GP 005 Emission Units subject to MACT

SV 006 Back-up Generator 3 Stack Vent

What to do	Why to do it
<b>EMISSION &amp; OPERATING LIMITS</b>	hdr
Operating Hours: less than or equal to 100 hours/year using 12-month Rolling Sum to be calculated by the 15th day of each month for the previous 12-month period as described later in this permit.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Visible Emissions: less than or equal to 20 percent once operating temperatures have been obtained	Minn. R. 7011.2300, subp. 1
Fuel type: No. 2 fuel oil only by design. [Basis for BACT analysis.]	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Sulfur Content of Fuel: less than or equal to 0.05 percent by weight [Basis for BACT analysis for PM, PM10, and SO <sub>2</sub> .]	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7011.2300, Subp. 2
Operating Hours: less than or equal to 100 hours/year based on a 12-month rolling sum to be calculated by the 15th day of each month. [Basis for BACT analysis for PM, PM10, SO <sub>2</sub> , CO, VOCs, and NO <sub>x</sub> .]	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Install, calibrate, and maintain an hour clock.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
<b>MONITORING AND RECORDKEEPING REQUIREMENTS</b>	hdr
Fuel Supplier Certification: The Permittee shall obtain and maintain a fuel supplier certification for each shipment of No. 2 fuel oil, certifying that the sulfur content does not exceed 0.05 percent by weight.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Hours of Operation: The Permittee shall maintain documentation on site that the unit is an emergency diesel 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. [In this case, operation is limited to 100 hours per year.]	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Monthly Recordkeeping -- Hours of operation.  By the 15th of the month, the Permittee shall calculate and record the following:  1) The hours of operation for back-up generator (EU011) during the previous month as recorded by the hour clock..  2) The 12 month rolling sum hours of operation for the previous 12 month period by summing the monthly hours of operation data for the previous 12 months.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
<b>RECIPROCATING INTERNAL COMBUSTION ENGINE (RICE) MACT NOTIFICATION REQUIREMENTS</b>	hdr
Submit: due 120 days after Initial Startup of the RICE an Initial Notification required by 40 CFR 63 Subpart ZZZZ.	40 CFR Section 63.6645(c)
The Initial Notification should include the information in 40 CFR Section 63.9(b)(2)(i) through (v), a statement that the stationary RICE has no additional requirements, and an explanation of the basis of the exclusion.	40 CFR Section 63.9(b)(2)(i)-(v); 40 CFR Section 63.6645(d)

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-47**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Subject Item:** EU 012 Flux 2 Pulverizer**Associated Items:** CE 016 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

GP 005 Emission Units subject to MACT

SV 002 Pulverizer Stack Vent

What to do	Why to do it
EMISSION AND OPERATING LIMITS	hdr
Opacity: less than or equal to 10 percent opacity using 6-minute Average  Compliance with this limit also fulfills the requirements of Minn. R. 7011.0610, subp. 1.A(2)	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7011.0610, subp. 1.A(2)
Front-half Particulate Matter: less than or equal to 0.010 grains/dry standard cubic foot using 3-hour Average  Compliance with this limit also fulfills the requirements of Minn. R. 7011.0610, subp. 1.A(1)  [Front-half particulate matter is a surrogate for the capture of metals HAPs]	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7011.0610, subp. 1.A(1)
Particulate Matter < 10 micron: less than or equal to 0.015 grains/dry standard cubic foot using 3-hour Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Volatile Organic Compounds: less than or equal to 0.08 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Volatile Organic Compounds: less than or equal to 0.0054 lbs/million Btu heat input using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Nitrogen Oxides: less than or equal to 0.71 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Nitrogen Oxides: less than or equal to 0.049 lbs/million Btu heat input using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Carbon Monoxide: less than or equal to 1.2 lbs/hour using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Carbon Monoxide: less than or equal to 0.082 lbs/million Btu heat input using 3-hour Block Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Fuel Usage: Limited to natural gas or propane (as backup) only.  Complying with this restriction also fulfills the requirements of Minn. R. 7011.0610, subp. 2.B.  [Basis for BACT for sulfur dioxide.]	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7011.0610, subp. 2.B
Operate and maintain the Flux 1 Pulverizer (EU006), including air pollution control and monitoring equipment, in a manner consistent with good air pollution control practices for minimizing emissions at least to the emission limitations.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Operate the baghouse (CE004) at all times the emission unit is operating to control particulate emissions. Also, operate in compliance with the requirements in GP004.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
VISIBLE EMISSIONS REQUIREMENTS	hdr
Check for visible emissions (during daylight hours) from the control equipment (CE016) once each calendar week while EU012 is in operation.	Minn. R. 7007.0800, subp. 4
Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs. Corrective action may be in the form of discontinuing venting emissions to the atmosphere through CE016.	Minn. R. 7007.0800, subp. 2
Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken.	Minn. R. 7007.0800, subp. 5
MONITORING REQUIREMENTS	hdr
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate compliance with the BACT opacity limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate initial compliance with the BACT particulate matter limit and with the case-by-case MACT limit for metals HAPs (for which PM is a surrogate).	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT PM10 limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-48**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT VOC limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT NOx limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date. This test is to demonstrate initial compliance with the BACT CO limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-49**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Subject Item:** EU 013 Product Cooler**Associated Items:** CE 001 Wet Scrubber - High Efficiency

GP 005 Emission Units subject to MACT

SV 001 Rotary Hearth Furnace Stack Vent

What to do	Why to do it
EMISSION AND OPERATING LIMITS	hdr
Opacity: less than or equal to 10 percent opacity using 6-minute Average	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Front-half Particulate Matter: less than or equal to 0.010 grains/dry standard cubic foot using 3-hour Average [Front-half particulate matter is a surrogate for the capture of metals HAPs]	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Particulate Matter < 10 micron: less than or equal to 0.015 grains/dry standard cubic foot using 3-hour Block Average	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000
Operate and maintain the Product Cooler (EU013), including air pollution control and monitoring equipment, in a manner consistent with good air pollution control practices for minimizing emissions at least to the emission limitations.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Operate the wet scrubber (CE001) to control particulate emissions.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
VISIBLE EMISSIONS REQUIREMENTS	hdr
Check for visible emissions (during daylight hours) from the control equipment (CE001) once each calendar week while EU013 is in operation.	Minn. R. 7007.0800, subp. 4
Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs.	Minn. R. 7007.0800, subp. 2
Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken.	Minn. R. 7007.0800, subp. 5
MONITORING REQUIREMENTS	hdr
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate compliance with the BACT opacity limit.	Title I Condition: 40 CFR Section 52.21(j): BACT; Minn. R. 7007.3000
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate initial compliance with the BACT particulate matter limit and with the case-by-case MACT limit for metals HAPs (for which PM is a surrogate).	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate compliance with the BACT PM10 limit.	Title I Condition: 40 CFR Section 52.21(j): BACT; Minn. R. 7007.3000

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-50**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Subject Item: CE 001 Wet Scrubber - High Efficiency****Associated Items:** EU 001 Rotary Hearth Furnace (RHF)

EU 013 Product Cooler

MR 003 RHF - SO2 Monitor

MR 006 RHF - Differential Pressure

MR 007 RHF - Scrubber Water Flow

MR 008 RHF - pH

What to do	Why to do it
<b>CAM REQUIREMENTS</b>	hdr
Measure the pressure drop across the wet scrubber with a differential pressure transducer.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R. 7017.0200
Measure the wet scrubber liquid flow rate using a flow meter.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R. 7017.0200
Measure the pH of the scrubber water with a pH meter. [This is an indicator of the alkalinity of the scrubber water.]	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R. 7017.0200
Monitor scrubber performance for particulate matter control by monitoring pressure drop across the wet scrubber and liquid flow rate.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R. 7017.0200
Monitor scrubber performance for fluoride control by monitoring pressure drop across the wet scrubber, liquid flow rate, and pH.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R. 7017.0200
An excursion of the pressure drop is defined as a pressure drop less than TBD inches of water at TBD offgas flow rate.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R. 7017.0200
An excursion of the liquid flow rate is defined as a scrubber liquid flow rate of less than TBD gallons per minute and greater than TBD gallons per minute for a TBD offgas flow rate.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R. 7017.0200
An excursion shall trigger an inspection, a corrective action as necessary, and a report.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R. 7017.0200
Calibrate the differential pressure transducer reading on at least an annual basis, or more frequently if required by the manufacturer's specifications. The reading shall be accurate to within (1) one inch of water gauge pressure (250 pascals); or (2) two percent of span.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R. 7017.0200
<b>MACT LIMITATIONS</b>	hdr
Maintain the daily average pressure drop and daily average scrubber water flow rate at or above the minimum levels established during the initial performance test for a given RHF offgas flow rate.	Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R. 7017.0200
<b>MACT OPERATION AND MAINTENANCE REQUIREMENTS</b>	hdr
Install, operate, and maintain a CPMS according to the requirements in this permit and monitor the daily average pressure drop, daily average scrubber water flow rate, and pH according to the applicable requirements.	Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R. 7017.0200

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-51**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

<p>Prepare and at all times operate according to a written operation and maintenance plan for the wet scrubber installed to meet the particulate matter emission limit for EU001. Submit the site-specific operation and maintenance plan to the Administrator on or before the start of operation. The submitted plan must explain why the chosen practices (i.e., quantified objectives) are effective in performing corrective actions. Maintain a current copy of the operation and maintenance plan onsite. It must be available for inspection upon request. Keep the plan for the life of the affected source or until the affected source is no longer subject to the requirements of this subpart. Each operation and maintenance plan must address the elements in paragraphs (1) through (3), below.</p> <p>(1) Preventative maintenance for the wet scrubber, including a preventative maintenance schedule that is consistent with the manufacturer's instructions for routine and long-term maintenance.</p> <p>(CONTINUED)</p>	<p>Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R. 7017.0200</p>
<p>(Continued from above:)</p> <p>(2) In the event you exceed an established operating limit for the scrubber, you must initiate corrective action to determine the cause of the operating limit exceedance and complete the corrective action within 10 calendar days. The corrective action procedures you take must be consistent with the installation, operation, and maintenance procedures listed in your site-specific CPMS monitoring plan.</p> <p>(3) Good combustion practices. Identify and implement a set of site-specific GCP for the RHF. These GCP should correspond to your standard operating procedures for maintaining the proper and efficient combustion within the furnace.</p>	<p>Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R. 7017.0200</p>
<b>MACT ESTABLISHING AND DEMONSTRATING INITIAL COMPLIANCE WITH THE OPERATING LIMITS</b>	hdr
<p>Establish site-specific operating limits according to the procedures in paragraphs (1) and (2).</p> <p>(1) Using the required CPMS, measure and record the pressure drop and scrubber water flow rate every 15 minutes during each run of the particulate matter performance test.</p> <p>(2) Calculate and record the average pressure drop and scrubber water flow rate for each individual test run. Your operating limits are established as the lowest average pressure drop and the lowest average scrubber water flow rate corresponding to any of the three test runs.</p> <p>You may change the operating limits for any air pollution control device as long as you meet the requirements in paragraphs (1) through (3), below.</p> <p>(1) Submit a written notification to the Administrator of your request to conduct a new performance test to revise the operating limit.</p> <p>(2) Conduct a performance test to demonstrate compliance with the applicable PM emission limitation.</p> <p>(CONTINUED)</p>	<p>Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R. 7017.0200</p>
<p>(Continued from above)</p> <p>(3) Establish revised operating limits according to the applicable procedures to establish site-specific operating limits, above.</p>	<p>Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R. 7017.0200</p>
<b>MACT INSTALLATION, OPERATION, AND MAINTENANCE REQUIREMENTS FOR THE MONITORING EQUIPMENT</b>	hdr

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-52**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

<p>Develop and make available for inspection upon request by the permitting authority a site-specific monitoring plan that addresses the requirements in paragraphs (1) through (7).</p> <p>(1) Installation of the CPMS sampling probe or other interface at a measurement location relative to each affected emission unit such that the measurement is representative of control of the exhaust emissions (e.g., on or downstream of the last control device).</p> <p>(2) Performance and equipment specifications for the sample interface, the parametric signal analyzer, and the data collection and reduction system.</p> <p>(3) Performance evaluation procedures and acceptance criteria (e.g., calibrations).</p> <p>(4) Ongoing operation and maintenance procedures in accordance with the general requirements of 63.8(c)(1), (3), (4)(ii), (7), and (8).</p> <p>(5) Ongoing data quality assurance procedures in accordance with the general requirements of 63.8(d).</p> <p>(CONTINUED)</p>	<p>Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.3010; 40 CFR Section 63.8(c)(1), (3), (4)(ii), (7), and (8); 40 CFR Section 64.5 and Minn. R. 7017.0200</p>
<p>(continued from above)</p> <p>(6) Ongoing recordkeeping and reporting procedures in accordance with the general requirements of 63.10(c), (e)(1), and (e)(2)(i).</p> <p>(7) Corrective action procedures that you will follow in the event an air pollution control device exceeds an established operating limit as required for this emission unit (EU001).</p>	<p>Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.3010; 40 CFR Section 63.10(c), (e)(1), and (e)(2)(i); 40 CFR Section 64.5 and Minn. R. 7017.0200</p>
<p>(1) Each CPMS must complete a minimum of one cycle of operation for each successive 15-minute period and must have valid data for at least 95 percent of every daily averaging period.</p> <p>(2) Each CPMS must determine and record the daily average of all recorded readings.</p>	<p>Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R. 7017.0200</p>
<p>Conduct a performance evaluation of each CPMS in accordance with your site-specific monitoring plan. Operate and maintain the CPMS in continuous operation according to the site-specific monitoring plan.</p>	<p>Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R. 7017.0200</p>
<p><b>DEMONSTRATING CONTINUOUS COMPLIANCE - MONITORING AND COLLECTING DATA</b></p>	<p>hdr</p>
<p>(a) Except for monitoring malfunctions, associated repairs, and required quality assurance or control activities (including as applicable, calibration checks and required zero and span adjustments), monitor continuously (or collect data at all required intervals) at all times an affected source is operating.</p> <p>(b) Do not use data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities in data averages and calculations used to report emission or operating levels, or to fulfill a minimum data availability requirement. Use all the data collected during all other periods in assessing compliance.</p> <p>(c) A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring system to provide valid data. Monitoring failures that are caused in part by poor maintenance or careless operation are not considered malfunctions.</p>	<p>Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R. 7017.0200</p>
<p><b>DEMONSTRATING CONTINUOUS COMPLIANCE WITH EMISSION LIMITATIONS</b></p>	<p>hdr</p>
<p>The mean concentration of particulate matter for the RHF must be maintained at or below the particulate emission limit. Demonstrate continuous compliance by completing the requirements of paragraphs (1) through (4) of this section.</p> <p>(1) Maintain the daily average pressure drop and daily average scrubber water flow rate at or above the minimum levels established during the initial or subsequent performance test.</p> <p>(2) Operate and maintain each wet scrubber CPMS and record all information needed to document conformance with these requirements.</p> <p>(3) Collect and reduce monitoring data for pressure drop and scrubber water flow rate and record all information needed to document conformance with these requirements.</p> <p>(CONTINUED)</p>	<p>Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R. 7017.0200</p>



**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-53**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

<p>(Continued from above)</p> <p>(4) If the daily average pressure drop or daily average scrubber water flow rate is below the operating limits established for a corresponding emission unit or group of similar emission units, then follow the corrective action procedures in the following paragraph.</p>	<p>Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R 7017.0200</p>
<p>If the daily average operating parameter value for an emission unit or group of similar emission units does not meet the corresponding established operating limit, follow the procedures in paragraphs (1) through (4) of this section.</p> <p>(1) Initiate and complete the initial corrective action within 10 calendar days and demonstrate that the initial corrective action was successful. During any period of corrective action, continue to monitor and record all required operating parameters for equipment that remains in operation. After 10 calendar days, measure and record the daily average operating parameter value for the emission unit or group of similar emission units on which corrective action was taken. After the initial corrective action, if the daily average operating parameter value for the emission unit or group of similar emission units meets the operating limit established for the corresponding unit or group, then the corrective action was successful and</p> <p>(CONTINUED)</p>	<p>Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R 7017.0200</p>
<p>(continued from above)</p> <p>the emission unit or group of similar emission units is in compliance with the established operating limits.</p> <p>(2) If the initial corrective action required in paragraph (1) (immediately preceding) was not successful, then complete an additional corrective action within 10 calendar days and demonstrate that the subsequent corrective action was successful. During any period of corrective action, continue to monitor and record all required operating parameters for equipment that remains in operation. After the second set of 10 calendar days allowed to implement corrective action, measure and record the daily average operating parameter value for the emission unit or group of similar emission units again. If the daily average operating parameter value for the emission unit or group of similar emission units meets the operating limit established for the corresponding unit or group, then the corrective action was successful and the</p> <p>(CONTINUED)</p>	<p>Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R 7017.0200</p>
<p>(continued from above)</p> <p>emission unit or group of similar emission units is in compliance with the established operating limits.</p> <p>(3) If the second attempt at corrective action required in paragraph (2) (immediately preceding) was not successful, then you must repeat the procedures of paragraph (2) until the corrective action is successful. If the third attempt at corrective action is unsuccessful, you must conduct another performance test in accordance with the procedures in this permit and report to the Administrator as a deviation the third unsuccessful attempt at corrective action.</p> <p>(4) After the third unsuccessful attempt at corrective action, submit to the Administrator the written report required in paragraph (3) (immediately preceding) within 5 calendar days after the third unsuccessful attempt at corrective action. This report must notify the Administrator that a deviation has occurred and document the types of corrective measures taken to address</p> <p>(CONTINUED)</p>	<p>Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R 7017.0200</p>
<p>(continued from above)</p> <p>the problem unit that resulted in the deviation of established operating parameters and the resulting operating limits.</p>	<p>Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R 7017.0200</p>
<p>COMPLIANCE WITH OPERATING AND MAINTENANCE REQUIREMENTS</p>	<p>hdr</p>

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-54**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

<p>Demonstrate continuous compliance with the operation and maintenance requirements by completing the requirements of paragraphs (1) through (3), below.</p> <p>(1) Perform preventative maintenance for each control device in accordance with this permit and record all information needed to document conformance with these requirements;</p> <p>(2) Initiate and complete the corrective action for a CPMS when an established operating limit is exceeded for the wet scrubber in accordance with this permit and record all information needed to document conformance with these requirements; and record all information needed to document conformance with these requirements.</p> <p>(3) Implement and maintain good combustion practices for the RHF in accordance with this permit and record all information needed to document conformance with these requirements.</p>	<p>Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R 7017.0200</p>
<p>REPORTING REQUIREMENTS</p>	<p>hdr</p>
<p>(a) Deviations. Report each instance in which an emission limitation was not met. This includes periods of startup, shutdown, and malfunction in accordance with the paragraph (b), below. Report each instance in which the work practice standards in this permit were not met and each instance in which the operation and maintenance requirement in this permit were not met. These instances are deviations from the emission limitations, work practice standards, and operation and maintenance requirements in this subpart. Report these deviations in accordance with the requirements in this permit.</p> <p>(CONTINUED)</p>	<p>Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010; Minn. R. 7007.3010; 40 CFR Section 64.5 and Minn. R 7017.0200</p>
<p>(continued from above)</p> <p>(b) Startups, shutdowns, and malfunctions. During periods of startup, shutdown, and malfunction, operate in accordance with your startup, shutdown, and malfunction plan and the requirements in paragraphs (1) and (2), below.</p> <p>(1) Consistent with 40 CFR Section 63.6(e) and 63.7(e)(1), deviations that occur during a period of startup, shutdown, or malfunction are not violations if it is demonstrated to the Administrator's satisfaction that the emission unit and control equipment were operating in accordance with the startup, shutdown, and malfunction plan.</p> <p>(2) The Administrator will determine whether deviations that occur during a period of startup, shutdown, or malfunction are violations, according to the provisions in 40 CFR Section 63.6(e).</p> <p>[These startup, shutdown, and malfunction provisions apply only to the MACT (40 CFR 63.43(g)) limits. There is no startup, shutdown, and malfunction exception for the limits set under BACT (40 CFR 52.21).]</p>	<p>Title I Condition: 40 CFR Section 63.43(g): MACT; Minn. R. 7007.3010; 40 CFR Section 63.6(e) and 63.7(e)(1); 40 CFR Section 64.5</p>

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

A-55

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Subject Item: FS 009 Roads**

What to do	Why to do it
EMISSION LIMITATIONS	hdr
Opacity: less than or equal to 5 percent opacity using 6-minute Average	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000
Install asphalt or concrete surfaces or chemical agents on all active truck haul roads of the coal handling facility when the coal throughput by truck is 200,000 tons per year or greater. All paved roads and areas shall be cleaned to minimize the discharge to the atmosphere of fugitive particulate emissions in accordance with the fugitive dust plan. Such cleaning shall be accomplished in a manner which minimizes resuspension of particulate matter. Access areas surrounding coal stockpiles and parking facilities which are located within a coal handling facility shall be treated with water, oils, or chemical agents.	Minn. R. 7011.1105 A(1)
COMPLIANCE DEMONSTRATION	hdr
Initial Performance Test: due 90 days after the Initial Performance Test Trigger Date to demonstrate compliance with the BACT opacity limit.	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
Opacity Performance Test: due before end of each 60 months following Initial Performance Test	Title I Condition: 40 CFR 52.21(j): BACT and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4
VISIBLE EMISSIONS REQUIREMENTS	hdr
Check for visible emissions (during daylight hours) from the roads while in operation.	Minn. R. 7007.0800, subp. 4
Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs.	Minn. R. 7007.0800, subp. 2
Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken.	Minn. R. 7007.0800, subp. 5
WORK PRACTICE STANDARDS	hdr
Prepare, and at all times operate according to, a fugitive dust emissions control plan that describes in detail the measures that will be put in place to control fugitive dust emissions from the locations listed in paragraphs (1) through (5), below.  (1) Stockpiles (includes, but is not limited to, stockpiles of uncrushed coal, crushed coal, or slag);  (2) Material transfer points;  (3) Plant roadways;  (4) Nugget loading areas; and  (5) Yard areas.	Title I Condition: 40 CFR Section 52.21(j): BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Submit: due 30 days before Initial Startup a copy of the fugitive dust emissions control plan for approval to the Administrator.	Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
Maintain a current copy of the fugitive dust emissions control plan onsite. It must be available for inspection upon request. Keep the plan for the life of the affected source or until the affected source is no longer subject to the requirements of this subpart.	Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010
For each work practice standard and operation and maintenance requirement that applies where initial compliance is not demonstrated using a performance test, demonstrate initial compliance within 30 calendar days after initial startup.  Demonstrate continuous compliance with the work practice standard requirements by operating in accordance with the fugitive dust emissions control plan at all times.	Title I Condition: 40 CFR Section 63.43(g): MACT and Minn. R. 7007.3010

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-56**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

<p>Clean up all coal spilled on roads or access areas as soon as practicable using methods that minimize the amount of dust suspended.</p> <p>Control fugitive particulate emissions by dust suppression methods on such operations so that fugitive particulate emissions are minimized.</p> <p>However, during freezing temperatures, owners or operators shall not be required to apply water or dust suppressants.</p> <p>No nonessential coal handling operations shall be conducted that are not shielded from the wind or enclosed in a building when steady wind speeds exceed 30 miles per hour as determined at the nearest official station of the United States Weather Bureau or by wind speed instruments on or adjacent to the site.</p> <p>This does not authorize the use of surface hardening agents, wetting or chemical agents, foam agents, and oils that may cause ground water or surface water contamination in violation of any applicable water pollution law.</p>	<p>Minn. R. 7011.1105.A.; Minn. R. 7011.1120; Minn. R. 7011.1125; Minn. R. 7011.1140</p>
<p>Hold initial notifications, all other reports, testing and compliance data for at least five years.</p>	<p>40 CFR Section 63.10(b); Minn. R. 7007.0800, subp. 6(A)(2)</p>
<p>Follow fugitive dust emissions control plan for applicable recordkeeping requirements, including weekly visibility checks.</p>	<p>40 CFR Section 63.6(e); 40 CFR Section 63.8(b)); Minn. R. 7007.0800, subp. 6(A)(2)</p>

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

A-57

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

**Subject Item:** MR 004 RHF - NOx Monitor**Associated Items:** EU 001 Rotary Hearth Furnace (RHF)

What to do	Why to do it
MONITORING AND COLLECTING DATA	hdr
Do not use data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities in data averages and calculations used to report emission or operating levels, or to fulfill a minimum data availability requirement. All the data collected during all other periods must be used in assessing compliance.	Minn. R. 7007.0800, subp. 2
Installation Notification: due 60 days before installing the continuous emissions monitoring system. The notification shall include plans and drawings of the system.	Minn. R. 7017.1040, subp. 1
CEMS Installation: install CEMS such that representative measurements of emissions or process parameters from the source are obtained. In addition the CEMS shall be located according to procedures contained in the applicable performance specifications of 40 CFR pt. 60, Appendix B.	Minn. R. 7017.1040, subp. 2
When two or more emission units required to be monitored with a CEMS are not subject to the same emission limit, a separate CEMS shall be installed on each emission unit.	Minn. R. 7017.1040, subp. 3
CEMS Certification Test: due within 90 days after the due date of the first excess emissions report required for the CEMS. Follow the Performance Specifications listed in 40 CFR pt. 60, Appendix B.	Minn. R. 7017.1050, subp. 1
CEMS Certification Test Plan: due 30 days before CEMS Certification Test	Minn. R. 7017.1060, subp. 1 & 2
CEMS Certification Test Pretest Meeting: due 7 days before CEMS Certification Test.	Minn. R. 7017.1060, subp. 3
All CEMS must be certified according to the appropriate performance specifications listed in 40 CFR pt. 60, Appendix B.	Minn. R. 7017.1070, subp. 1
CEMS Certification Test Report: due 45 days after CEMS Certification Test	Minn. R. 7017.1080, subp. 1, 2, & 4
CEMS Certification Test Report - Microfiche Copy: due 105 days after CEMS Certification Test	Minn. R. 7017.1080, subp. 3
Continuous Operation: CEMS must be operated and data recorded during all periods of emission unit operation including periods of emission unit start-up, shutdown, or malfunction except for periods of acceptable monitor downtime. This requirement applies whether or not a numerical emission limit applies during these periods. A CEMS must not be bypassed except in emergencies where failure to bypass would endanger human health, safety, or plant equipment.  Acceptable monitor downtime includes reasonable periods as listed in Items A, B, C and D of Minn. R. 7017.1090, subp. 2.	Minn. R. 7017.1090, subp. 1
Excess Emissions/Downtime Reports (EERs): due 30 days after end of each calendar quarter following CEMS Certification Test (Submit Deviations Reporting Form DRF-1 as amended). The EER shall indicate all periods of monitor bypass and all periods of exceedances of the limit including exceedances allowed by an applicable standard, i.e. during startup, shutdown, and malfunctions.	Minn. R. 7017.1110, subp. 1 & 2
Recordkeeping: The owner or operator must retain records of all CEMS monitoring data and support information for a period of five years from the date of the monitoring sample, measurement or report. Records shall be kept at the source.	Minn. R. 7007.1130
All data points collected by a CEMS shall be used to calculate individual hourly emission averages unless another applicable requirement or compliance document requires more frequent averaging. Each hourly average starts at the beginning of the hour and ends at the beginning of the following hour.  In order for an hour of data to be considered valid, it must contain the following minimum number of data points during the hour:  - four data points, equally spaced, if the emission unit operated during the entire hour;  - two data points, at least 15 minutes apart, during periods of monitor calibration, and periods of time to conduct quality control audits or routine maintenance; and  - one data point if the emission unit operated for 15 minutes or less during the hour.  Monitoring data shall be recorded in the same units of measurement and averaging period as the facility's emission standard.	Minn. R. 7017.1160

**TABLE A: LIMITS AND OTHER REQUIREMENTS****A-58**

01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

QA Plan: Develop and implement a written quality assurance plan that covers each CEMS. The plan shall be on site and available for inspection within 30 days after monitor certification. The plan shall contain all of the information required by 40 CFR part 60, Appendix F, section 3.	Minn. R. 7017.1170, subp. 2
CEMS Daily Calibration Drift (CD) Test: The CD shall be quantified and recorded at zero (low-level) and upscale (high-level) gas concentrations at least once daily. The CEMS shall be adjusted whenever the CD exceeds twice the specification of 40 CFR part 60, Appendix B. 40 CFR part 60, Appendix F, shall be used to determine out-of-control periods for CEMS. Follow the procedures in 40 CFR part 60, Appendix F.	Minn. R. 7017.1170, subp. 3
Cylinder Gas Audit (CGA): due before end of each calendar half-year following CEMS Certification Test. Conduct CGA at least 3 months apart and not greater than 8 months apart. Follow the procedures in 40 CFR pt. 60, Appendix F.	Minn. R. 7017.1170, subp. 4
Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar half-year following Cylinder Gas Audit (CGA).	Minn. R. 7017.1180, subp. 1
CEMS Relative Accuracy Test Audit (RATA): due before end of each calendar year following CEMS Certification Test. Follow the procedures in 40 CFR pt. 60, Appendix F, as amended.	Minn. R. 7017.1170, subp. 5
Relative Accuracy Test Audit (RATA) Notification: due 30 days before CEMS Relative Accuracy Test Audit (RATA)).	Minn. R. 7017.1180, subp. 2
Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which the CEMS RATA was conducted.	Minn. R. 7017.1180, subp. 3
CEM Certification Test: Written notification of the planned test date shall be postmarked or received at least 30 days before the planned test date.	Minn. R. 7017.2030, subp. 1

## TABLE B: SUBMITTALS

B-1 01/25/07

Facility Name: Mesabi Nugget LLC  
Permit Number: 13700318 - 001

Also, where required by an applicable rule or permit condition, send to the Permit Technical Advisor notices of:

- accumulated insignificant activities,
- installation of control equipment,
- replacement of an emissions unit, and
- changes that contravene a permit term.

Send submittals that are required to be submitted to the U.S. EPA regional office to:

Mr. George Czerniak  
Air and Radiation Branch  
EPA Region V  
77 West Jackson Boulevard  
Chicago, Illinois 60604

Table B lists most of the submittals required by this permit. Please note that some submittal requirements may appear in Table A or, if applicable, within a compliance schedule located in Table C. Table B is divided into two sections in order to separately list one-time only and recurrent submittal requirements.

Send submittals that are required by the Acid Rain Program to:

U.S. Environmental Protection Agency  
Clean Air Markets Division  
1200 Pennsylvania Avenue NW (6204N)  
Washington, D.C. 20460

Send any application for a permit or permit amendment to:

AQ Permit Technical Advisor  
Industrial Division  
Minnesota Pollution Control Agency  
520 Lafayette Road North  
St. Paul, Minnesota 55155-4194

Each submittal must be postmarked or received by the date specified in the applicable Table. Those submittals required by parts 7007.0100 to 7007.1850 must be certified by a responsible official, defined in Minn. R. 7007.0100, subp. 21. Other submittals shall be certified as appropriate if certification is required by an applicable rule or permit condition.

Unless another person is identified in the applicable Table, send all other submittals to:

AQ Compliance Tracking Coordinator  
Industrial Division  
Minnesota Pollution Control Agency  
520 Lafayette Road North  
St. Paul, Minnesota 55155-4194

**TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS****B-2** 01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

What to send	When to send	Portion of Facility Affected
Application for Permit Reissuance	due 180 days before expiration of Existing Permit	Total Facility
Notification of compliance status	due 60 days after Performance Test	GP005
Notification of the Actual Date of Initial Startup	due 15 days after Initial Startup	EU008
Notification of the Actual Date of Initial Startup	due 15 days after Initial Startup of each listed EU.	GP005
Notification of the Actual Date of Initial Startup	due 15 days after Initial Startup of the rotary hearth furnace using form NT-01. Submit the name and number of the control device (or emissions unit) and the actual date of initial startup the control device (or emissions unit).	EU001
Notification of the Anticipated Date of Initial Startup	due 30 days before Anticipated Date of Initial Startup of the rotary hearth furnace	EU001
Notification of the Anticipated Date of Initial Startup	due 30 days before Anticipated Date of Initial Startup. Submit the name and number of each unit and the anticipated date of initial startup of each unit.	GP005
Notification of the Date Construction Began	due 30 days after Start Of Construction of the rotary hearth furnace	EU001
Notification of the Date Construction Began	due 30 days after Start Of Construction. Submit the name and number of each unit and the date construction of each unit began.	GP005
Notification of the Date Construction Began	due 30 days after Start Of Construction. Submit the name and number of each unit and the date construction of each unit began.	EU008
Performance Test Notification (written)	due 60 days before Performance Test. Simultaneously provide written notification of the date the performance evaluation of the continuous monitoring system is scheduled to begin.	GP005
Testing Frequency Plan	due 60 days after Initial Performance Test for opacity, particulate matter, and particulate matter less than ten microns in diameter. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on one-year (12 month), 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.	EU007, EU008, EU010, EU013
Testing Frequency Plan	due 60 days after Initial Performance Test for opacity, particulate matter, particulate matter less than ten microns in diameter, and nitrogen oxides. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on one-year (12 month), 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.	EU004
Testing Frequency Plan	due 60 days after Initial Performance Test for opacity, particulate matter, particulate matter less than ten microns in diameter, carbon monoxide, nitrogen oxides, and volatile organic compounds. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on one-year (12 month), 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.	EU002
Testing Frequency Plan	due 60 days after Initial Performance Test for opacity, particulate matter, particulate matter less than ten microns in diameter, volatile organic compounds, nitrogen oxides, and carbon monoxide. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on one-year (12 month), 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.	EU003, EU005, EU006, EU012



TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS

Facility Name: Mesabi Nugget LLC  
Permit Number: 13700318 - 001

Testing Frequency Plan	due 60 days after Initial Performance Test for opacity, PM, PM10, VOC, lead, fluoride, and sulfuric acid mist emissions. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on one-year (12 month), 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.	EU001
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**TABLE B: RECURRENT SUBMITTALS****B-4** 01/25/07

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

What to send	When to send	Portion of Facility Affected
Excess Emissions/Downtime Reports (EER's)	due 30 days after end of each calendar quarter following Initial Startup of the Monitor. Submit Deviations Reporting Form DRF-1 as amended. The EER must contain all of the information requested in 40 CFR Section 63.10(c)(3)(v). The EER shall indicate all periods of monitor bypass and all periods of exceedances of the limit including exceedances allowed by an applicable standard (i.e., during startup, shutdown, and malfunction).	GP005
Semiannual Deviations Report	due 30 days after end of each calendar half-year following Permit Issuance. The first semiannual report submitted by the Permittee shall cover the calendar half-year in which the permit is issued. The first report of each calendar year covers January 1 - June 30. The second report of each calendar year covers July 1 - December 31. If no deviations have occurred, the Permittee shall submit the report stating no deviations.	FS009, Total Facility
Compliance Certification	due 31 days after end of each calendar year following Permit Issuance (for the previous calendar year). To be submitted on a form approved by the Commissioner, both to the Commissioner and to the US EPA regional office in Chicago. This report covers all deviations experienced during the calendar year.	Total Facility

APPENDIX MATERIAL

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318-001

**Appendix A**

(Not used in Permit Number 13700318-001)

APPENDIX MATERIAL

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318-001

## Appendix B

### Insignificant Activities

Space heaters fueled by kerosene, natural gas, or propane

Infrared electric ovens

Storage tanks with a combined total tankage of  $\leq 10,000$  gallons of gasoline

Storage tanks with a combined total tankage of  $\leq 10,000$  gallons of non-HAP VOCs and with a vapor pressure of  $\leq 1.0$  psia at 60 °F.

Laboratory activities, including equipment for forging, pressing, drawing, spinning or extruding hot metals

Equipment used for hydraulic or hydrostatic testing

Brazing, soldering, or welding equipment for maintenance-related activities

Alkaline/phosphate cleaners and associated cleaners and burners

Infrequent use of spray paint equipment for routine housekeeping or plant upkeep activities not associated with primary production processes

Hot water heaters (2), 5 MMBtu/hr each

Silos (dolomite – 1, limestone – 2, coal – 2)

Emergency piles for nuggets, slag, bird shot nuggets, product separation surge, pellets bypass, recycle coal #2

Material handling operations (coal, limestone, dolomite, slag, nuggets)

Wind erosion (coal, limestone, dolomite, slag, nuggets)

Green Ball Drum/Disc

Pneumatic conveying of water treatment materials

Parts washers

## APPENDIX MATERIAL

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318-001

# Appendix C

## Modeling Parameters

### Introduction

For this project, both Class I and Class II modeling were conducted. Class II modeling was conducted first, and contains higher emission rates than the permit limits in the permit. However, because the modeling at the higher emission rates showed attainment and maintenance of the NAAQS and increment, the Class II modeling was not repeated with the lower, permitted emission rates.

Class II modeling includes all sources except insignificant activities. Class I modeling includes only those sources which are expected to impact the Class I areas. Except for emission rates, modeled parameters are identical between Class I and Class II modeling

**Table 1a – Class II Modeling – Stack Sources**

MPCA ID	Nugget ID	Source Description	Emission Rates (g/s)					Modeled Parameters			
			PM10	NOX	SO2	CO	Lead	Stack Height (m)	Stack Exit Temp. (K)	Exit Velocity (m/s)	Stack Exit Diameter (m)
SV001	SV201	RHF	10.30	31.5	28.42	13.98	0.121	60	358	25	4.23
SV002	SV202	Pulverizer	2.04	0.37	0.0044	0.00	0.00015	40	355	25	1.98
SV003	SV203	Coal Flux Unload	0.358	0	0	0	0	30	298	25	1.26
SV004	SV204	Rail Loadout	0.358	0	0	0	0	30	298	25	1.26
SV007	SV207	RHF Building Baghouse	0.540	0	0	0	0	40	298	25	1.55
SV009	SV208A	Process Water Cooling Tower	0.0230	0	0	0	0	18.7	311	5.1	2.7
	SV208B	Process Water Cooling Tower	0.0230	0	0	0	0	18.7	311	5.1	2.7
	SV208C	Process Water Cooling Tower	0.0230	0	0	0	0	18.7	311	5.1	2.7
	SV208D	Process Water Cooling Tower	0.0230	0	0	0	0	18.7	311	5.1	2.7
	SV208E	Process Water Cooling Tower	0.0230	0	0	0	0	18.7	311	5.1	2.7
	SV208F	Process Water Cooling Tower	0.0230	0	0	0	0	18.7	311	5.1	2.7
SV010	SV209A	Clean Water Cooling Tower	0.0090	0	0	0	0	10.7	311	5.1	2.7
	SV209B	Clean Water Cooling Tower	0.0090	0	0	0	0	10.7	311	5.1	2.7
	SV209C	Clean Water Cooling Tower	0.0090	0	0	0	0	10.7	311	5.1	2.7

# APPENDIX MATERIAL

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318-001

**Table 1b – Class II modeling – Fugitive Emission Sources**

Emission Unit ID	Source Description	Modeled Parameters			
		PM10 Emission Rate (g/s)	Release Height (m)	Sigma-Y (m)	Sigma-Z (m)
FS034	Coal Material Handling	4.10E-02	5	3.544	4.65
FS035	Flux Material Handling	9.30E-02	5	3.544	4.65
FS037	Slag Material Handling	9.00E-02	5	3.544	4.65
FS038	Coal Wind Erosion	1.00E+00	5	3.544	4.65
FS039	Flux Wind Erosion	1.00E+00	5	3.544	4.65
FS041	Slag Wind Erosion	1.00E+00	5	3.544	4.65
SV205	RHF Roof Monitor	2.23E-01	30	5.581	14
PR001	Paved Road Segment	5.53E-03	3	9.3	2.79
PR002	Paved Road Segment	5.53E-03	3	9.3	2.79
PR003	Paved Road Segment	5.53E-03	3	9.3	2.79
PR004	Paved Road Segment	5.53E-03	3	9.3	2.79
PR005	Paved Road Segment	5.53E-03	3	9.3	2.79
PR006	Paved Road Segment	5.53E-03	3	9.3	2.79
PR007	Paved Road Segment	5.53E-03	3	9.3	2.79
PR008	Paved Road Segment	5.53E-03	3	9.3	2.79
PR009	Paved Road Segment	5.53E-03	3	9.3	2.79
PR010	Paved Road Segment	5.53E-03	3	9.3	2.79
PR011	Paved Road Segment	5.53E-03	3	9.3	2.79
PR012	Paved Road Segment	5.53E-03	3	9.3	2.79
PR013	Paved Road Segment	5.53E-03	3	9.3	2.79
PR014	Paved Road Segment	5.53E-03	3	9.3	2.79
PR015	Paved Road Segment	5.53E-03	3	9.3	2.79
PR016	Paved Road Segment	5.53E-03	3	9.3	2.79
PR017	Paved Road Segment	5.53E-03	3	9.3	2.79
PR018	Paved Road Segment	5.53E-03	3	9.3	2.79
PR019	Paved Road Segment	5.53E-03	3	9.3	2.79
PR020	Paved Road Segment	5.53E-03	3	9.3	2.79
PR021	Paved Road Segment	5.53E-03	3	9.3	2.79
PR022	Paved Road Segment	5.53E-03	3	9.3	2.79
PR023	Paved Road Segment	5.53E-03	3	9.3	2.79
PR024	Paved Road Segment	5.53E-03	3	9.3	2.79
PR025	Paved Road Segment	5.53E-03	3	9.3	2.79
PR026	Paved Road Segment	5.53E-03	3	9.3	2.79
PR027	Paved Road Segment	5.53E-03	3	9.3	2.79
PR028	Paved Road Segment	5.53E-03	3	9.3	2.79
PR029	Paved Road Segment	5.53E-03	3	9.3	2.79
PR030	Paved Road Segment	5.53E-03	3	9.3	2.79
PR031	Paved Road Segment	5.53E-03	3	9.3	2.79

# APPENDIX MATERIAL

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318-001

**Table 1b – Class II modeling – Fugitive Emission Sources (continued)**

Emission Unit ID	Source Description	Modeled Parameters			
		PM10 Emission Rate (g/s)	Release Height (m)	Sigma-Y (m)	Sigma-Z (m)
PR032	Paved Road Segment	5.53E-03	3	9.3	2.79
PR033	Paved Road Segment	5.53E-03	3	9.3	2.79
PR034	Paved Road Segment	5.53E-03	3	9.3	2.79
PR035	Paved Road Segment	5.53E-03	3	9.3	2.79
PR036	Paved Road Segment	5.53E-03	3	9.3	2.79
PR037	Paved Road Segment	5.53E-03	3	9.3	2.79
PR038	Paved Road Segment	5.53E-03	3	9.3	2.79
PR039	Paved Road Segment	5.53E-03	3	9.3	2.79
PR040	Paved Road Segment	5.53E-03	3	9.3	2.79
PR041	Paved Road Segment	5.53E-03	3	9.3	2.79
PR042	Paved Road Segment	5.53E-03	3	9.3	2.79
PR043	Paved Road Segment	5.53E-03	3	9.3	2.79
PR044	Paved Road Segment	5.53E-03	3	9.3	2.79
PR045	Paved Road Segment	5.53E-03	3	9.3	2.79
PR046	Paved Road Segment	5.53E-03	3	9.3	2.79
PR047	Paved Road Segment	5.53E-03	3	9.3	2.79
PR048	Paved Road Segment	5.53E-03	3	9.3	2.79
PR049	Paved Road Segment	5.53E-03	3	9.3	2.79
PR050	Paved Road Segment	5.53E-03	3	9.3	2.79
PR051	Paved Road Segment	5.53E-03	3	9.3	2.79
PR052	Paved Road Segment	5.53E-03	3	9.3	2.79
PR053	Paved Road Segment	5.53E-03	3	9.3	2.79
PR054	Paved Road Segment	5.53E-03	3	9.3	2.79
PR055	Paved Road Segment	5.53E-03	3	9.3	2.79
PR056	Paved Road Segment	5.53E-03	3	9.3	2.79
PR057	Paved Road Segment	5.53E-03	3	9.3	2.79
PR058	Paved Road Segment	5.53E-03	3	9.3	2.79
PR059	Paved Road Segment	5.53E-03	3	9.3	2.79
PR060	Paved Road Segment	5.53E-03	3	9.3	2.79
PR061	Paved Road Segment	5.53E-03	3	9.3	2.79
PR062	Paved Road Segment	5.53E-03	3	9.3	2.79
PR063	Paved Road Segment	5.53E-03	3	9.3	2.79
PR064	Paved Road Segment	5.53E-03	3	9.3	2.79
PR065	Paved Road Segment	5.53E-03	3	9.3	2.79
PR066	Paved Road Segment	5.53E-03	3	9.3	2.79
PR067	Paved Road Segment	5.53E-03	3	9.3	2.79
PR068	Paved Road Segment	5.53E-03	3	9.3	2.79
PR069	Paved Road Segment	5.53E-03	3	9.3	2.79
PR070	Paved Road Segment	5.53E-03	3	9.3	2.79
PR071	Paved Road Segment	5.53E-03	3	9.3	2.79
PR072	Paved Road Segment	5.53E-03	3	9.3	2.79

# APPENDIX MATERIAL

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318-001

**Table 1b – Class II modeling – Fugitive Emission Sources (continued)**

Emission Unit ID	Source Description	Modeled Parameters			
		PM10 Emission Rate (g/s)	Release Height (m)	Sigma-Y (m)	Sigma-Z (m)
PR073	Paved Road Segment	5.53E-03	3	9.3	2.79
PR074	Paved Road Segment	5.53E-03	3	9.3	2.79
PR075	Paved Road Segment	5.53E-03	3	9.3	2.79
PR076	Paved Road Segment	5.53E-03	3	9.3	2.79
PR077	Paved Road Segment	5.53E-03	3	9.3	2.79
PR078	Paved Road Segment	5.53E-03	3	9.3	2.79
PR079	Paved Road Segment	5.53E-03	3	9.3	2.79
PR080	Paved Road Segment	5.53E-03	3	9.3	2.79
PR081	Paved Road Segment	5.53E-03	3	9.3	2.79
PR082	Paved Road Segment	5.53E-03	3	9.3	2.79
PR083	Paved Road Segment	5.53E-03	3	9.3	2.79
PR084	Paved Road Segment	5.53E-03	3	9.3	2.79
PR085	Paved Road Segment	5.53E-03	3	9.3	2.79



# APPENDIX MATERIAL

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318-001

**Table 2a Class I Modeling Parameters – Stack Sources**

MPCA ID	Nugget ID	Includes Emission Units	Source Description	Emission Rates (g/s)			Modeled Parameters			
				PM10	NOX	SO2	Stack Height (m)	Stack Exit Temp. (K)	Exit Velocity (m/s)	Stack Exit Diameter (m)
SV001	SV201	EU001, 002, 003, 013	RHF	10.3	26.96	11.98	60	358	25	4.23
SV002	SV202	EU004, 005, 006, 012	Pulverizer	2.04	0.37	0.0044	40	355	25	1.98
SV003	SV203	EU 007	Coal Flux Unload	0.358	0	0	30	298	25	1.26
SV004	SV204	EU 008	Rail Loadout	0.358	0	0	30	298	25	1.26
SV007	SV207	EU010	RHF Building Baghouse	0.540	0	0	40	298	25	1.55

Class I modeling SO<sub>2</sub> emissions levels for the RHF (SV201), were reduced from those levels modeled in the Class II modeling. Since Class II modeling showed attainment and maintenance of the NAAQS and increment at the higher levels, it was unnecessary to revise the Class II model, as further reductions would not change the acceptability of the original results.

Class I levels reflected in this table are from the modeling performed on April 22, 2005, with reductions in SO<sub>2</sub>. These values correspond to the spreadsheet CALCS\_superseded\_05\_09\_05. Only certain fugitive sources were modeled in the Class I analysis – see table below.

Emergency sources, including the RHF Bypass stack (SV 008) and the emergency diesel generator (EU 011) were not modeled in the Class I analysis.

Stack parameters (height, exit temperature, exit velocity, exit diameter) were not changed between Class I and II modeling.

## APPENDIX MATERIAL

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318-001

**Table 2b Class I Modeling Parameters – Area Sources**

MPCA Emission ID	Nugget Emission ID	Source Description	Modeled Parameters			
			PM10 Emission Rate (g/s)	Release Height (m)	Sigma-Y (m)	Sigma-Z (m)
FS 001	FS034	Coal Material Handling	4.13E-02	5	3.544	4.65
FS 003	FS035	Flux Material Handling	9.27E-02	5	3.544	4.65
FS 005	FS037	Slag Material Handling	8.97E-02	5	3.544	4.65
SV 005	SV205	RHF Roof Monitor	2.23E-01	30	5.581	14

Only these fugitive sources were modeled in Class I modeling. Other fugitive PM sources, such as nugget material Handling (FS 007) and paved roads (FS 009) were not modeled in the Class I analysis, as they consist of small, low level, coarse particulate emissions which will not affect the Class I areas. Fugitive VOC sources such as parts washer (FS 010) were not modeled because they are low, cold, minor sources of VOC which will not affect the Class I areas. Finally, insignificant sources were not modeled, including cooling towers, emergency and recycle materials piles, and wind erosion off storage piles because they consist of low level, coarse particulate emissions which will not affect the Class I areas.

## APPENDIX MATERIAL

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318-001

# Appendix D: Determination of Allowances Needed to Address Visibility Impacts

To determine the allowances needed to be retired for a calendar year, follow these steps:

1. Identify the emissions of SO<sub>2</sub>, NO<sub>x</sub>, PM<sub>10</sub>, and sulfuric acid mist, in tons, from the Mesabi Nugget facility during the specified calendar year. Add those emissions together to determine the facility's  $Q$ , or total emissions affecting visibility. Divide  $Q$  by the distance of the Mesabi Nugget facility from the nearest portion of the Boundary Waters Canoe Area Wilderness,  $d$ . If  $Q/d$  is less than 10, no further analysis is needed.
2. [ $Q/d$  greater than or equal to 10.] Identify the nearest facility from which allowances are available. Determine the distance ( $d1$ ) of that facility from the nearest portion of the Boundary Waters. Mesabi Nugget will need to acquire (and retire) at least the number of allowances (of vintage equivalent to the calendar year in which Mesabi Nugget's emissions occurred) determined by subtracting ten from the  $Q/d$  for Mesabi Nugget and multiplying the result by  $d1$  (i.e.,  $((Q/d - 10) * d1)$ ). The result must be rounded up to the next full allowance. If the resulting number of allowances ( $A1$ ) can be acquired from that facility, no further analysis is needed. However, if the facility with allowances has fewer than quantity  $A1$  allowances available, Mesabi Nugget will need to acquire the maximum number of allowances ( $B1$ ) available and then move on to step 3. (Additional allowances will also be needed from at least one more facility.)
3. [ $(Q/d - B1/d1)$  greater than or equal to 10]. Identify the next nearest facility from which allowances are available. Determine the distance ( $d2$ ) of that facility from the nearest portion of the Boundary Waters. In addition to the allowances ( $B1$ ) acquired in step 2, Mesabi Nugget will need to acquire (and retire) at least the number of allowances (of vintage equivalent to the calendar year in which Mesabi Nugget's emissions occurred) determined by subtracting 10 from the difference between  $Q/d$  and  $B1/d1$  and multiplying the result by  $d2$  (i.e.,  $((Q/d - B1/d1) - 10) * d2$ ). The result must be rounded up to the next full allowance. If the resulting number of allowances ( $A2$ ) can be acquired from that facility, no further analysis is needed. (In this case, Mesabi Nugget would need to acquire the number of allowances  $B1$  from the first facility and the number of allowances  $A2$  from the second facility.) If the number of allowances  $A2$  cannot be acquired from the second facility with available allowances, Mesabi Nugget will need to acquire the maximum number of allowances ( $B2$ ) available and then move on to step 4. (Additional allowances will also be needed from at least one more facility.)
4. [ $(Q/d - (B1/d1 + B2/d2))$  greater than or equal to 10]. The quantity of allowances,  $A3$ , to be sought from the third facility will equal  $((Q/d - (10 + B1/d1 + B2/d2)) * d3)$ . This determination can be continued at successive facilities until Mesabi Nugget is able to acquire all remaining needed allowances at a facility.

## APPENDIX MATERIAL

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318-001

NOTE: Should a future trading program administered by USEPA include allowances for sulfur dioxide or nitrogen oxides, these would also be acceptable in combination or as a substitute for the Acid Rain program sulfur dioxide allowances

### *Example:*

1. Assume that the Mesabi Nugget facility emits 200 tons of SO<sub>2</sub>, 450 tons of NO<sub>x</sub>, 300 tons of PM<sub>10</sub> and 50 tons of sulfuric acid mist in 2007.  $Q$  equals  $200 + 450 + 300 + 50 = 1000$  tons. Let  $d$  equal 34 km, so  $Q/d$  equals 29.41. This is greater than 10, so step 2 is needed.
2. Assume that a power plant located 51 kilometers (i.e.,  $d1 = 51$ ) away from the BWCAW owns allowances and is willing to let Mesabi Nugget acquire up to 800 allowances. Calculating  $Q/d - 10$  results in 19.41. Multiplying by  $d1$  results in 990 ( $A1$ ). But only 800 allowances ( $B1$ ) are available, so Mesabi Nugget acquires them and moves on to step 3.
3. Assume that another power plant located 80 km away from the BWCAW (i.e.,  $d2 = 80$ ) owns allowances and is willing to let Mesabi Nugget acquire up to 500 allowances. Calculating  $Q/d - B1/d1 - 10$  results in 3.73. Multiplying by  $d2$  results in 298.04. Mesabi Nugget must acquire at least the number of allowances determined in this way (only whole allowances are available), so it must acquire 299 allowances from this second power plant. This power plant has that number available, so Mesabi Nugget acquires 299 allowances from the second power plant in addition to the 800 acquired from the first power plant. All credits must be of the same vintage that Mesabi Nugget emitted the pollution being address.

That would complete the needed allowance acquisitions for that calendar year. No further steps are needed.

**TECHNICAL SUPPORT DOCUMENT**  
**For**  
**AIR EMISSION PERMIT NO. 13700318-001**

This technical support document is intended for all parties interested in permit and to meet the requirements that have been set forth by the federal and state regulations (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 proposed permit.

**1. General Information**

**1.1. Applicant and Stationary Source Location:**

Applicant/Address	Stationary Source/Address (SIC Code: 3312)
Mesabi Nugget, LLC 10 Outer Drive Silver Bay, MN 55614	Hoyt Lakes Mining Area Hoyt Lakes, MN St. Louis County
Contact: Larry Lehtinen, President Phone: (218) 349-1277	

**1.2. Description of the Proposed Facility**

Mesabi Nugget LLC (the applicant) is proposing to construct a 600,000 metric ton per year iron nugget production scale demonstration facility. The facility will be constructed near Hoyt Lakes, Minnesota, on a portion of the site formerly occupied by the LTV Steel Mining Company taconite mining and processing facility. The facility will be known as Erie Nugget. Iron nuggets produced by the facility will be approximately 96 to 98 percent iron and can be fed directly to electric arc furnaces (also known as mini-mills) as well as to conventional integrated iron and steel manufacturing facilities.

The iron nugget process produces iron directly from finely ground iron ore and coal. This technology has not yet been demonstrated in a facility of this size. Data gathered from a pilot plant located at the Northshore Mining Company taconite processing facility in Silver Bay, Minnesota were used to develop emission estimates used in the permit application and permitting review.

The facility will include a rotary hearth furnace (RHF), a product separator, coal pulverizers, flux pulverizers, green ball dryers, product coolers, and materials handling operations. The RHF is the major source of air pollutants, with significant emissions of carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), particulate matter (PM) and particulate matter less than ten microns in diameter (PM<sub>10</sub>), volatile organic compounds (VOCs), lead, fluorides, sulfuric acid mist, and hazardous air pollutants (HAPs). The green ball dryer generates combustion gases (CO, NO<sub>x</sub>, and VOCs) and particulate emissions. The coal and flux

pulverizers also generate combustion gases. The other emission units primarily generate particulate emissions.

The pollution controls on the RHF include an air infiltration system to reduce CO, VOC, and volatile HAP emissions and wet scrubbers to control SO<sub>2</sub>, particulate matter, lead, fluoride, sulfuric acid mist, and particulate HAP emissions. Fabric filters (baghouses) are used on most other equipment to control particulate emissions, including particulate HAPs.

The facility will initially operate using raw materials that were successful in producing iron nuggets at the pilot plant to demonstrate that iron nuggets can be successfully made at this larger scale. However, the applicant has also indicated that the raw materials may change to advance economic, environmental, or technological agendas.

### **1.3. Facility Emissions:**

**Table 1. Total Facility Potential to Emit Summary**

<b>Pollutant, tons per year</b>	<b>Total Facility Limited Potential Emissions</b>
<b>PM</b>	<b>514</b>
<b>PM<sub>10</sub></b>	<b>514</b>
<b>SO<sub>2</sub></b>	<b>417</b>
<b>NO<sub>x</sub></b>	<b>954</b>
<b>CO</b>	<b>449</b>
<b>VOCs</b>	<b>170</b>
<b>Lead</b>	<b>4.2</b>
<b>Fluorides</b>	<b>108</b>
<b>Sulfuric Acid Mist</b>	<b>112</b>
<b>Single HAP (Manganese compounds)</b>	<b>63</b>
<b>All HAPs</b>	<b>210</b>

**Table 2. Facility Classification**

<b>Classification</b>	<b>Major/Affected Source</b>	<b>Synthetic Minor</b>	<b>Minor</b>
PSD	Yes – PM, PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>x</sub> , CO, VOCs, Lead, Fluorides, Sulfuric Acid Mist		
Part 70 Permit Program	Yes		
Part 63 NESHAP	Yes (case-by case)		

#### **1.4. Confidentiality**

The applicant submitted certain information that was requested to be kept confidential under Minn. Stat. § 116.075, subd. 2 on the basis that it relates to “processes or methods of operation unique to the owner or operator” and “information which would tend to affect adversely the competitive position of said owner or operator.” The MPCA has determined that this information is confidential and has handled it accordingly. Attachment 3 contains the MPCA’s confidentiality determination.

## **2. Regulatory and/or Statutory Basis**

The proposed facility is subject to a number of federal and state air quality regulatory programs.

### ***New Source Review***

Mesabi Nugget, LLC plans to build its new commercial-scale iron nugget production facility on a portion of a site currently owned and operated by Cliffs-Erie LLC. The MPCA has determined that, under Prevention of Significant Deterioration (PSD) regulation, the Erie Nugget site will be a separate stationary source from the Cliffs-Erie facility. Although the properties are contiguous, the SIC codes for the two facilities differ. The Cliffs-Erie facility has an SIC code of 1011 (iron ore mining), while the SIC code for the Erie Nugget facility will be 3312 (steel works, blast furnaces, etc.). Furthermore, neither facility will be a support facility for the other. The raw materials for the iron nugget process are coal, iron ore concentrate, and fluxes. There is no plan for Cliffs-Erie to supply any of these materials to the Erie Nugget site. There are also no plans for Cliffs-Erie to receive iron nuggets, the primary product of the Erie Nugget facility.

The area surrounding the proposed Erie Nugget site is classified as attainment or unclassifiable for all pollutants subject to the Prevention of Significant Deterioration (PSD) regulation (part of the New Source Review program). The construction of the facility is a major modification under PSD, as at least one pollutant exceeds the major source threshold (in this case, 250 tons per year, or tpy). A comparison of the emission rates of other PSD pollutants to their respective

significance levels indicated that the regulation was triggered for CO, NO<sub>x</sub>, SO<sub>2</sub>, PM, PM<sub>10</sub>, VOCs, lead, fluorides, and sulfuric acid mist. (See 40 CFR Part 52.21.)

This permit authorizes construction of the facility which, after construction, will be a major PSD source. Details of the PSD permitting requirements are provided in Section 3.1 of this document.

### ***Part 70 Permit Program***

After its construction, the facility will be a major source under the Part 70 (Title V) operating permit program. (See 40 CFR Part 70.)

### ***New Source Performance Standards (NSPS)***

The New Source Performance Standard for Coal Preparation Plants (40 CFR Part 60, Subpart Y) applies to the pulverization of coal at this facility.

### ***National Emission Standards for Hazardous Air Pollutants (NESHAP)***

The proposed facility has the potential to emit more than ten tons per year of at least one HAP. It also has potential emissions of all HAPs, combined, that exceed 25 tons per year. Since this facility type does not fall into any listed major source category, a case-by-case determination of Maximum Achievable Control Technology is required. (See 40 CFR Part 63, Subpart B.)

### ***Minnesota State Rules***

Several emission units at the proposed facility are subject to one or more state rules.

The rotary hearth furnace (EU001), the green ball dryer (EU002), the product separator (EU003), and the flux pulverizers (EU006 and EU012) are subject to Minnesota's standards of performance for fossil-fuel-burning direct heating equipment, Minn. R. 7011.0610.

The coal pulverizers (EU004 and EU005) are subject to the standards of performance for pneumatic coal-cleaning equipment and thermal dryers at any coal handling equipment (Minn. R. 7011.1115) and for new coal preparation plants (Minn. R. 7011.1150).

The emergency generator (EU011) is subject to Minnesota's standards for stationary internal combustion engines, Minn. R. 7011.2300.

The coal/flux unloading baghouse (EU007), the rail loadout baghouse/material transfer operations (EU008), the material transfer operations (EU010), and the product cooler (EU013) are subject to the state standards of performance for post-1969 industrial process equipment (Minn. R. 7011.0715).

The RHF Roof Monitor/Heat Control (EU009) is subject to Minn. R. 7011.0110, visible emission restrictions for new facilities.

Fugitive emission sources (FS001 – FS009) are subject to Minn. R. 7011.0110, visible emission restrictions for new facilities and Minn. R. 7011.0150, preventing particulate matter from becoming airborne.



**Table 3. Regulatory Overview of Facility**

<b>EU, GP, or SV</b>	<b>Applicable Regulations</b>	<b>Comments:</b>
EU001	40 CFR §52.21	Prevention of Significant Deterioration (PSD). Major source threshold exceeded for PM, PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>x</sub> , and CO. Significance thresholds exceeded for VOCs, Lead, Fluorides, and Sulfuric Acid Mist. BACT limits set for PM, PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>x</sub> , CO, VOCs, Lead, Fluorides, and Sulfuric Acid Mist. Clean Unit provisions are included for PM, PM <sub>10</sub> , SO <sub>2</sub> , CO, VOCs, Lead, Fluorides, and Sulfuric Acid Mist.
	40 CFR §63.43(g)	Major source threshold exceeded for total HAPs and individual HAPs. Case-by-case determination of Maximum Achievable Control Technology (MACT; Clean Air Act §112(g)): MACT limits set at the RHF for (particulate) metal HAPs; semi-volatile and volatile organic HAPs; acid gas HAPs; and mercury.
	40 CFR §64.5(a)	The Compliance Assurance Monitoring (CAM) threshold for large pollutant-specific emission units was exceeded at the RHF for PM, PM <sub>10</sub> , SO <sub>2</sub> , CO, Fluorides, Sulfuric Acid Mist, (particulate) metal HAPs; and acid gas HAPs.

EU, GP, or SV	Applicable Regulations	Comments:
	Minn. R. 7011.0610, Subp. 2.B	<p>Standards of Performance for Fossil-Fuel-Fired Direct Heating Equipment. Determination of applicable limit from rule:</p> <ul style="list-style-type: none"> <li>• No specific standard of performance has been promulgated for the iron nugget rotary hearth furnace;</li> <li>• The facility is located outside the Minneapolis-St. Paul Air Control Region; and</li> <li>• The facility has greater than 250 MMBtu/hr of all direct and indirect heating equipment.</li> </ul> <p>(The 4.0 pound per million Btu SO<sub>2</sub> emission rate from this regulation is met by the compliance with the sulfur limit of 1.0 weight percent for the coal used in the RHF. A heat content of at least 2500 Btu per pound is required to comply with the limit. All coals reviewed in AP-42 have a heat content well above this value.)</p>
EU002	40 CFR §52.21	PSD. The proposed source is major for PM, PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>x</sub> , CO, VOCs, Lead, Fluorides, and Sulfuric Acid Mist. This unit has BACT limits for PM, PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>x</sub> , CO, and VOCs. Clean Unit provisions are included for PM and PM <sub>10</sub> .
	40 CFR §63.43(g)	Case-by-case MACT: Limits set at the green ball dryer for (particulate) metal HAPs.
	40 CFR §64.5(a)	For the green ball dryer, the CAM threshold for large, pollutant-specific emission units was exceeded for PM and PM <sub>10</sub> .

EU, GP, or SV	Applicable Regulations	Comments:
	Minn. R. 7011.0610, Subp. 2.B	<p>Standards of Performance for Fossil-Fuel-Fired Direct Heating Equipment. Determination of applicable limit from rule:</p> <ul style="list-style-type: none"> <li>• No specific standard of performance has been promulgated for the green ball dryer;</li> <li>• The facility is located outside the Minneapolis-St. Paul Air Control Region; and</li> <li>• The facility has greater than 250 MMBtu/hr of all direct and indirect heating equipment.</li> </ul> <p>(The pound per million Btu SO<sub>2</sub> emission rate from this regulation is met by burning natural gas.)</p>
EU003	40 CFR §52.21	PSD. The proposed source is major for PM, PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>x</sub> , CO, VOCs, Lead, Fluorides, and Sulfuric Acid Mist. This unit has BACT limits for PM, PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>x</sub> , CO, and VOCs. Clean Unit provisions are included for PM and PM <sub>10</sub> .
	40 CFR §63.43(g)	Case-by-case MACT: Limits set for (particulate) metal HAPs.
	Minn. R. 7011.0610, Subp. 2.B	<p>Standards of Performance for Fossil-Fuel-Fired Direct Heating Equipment. Determination of applicable limit from rule:</p> <ul style="list-style-type: none"> <li>• No specific standard of performance has been promulgated for the product separator;</li> <li>• The facility is located outside the Minneapolis-St. Paul Air Control Region; and</li> <li>• The facility has greater than 250 MMBtu/hr of all direct and indirect heating equipment.</li> </ul> <p>(The pound per million Btu SO<sub>2</sub> emission rate from this regulation is met by burning natural gas.)</p>

EU, GP, or SV	Applicable Regulations	Comments:
EU004, EU005	40 CFR §52.21	PSD. The proposed source is major for PM, PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>x</sub> , CO, VOCs, Lead, Fluorides, and Sulfuric Acid Mist. This unit has BACT limits for PM, PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>x</sub> , CO, and VOCs. Clean Unit provisions are included for PM and PM <sub>10</sub> .
	40 CFR §63.43(g)	Case-by-case MACT: Limits set for (particulate) metal HAPs.
	40 CFR 60 Subp. Y	The coal pulverizer/dryers are thermal dryers for coal. For that reason, they are subject to the federal Standards of Performance for Coal Preparation Plants.
	Minn. R. 7011.1150	The coal pulverizer/dryers are thermal dryers that dry and convey coal. Thus, they are subject to the thermal dryer provisions of this rule.
EU006, EU012	40 CFR §52.21	PSD. BACT limits are set for PM and PM <sub>10</sub> . Clean Unit provisions are included for PM and PM <sub>10</sub> .
	40 CFR §63.43(g)	Case-by-case MACT Limits set for (particulate) metal HAPs.
	Minn. R. 7011.0610, Subp. 2.B	Standards of Performance for Fossil-Fuel-Fired Direct Heating Equipment. Determination of applicable limit from rule: <ul style="list-style-type: none"> <li>• No specific standard of performance has been promulgated for the flux pulverizer/dryers;</li> <li>• The facility is located outside the Minneapolis-St. Paul Air Control Region; and</li> <li>• The facility has greater than 250 MMBtu/hr of all direct and indirect heating equipment.</li> </ul> (The pound per million Btu SO <sub>2</sub> emission rate from this regulation is met by burning natural gas.)
EU007	40 CFR §52.21	PSD. BACT limits are set for PM and PM <sub>10</sub> . Clean Unit provisions are included for PM and PM <sub>10</sub> .

<b>EU, GP, or SV</b>	<b>Applicable Regulations</b>	<b>Comments:</b>
	40 CFR §63.43(g)	Case-by-case MACT: Limits set for (particulate) metal HAPs.
	Minn. R. 7011.0715	The coal/flux unloading equipment is industrial process equipment that is not subject to any other standard of performance, so it is subject to the state standards of performance for post-1969 industrial process equipment. (The particulate requirements of this regulation are met by the use of a baghouse with a control efficiency greater than 85 percent by weight.)
EU008	40 CFR §52.21	PSD. BACT limits are set for PM and PM <sub>10</sub> . Clean Unit provisions are included for PM and PM <sub>10</sub> .
	40 CFR §63.43(g)	Case-by-case MACT: Limits set for (particulate) metal HAPs.
	Minn. R. 7011.0715	The rail loadout and material transfer operations are performed by industrial process equipment that is not subject to any other standard of performance, so it is subject to the state standards of performance for post-1969 industrial process equipment. (The particulate requirements of this regulation are met by the use of baghouses with a control efficiency greater than 85 percent by weight.)
EU009	Minn. R. 7011.0110	The emissions from the roof vent are not subject to any other promulgated rules and therefore are subject to the standards under Visible Emission Restrictions for New Facilities.
EU010	40 CFR §52.21	PSD. BACT limits set for PM and PM <sub>10</sub> . Clean Unit provisions are included for PM and PM <sub>10</sub> .
	40 CFR §63.43(g)	Case-by-case MACT: Limits set for (particulate) metal HAPs.

<b>EU, GP, or SV</b>	<b>Applicable Regulations</b>	<b>Comments:</b>
	Minn. R. 7011.0715	The material transfer operations are performed by industrial process equipment that is not subject to any other standard of performance, so it is subject to the state standards of performance for post-1969 industrial process equipment. (The particulate requirements of this regulation are met by the use of baghouses with a control efficiency greater than 85 percent by weight.)
EU011	40 CFR §52.21	PSD. BACT limits are set for PM and PM <sub>10</sub> . Clean Unit provisions are included for PM and PM <sub>10</sub> .
	40 CFR §63.43(g)	Case-by-case MACT: Limits set for (particulate) metal HAPs.
	40 CFR pt. 63, subp. ZZZZ	National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. This is a new emergency generating unit (< 100 hours per year) and is thus subject only to the reporting requirements.
	Minn. R. 7011.2300	The emergency generator is a stationary internal combustion engine.
EU013	40 CFR §52.21	PSD. BACT limits are set for PM and PM <sub>10</sub> . Clean Unit provisions are included for PM and PM <sub>10</sub> .
	40 CFR §63.43(g)	Case-by-case MACT: Limits set for (particulate) metal HAPs.
	Minn. R. 7011.0715	The rail product cooler is industrial process equipment that is not subject to any other standard of performance, so it is subject to the state standards of performance for post-1969 industrial process equipment. (The particulate requirements of this regulation are met by the use of a wet scrubber with a control efficiency greater than 85 percent by weight.)
FS001-FS008	40 CFR §52.21	PSD. BACT limits are set for PM and PM <sub>10</sub> .
	40 CFR §63.43(g)	Case-by-case MACT: Limits set for (particulate) metal HAPs.

EU, GP, or SV	Applicable Regulations	Comments:
	Minn. R. 7011.0110 and Minn. R. 7011.0150	Fugitive dust emissions from the storage piles and from materials handling operations are not subject to any other promulgated rules and therefore are subject to the standards under Visible Emission Restrictions for New Facilities and Preventing Particulate Matter from Becoming Airborne.
FS009	40 CFR §52.21	PSD. BACT limits are set for PM and PM <sub>10</sub> .
	40 CFR §63.43(g)	Case-by-case MACT: Limits set for (particulate) metal HAPs.
	Minn. R. 7011.0110 and Minn. R. 7011.0150	Fugitive dust emissions from paved roads are not subject to any other promulgated rules and therefore are subject to the standards under Visible Emission Restrictions for New Facilities and Preventing Particulate Matter from Becoming Airborne.

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 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 U.S. EPA or by citizens under the federal Clean Air Act, but are fully enforceable by the MPCA and citizens under provisions of state law.

### 3. Technical Information

The rationale used to set site-specific conditions for this facility is discussed below. The project is subject to the Prevention of Significant Deterioration (PSD) regulation as well as a case-by-case determination of the Maximum Achievable Control Technology (MACT) under Section 112(g) of the Clean Air Act. Conditions included in the permit to fulfill Compliance Assurance Monitoring (CAM) and Periodic Monitoring requirements are also discussed.

#### 3.1 Timing of Performance Tests

This facility differs from most others in that no other similar facilities have been constructed at this scale. For this reason, some adjustments have been made in the permitting of the facility. Part of the role of this document is to explain where these adjustments have been made and explain the reasons for them.

One area where a change has been made is with the initial performance test. These tests are often required sixty days after the emission unit achieves maximum capacity, but not more than

180 days after initial startup. Because the Mesabi Nugget's iron nugget process is a new technology being used at the commercial scale for the first time, some problems with scaling up the technology are expected. It may be a while before the plant is able to operate in a consistent way; however, it is difficult to know how long it will take to achieve this "normal" mode of operation.

For this reason, the MPCA set up a triggering event based not on a calendar event (i.e., 180 days after initial startup), but chose to use a parameter that would indicate some level of normal operations. Except for situations where regulatory programs (such as the federal New Source Performance Standards) require adherence to a different schedule, the initial performance tests are due within ninety after the facility has produced 200,000 metric tons of nuggets from its initial startup. This level of production – roughly four months of production at full capacity – may take several months beyond those four to be achieved. However, it is reasonable to assume that, once this level of production has been achieved, the facility is operating in a way that can be considered normal.

The timing of subsequent tests will be determined by the MPCA after it receives the results of the initial performance tests. Among the factors to be considered by the MPCA are the proximity of the test result to the limit (with a test result closer to the limit likely to require more frequent testing), the degree of the MPCA's confidence in the periodic monitoring (e.g., CEMS or parametric monitoring, such as pressure drop at a baghouse), and the MPCA's concern about the emissions of the pollutant on ambient air quality indicators. (For instance, pollutants that were modeled to be near a National Ambient Air Quality Standard would be more likely to have more frequent testing than pollutants that were modeled but demonstrated little impact on the standard.)

### **3.2 Prevention of Significant Deterioration Requirements**

The Erie Nugget facility proposed by the applicant is a new major source under PSD, as the facility's potential to emit sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), particulate matter (PM), particulate matter less than ten microns in diameter (PM<sub>10</sub>), carbon monoxide (CO), and volatile organic compounds (VOCs) all exceed the 250 tpy major source threshold. In addition, emissions of three other PSD pollutants – lead, fluorides (F), and sulfuric acid mist (SAM) – also exceed their associated significance thresholds.

Since the potential emissions from the proposed project exceed the PSD pollutant-specific thresholds for these nine pollutants, the PSD regulation requires a number of analyses. Those analyses include determining the Best Available Control Technology (BACT) for emission units at the facility; modeling maximum allowable emissions to ensure protection of the Minnesota and National Ambient Air Quality Standards (MAAQS and NAAQS) for PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub>, CO, and lead; and examining the planned facility's impacts on the PSD increments for PM<sub>10</sub>, SO<sub>2</sub>, and NO<sub>x</sub>. (The increment analyses were required for both the local Class II areas and the nearby Class I areas.<sup>1</sup>) The applicant was required to perform analyses specific to Class I areas to

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<sup>1</sup> All areas in Minnesota are designated as Class II areas except for those specifically identified as Class I areas. Class I areas include most National Parks and National Wilderness Areas. For this project, the Class I areas of



ensure that Air Quality Related Values (AQRVs)<sup>2</sup> are protected. Finally, an “additional impact analysis”<sup>3</sup> was required of the applicant.

### BACT Analyses

The proposed facility exceeds the PSD major source threshold or the PSD significance level for several pollutants. A BACT analysis must be performed for each of these pollutants at each source at which it is emitted. The table below summarizes the pollutants emitted from the emission units.

Emission unit	MPCA ID	Pollutants emitted
Rotary Hearth Furnace (RHF)	EU001	PM, PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>x</sub> , CO, VOCs, Lead, F, SAM
Pellet Dryer	EU002	PM, PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>x</sub> , CO, VOCs
RHF Product Separator	EU003	PM, PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>x</sub> , CO, VOCs, Lead, F, SAM
Coal Pulverizer Dryers	EU004 EU005	PM, PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>x</sub> , CO, VOCs
Flux Pulverizer Dryers	EU006 EU012	PM, PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>x</sub> , CO, VOCs
Coal and Flux Unloading	EU007	PM, PM <sub>10</sub>
Rail Loadout	EU008	PM, PM <sub>10</sub>
RHF Building Roof Vent	EU009	PM, PM <sub>10</sub>
Materials Handling	EU010	PM, PM <sub>10</sub>
Back-up Generator	EU011	PM, PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>x</sub> , CO, VOCs
RHF Product Cooler	EU013	PM, PM <sub>10</sub>
Process Water Cooling Tower	EU014	PM, PM <sub>10</sub>
Clean Water Cooling Tower	EU015	PM, PM <sub>10</sub>
Fugitive Dust	FS001 - FS009	PM, PM <sub>10</sub>

One element of a BACT determination is a calculation of the cost of control per ton of pollutant controlled. Usually this is done on a pollutant-specific basis, but when one type of control equipment reduces multiple pollutants, the BACT analysis distributes the cost of the equipment among the controlled pollutants.

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concern are Voyageurs National Park and the Boundary Waters Canoe Area Wilderness in Minnesota; Isle Royale National Park in Michigan; and Rainbow Lakes Wilderness Area in Wisconsin. For these areas, the PSD increments are smaller, meaning that less degradation of the air quality is allowed.

<sup>2</sup> AQRVs include nitrogen and sulfate deposition (in Class I areas) as well as (Class I) visibility.

<sup>3</sup> The additional impacts analysis examines the expected impairment of visibility, soils, and vegetation due to the project and its associated impacts (including local growth).

### ***Rotary Hearth Furnace***

The iron nugget technology has been tested at the lab scale and pilot plant level but, when built, the proposed facility will be the first commercial scale (demonstration) facility. Data from the pilot plant are used to approximate the facility's emissions, although some potentially significant deviations from those results may occur due to the differences in scale. In addition, the applicant may wish to use – or at least consider using – raw materials that differ from those used when the pilot plant operations were tested.

The rotary hearth furnace (RHF) is the key to this new technology. As noted in the table above, the RHF emits several PSD pollutants; BACT must be determined for each pollutant.

***Particulate matter and particulate matter less than ten microns in diameter.*** All of the particulate matter emitted by the RHF is less than ten microns in diameter, so only information on technologies to control PM<sub>10</sub> was submitted. After reviewing entries for the mineral and metallic processing industry in the RACT/BACT/LAER Clearinghouse (RBLC), the applicant investigated five technologies for review in the BACT analysis: fabric filters, wet scrubbers, electrostatic precipitators, wet electrostatic precipitators, and centrifugal separations (cyclones). Fabric filters were deemed infeasible due to pressure drop considerations while (dry) electrostatic precipitators were determined to be infeasible because the flue gases contains iron and other conductive materials that cannot be efficiently removed from the collection plates. Of the remaining options, the wet scrubber demonstrated the best control. From pilot plant data, the wet scrubber at the proposed RHF is expected to remove 87 percent of the filterable particulate and 98 percent of the condensable particulate. Since the RHF's exhaust stream contains only slightly more filterable than condensable particulate (55 percent is filterable), the overall particulate removal efficiency is about 92 percent.

The applicant proposed a limit of 0.03 grains per dry standard cubic foot (gr/dscf). An examination of the stack tests at the pilot plant suggests that a more stringent limit is appropriate. Corrected to seven percent oxygen, the MPCA believes a PM limit of 0.015 gr/dscf can be achieved, as can a PM<sub>10</sub> limit of 0.020 gr/dscf. (The PM will be measured according to EPA's Method 5, while Minnesota's definition of PM<sub>10</sub> – which includes condensable material – is a combination of Method 201A with Method 202. For streams with high humidity and for which all particulate is expected to be less than ten microns in diameter, Method 5 is sometimes substituted for Method 201A.) The MPCA found that vendors believed the lower limits were achievable.

Further conversations with the applicant indicated that there is a lack of data on particulate control systems given the pressure drop considerations present in this case. For this reason, the MPCA is setting the lower limits as BACT with an "escalator" clause<sup>4</sup> that would allow the limit

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<sup>4</sup> In a permit for a facility in Puerto Rico, the U.S. EPA's Region 2 office set a similar limit due to concerns about that facility's ability to meet a PM<sub>10</sub> limit. See the PSD permit issued to AES Puerto Rico Cogeneration Plant (AES-PRCP) in Guayama, Puerto Rico.

(The AES permit was reviewed by the Environmental Appeals Board. That decision is recorded as "In Re AES Puerto Rico L.P." (PSD Appeal Nos. 98-24, 98-30 & 98-31; May 27, 1999).)

to rise somewhat if test data indicated that a limit was unachievable. Should testing indicate that the initial limit is unachievable, the MPCA will set the final limit using the test data.

To demonstrate compliance, the permit will require an initial performance test. This test will also be used to set appropriate parameters for water flow rate and pressure drop across the scrubber.

**Lead.** Lead is a solid at the temperatures that are likely to be seen in the control equipment. It will be found in the filterable particulate fraction and removed best by control equipment that removes the filterable particulate. The same control technologies that were reviewed in the particulate matter analysis were reviewed for lead removal. Again, fabric filters and electrostatic precipitators were deemed infeasible; of the remaining options, wet scrubbers had the best removal efficiency and were identified as BACT. Good particulate control will also provide good control of lead, so no separate lead limit is needed. The PM and PM<sub>10</sub> limits will ensure good lead removal.

An initial performance test will be required to demonstrate that lead emissions fall into the expected range. Testing for this pollutant will be required every other particulate performance test, or every five years.

**Sulfur dioxide.** The maximum uncontrolled emissions from the RHF are calculated to be 4160 tons of SO<sub>2</sub> per year, based in part on a maximum sulfur concentration in the coal of 1.0 weight percent. After a review of the RBLC,<sup>5</sup> the applicant examined four possible control technologies for controlling SO<sub>2</sub> (a wet scrubber, spray dryer absorption, a wet electrostatic precipitator, and dry sorbent injection) and proposed a wet scrubber as BACT.

The applicant used a wet scrubber to control SO<sub>2</sub> emissions at the pilot plant. There, the wet scrubber achieved control of 93 percent of the SO<sub>2</sub> coming into the scrubber. For the Erie Nugget large-scale demonstration plant, the applicant based the BACT proposal on a more conservative value of 90 percent. (There is a concern that the results measured at the pilot plant may not be representative of actual operation, since physical conditions (e.g., little space, insufficient straight runs of duct, high temperatures for the stack testing personnel) limited the ability to acquire good data on the concentration of sulfur dioxide entering the wet scrubber. Furthermore, some variation from the pilot plant results is expected due to scale-up of the process.)

The 90 percent removal represents a higher rate of removal than would be expected from the other proposed control technologies considered individually. For that reason, the MPCA agrees that a wet scrubber is the best technology for controlling SO<sub>2</sub> at the RHF. The MPCA will also require the pH to remain alkaline enough to ensure SO<sub>2</sub> removal. (The appropriate pH will be determined by testing at the facility.)

The permit will contain a condition limiting the sulfur content of the coal used to 1.0 percent sulfur, by weight. The applicant proposed a BACT limit of 123 pounds of SO<sub>2</sub> per hour. This form of the limit would work well as an overall maximum (i.e., a “not to be exceeded” limit). However, it does not require that the scrubber be operated well at all times. For example, the

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<sup>5</sup> Entries from the RBLC are summarized in Appendix C.

facility could reduce the sulfur content of its raw materials and easily meet such a limit without achieving a high rate of removal. For that reason, the MPCA plans to incorporate removal efficiency requirement for the wet scrubber. Such a limit will require that the scrubber work well at all times.

However, due to the uncertainty about the scrubber's performance at the pilot plant – as well as an apparent lack of vendor experience in treating the mix of pollutants this facility will emit (SO<sub>2</sub>, fluorides, and sulfuric acid mist) – a reasonable, continuously achievable removal efficiency could not be established. To establish such a removal efficiency, the permit requires the applicant to conduct scrubber “optimization study.” The study will concentrate on SO<sub>2</sub> and other PSD pollutants controlled by the scrubber.<sup>6</sup> During the study, the effects of changes to certain parameters (including water flow rate and alkalinity) on pollutant emissions will be measured.

Using data gathered during the study, the MPCA will determine the optimal removal efficiency that can be continuously achieved. This removal efficiency for SO<sub>2</sub> will become an enforceable BACT limit. Once the limit is set, periodic performance tests will be required to demonstrate ongoing compliance with the removal efficiency requirements.

A CEM for SO<sub>2</sub> and a flow meter will also be installed to demonstrate compliance with the SO<sub>2</sub> pound per hour limit. The permit requires an initial certification of the monitor and flow meter and ongoing, periodic relative accuracy test audits (RATAs) and cylinder gas audits (CGAs).

**Fluorides.** Uncontrolled, the RHF would generate 3588 tons of fluorides per year. Of the four technologies examined (wet scrubber, spray dryer absorption, wet electrostatic precipitator, and dry sorbent injection), the wet scrubber is expected to remove the highest fraction of fluorides. At the pilot plant level, removals of at least 97 percent were recorded. The applicant has proposed wet scrubbing as the BACT technology for fluoride removal; the MPCA supports that determination.

The MPCA will set a limit of 24.6 lb fluorides per hour, which is the controlled potential to emit of the RHF assumed in the application. This ensures that the raw materials stay within ranges anticipated in the application. The applicant has proposed that an initial performance test and the SO<sub>2</sub> hourly emission rate be used to demonstrate compliance with the BACT limit for fluorides. The MPCA disagrees with this method. As noted above, a pound per hour limit does not ensure that the scrubber is operating well (especially for fluoride removal), particularly since the concentration of sulfur in the raw materials can be altered without a similar change in the amount of fluoride-containing compounds in the feed. In addition, the alkalinity of the scrubber water is likely to affect the fluoride removal rate.

The MPCA will require an initial performance test to demonstrate compliance with the pound per hour limit. The scrubber optimization study described for SO<sub>2</sub> will also address the removal of fluorides. Following completion of that study, the MPCA will set a scrubber removal efficiency for fluorides as BACT. Periodic performance tests will again be required to demonstrate periodic compliance with the removal efficiency requirements.

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<sup>6</sup> Other pollutants to be monitored are PM, PM<sub>10</sub>, fluorides, and sulfuric acid mist.

**Sulfuric acid mist.** The RHF has the potential to emit 1122 tons of sulfuric acid mist per year without controls. The applicant has proposed four control technologies (wet scrubber, spray dryer absorption, wet electrostatic precipitator, and dry sorbent injection). Of these, the applicant's BACT submittal indicates that the wet scrubber removes the highest fraction of sulfuric acid mist. Pilot plant data indicate that 90 percent of the sulfuric acid mist was removed by the wet scrubber. However, to maintain this removal, the scrubber water must remain alkaline.

The MPCA will set a BACT limit at 25.6 pounds per hour, which the application provides as the RHF's potential to emit sulfuric acid mist after controls. As with sulfur dioxide and fluorides, an initial performance test will be required at scrubber outlet to demonstrate compliance with the pound per hour limit. The test results will also be used to correlate the control of sulfuric acid mist with that of SO<sub>2</sub>, which will be monitored continuously.

The scrubber optimization study will also address the scrubber's ability to remove sulfuric acid mist emissions. Using data from that study, the MPCA will set a removal efficiency for sulfuric acid mist as BACT. Parametric monitoring and control of pressure drop, liquid flow, and pH (as a measure of alkalinity) will indicate ongoing compliance with the removal requirement. Periodic performance tests will be used to ensure that the parameters are set correctly.

**Nitrogen oxides.** The rotary hearth furnace operates at temperatures above 2000 °F. Even though the furnace has a reducing atmosphere, NO<sub>x</sub> is generated by the reaction of nitrogen in the air or in the raw materials with available oxygen.

Uncontrolled, the furnace is expected to generate 902 tons of NO<sub>x</sub>. A perusal of the RBLC identified eight technologies for the BACT review. They were selective catalytic reduction (SCR), selective non-catalytic reduction (SNCR), non-selective catalytic reduction (NSCR), external flue gas recirculation (external FGR), low-NO<sub>x</sub> burners and induced flue gas recirculation burners, staged fuel combustion at the RHF, low excess air, and other combustion controls.

SCR prior to the scrubber was determined to be infeasible since the compounds in the flue gas would poison the catalyst. The applicant also determined SNCR to be infeasible because the injection of ammonia would react with SO<sub>2</sub> in the flue gas to form ammonium sulfates that would be expected to foul the heat exchangers that are relied on to preheat combustion air. (The ammonia would be injected upstream of these heat exchangers because that is where the temperatures are most favorable for the desired reaction.) NSCR is not feasible, again due to the poisoning of the catalyst.

External FGR requires that flue gas be injected back into the combustion zone. In this application, external FGR would affect the heat distribution in the RHF and lower the furnace's efficiency. It is infeasible in the RHF itself. The applicant also indicates that it is infeasible in the air injection system (where the flue gas, high in CO, is reacted at high temperature with oxygen). The conversion of CO to CO<sub>2</sub> would be inhibited by the introduction of flue gas to that system, resulting in higher CO emissions from the source.

Low-NO<sub>x</sub> burners are feasible in this application, but the use of internal FGR cannot be used since it (like external FGR) reduces the flame temperature. Also, due to the high temperatures in

the RHF, the effectiveness of low-NO<sub>x</sub> burners in this application may be reduced compared to other applications.

The reducing environment of the RHF requires the use of low-excess air in at least parts of the furnace. It is a feasible option that is inherent to the process. The continuous emission monitoring system (CEMS) for NO<sub>x</sub> will assist in controlling the process to minimize NO<sub>x</sub> emissions.

Some combustion controls are feasible for use in the RHF. There will be some parts of the RHF in which staged combustion will be used. The combustion controls commonly used in a power boiler are not designed for the RHF's reducing environment, so the process control logic used for those controls is not feasible at the Nugget facility. Advanced combustion controls will be used to maintain the reducing atmosphere of the RHF, so it may be possible to tune the furnace to produce the desired product while keeping NO<sub>x</sub> formation to a minimum. That technology has not yet been developed.

The MPCA recommended that the applicant consider SCR located after the wet scrubber. This location was determined to be feasible, although it requires re-heating of the flue gas, an additional cost.

The options considered feasible were the post-scrubber SCR; staged combustion incorporating low excess air and overfire air; and low-NO<sub>x</sub> burners. The low-NO<sub>x</sub> burners and staged combustion are inherent in the design of the RHF process. Although the post-scrubber SCR was the most effective NO<sub>x</sub>-reduction technology still being considered, the cost per ton of NO<sub>x</sub> controlled (~\$11,000/ton) exceeded the cost guidelines used in Minnesota.

The low-NO<sub>x</sub> burners and staged combustion are both inherent to the design of the RHF. BACT is thus "no add-on controls" for this application. The permit will set a limit of 125 ppm (at seven percent oxygen) during normal operation. (This reflects the inclusion of low-NO<sub>x</sub> burners.) The permit will also contain a limit of 205.8 pound of NO<sub>x</sub> per hour.

A NO<sub>x</sub> CEMS, including a flow meter and an oxygen monitor will be installed to demonstrate initial and ongoing compliance with the concentration and pound per hour limits. The permit requires an initial certification of the monitoring system and periodic RATAs and CGAs.

**Carbon monoxide.** The RHF requires a reducing environment to allow the reaction that forms the iron nuggets. A reducing environment is maintained by limiting the amount of oxygen in the furnace. This type of environment ensures that significant amounts of CO will be formed there. The applicant expects that 2.0 percent of the gases leaving the RHF will be CO (or nearly 85,000 tons of CO per year).

At the pilot plant, an "air injection system" was used to introduce air and mix it into the exhaust gases. At the temperatures leaving the RHF (greater than 2000°F.), the introduction of oxygen leads to the rapid conversion of CO to CO<sub>2</sub>. The applicant measured the CO emissions after the air injection system and found them to be about 18 ppm.

The applicant proposes to use a similar air injection system at the commercial-scale facility. Additional oxidation technologies, such as thermal oxidation, would be expected only to slightly

increase the conversion of CO to CO<sub>2</sub> – with added capital and fuel costs. The MPCA agrees with the selection of the air injection system as BACT.

Due to scale-up, the results documented at the pilot plant are not expected to be reproduced at the commercial-scale facility. Still, the applicant expects the air injection system to control at least 99.7 percent of the CO. Applying this control factor to the 2.0 percent (20000 ppm) concentration in the exhaust gas results in an emission limit of 60 ppm CO at seven percent oxygen. This is the BACT limit.

The permittee will install a CO CEMS for compliance purposes. The elements of the system (the CO monitor and the oxygen monitor) are subject to an initial certification requirement as well as periodic RATAs and CGAs.

***Volatile organic compounds.*** The lack of oxygen in the RHF also ensures that unburned organic compounds will be present in the exhaust gases. While no VOC testing was performed prior to the air injection system, stack tests indicated that outlet VOC concentrations were very low. From these data, it is estimated that the air injection system had a control efficiency of at least 99 percent. Using this estimate, uncontrolled VOC emissions are assumed to total at least 2000 tons per year. The control technology proposed by the applicant as BACT for CO – the air injection system – is also proposed as BACT for VOC control. In the BACT analysis, the applicant assumes that over 99 percent of the VOCs are controlled. The applicant determined the maximum hourly emission rate, after the air injection system, to be 4.9 pounds of VOCs per hour.

The permit will require an initial performance test to demonstrate compliance. The furnace's ongoing compliance with the VOC limit will be demonstrated by compliance with CO limit as measured by the CO CEMS.

***Setting monitoring parameters for the wet scrubber.*** The wet scrubber controls several pollutants. Using data from the initial performance testing, the parameters to be monitored must be selected to ensure that the required removal efficiencies for all pollutants are met. This will require that the parameters be set at their most stringent levels.

After being set initially, the parameter ranges may be modified as long as it can be demonstrated that the removal efficiencies for all pollutants are maintained at levels meeting or exceeding those set in the permit.

***Startup/shutdown/malfunction considerations.*** The BACT analyses discussed above are based on normal operating conditions; that is, when the rotary hearth furnace is at the desired temperature, being fed dry balls, and producing iron nuggets. Other modes of operation may also occur. The application describes five such modes. Cold startup occurs during initial startup or following extended maintenance. A warm restart is performed when the rotary hearth furnace has been idled, but not shut down completely. To perform minor maintenance or to address minor production problems, the rotary hearth furnace is operated at idle (heat continues to be provided to the furnace, but no green balls are fed into the furnace). During a maintenance shutdown, the facility allows the furnace to cool down so that large-scale inspection and maintenance can be conducted. Finally, an emergency shutdown may be triggered to protect equipment and personnel.

No modification of pound per hour limits is needed during cold startup, warm startup, idling, or for a maintenance shutdown. In those periods, the facility can continue to operate the pollution control equipment, so the emissions during these periods will be less than those that occur during normal operation. During an emergency shutdown, however, the gases in the furnace are sent directly to an emergency bypass stack. No emissions will be controlled. However, the duration of an emergency shutdown is expected to be very short. (According to the application, the uncontrolled emissions are expected to last only a few minutes.)

During each of these operating modes – with the exception of the emergency shutdown – the concentrations of the pollutants tied to raw materials (SO<sub>2</sub>, SAM, F, PM, PM<sub>10</sub>, and lead) should be similar to those observed during normal operation. However, changes in the conditions within the RHF may cause emissions of the combustion pollutants (NO<sub>x</sub>, CO, and VOCs) to exceed the concentrations observed during normal operation. For this reason, the MPCA will provide relief from the concentration limits for these pollutants during these “alternative” modes of operation. The pound per hour limits will be retained.

### ***Green Ball Dryer***

Green balls are formed by mixing concentrate with coal and other raw materials. Because the concentrate contains about ten percent moisture, the green balls must be dried before they enter the RHF. This is the role of the green ball dryer.

The applicant anticipates that the green ball dryer will normally use air heated by the exhaust gases exiting the RHF. This arrangement, however, was not tested at the pilot plant; as a contingency measure, the green ball dryer will also have the capability of burning natural gas to provide the heat to dry the green balls. (The pilot plant used a green ball dryer fired by natural gas. Stack testing was performed on the pilot plant’s green ball dryer.)

The BACT analysis assumes that natural gas will be used a maximum of 20 percent of the time (1752 hours per year). This primarily affects the combustion pollutants (SO<sub>2</sub>, CO, NO<sub>x</sub>, and VOCs).

***Particulate matter and particulate matter less than ten microns in diameter.*** During the anticipated normal operations, only particulates from the drying balls will be emitted. The applicant reviewed the RBLC for control technologies at similar units. Few of the BACT determinations were directly applicable, but the applicant identified the following five potential control technologies as potential options: fabric filter, wet scrubber, (dry) electrostatic precipitator, wet electrostatic precipitator, and cyclones. (These technologies are generally consistent with the control technologies selected as BACT in the RBLC.) The fabric filters (or baghouses) provide the best control of these technologies, and the applicant selected this as BACT. The MPCA agrees with this determination.

The applicant proposes a limit of 0.015 gr PM<sub>10</sub>/dscf on a 3-hour average. The MPCA accepts this as BACT.



Initial compliance with the limit will be demonstrated with a performance test. Ongoing compliance will be ensured with bag alarms on the baghouses associated with the green ball dryer. Performance tests will also be required every five years.

***Sulfur dioxide.*** BACT for this equipment is the use of natural gas when the burner is being used to provide hot gases to dry the green balls, limiting the use of natural gas, and the use of air to dry the majority of the time. No compliance test is required beyond the use of natural gas.

***Carbon monoxide.*** When natural gas is combusted to provide the heat to dry the green balls, combustion pollutants such as CO will be emitted. Stack tests performed at the pilot plant found that the CO levels exceeded those predicted from normal natural gas emission factors. Poorly tuned burners are believed to have caused these higher emissions.

A review of the RBLC found three possible alternatives for reducing the CO emissions from the green ball dryer: thermal oxidation, catalytic oxidation, and good combustion controls. Each of these technologies was determined to be feasible.

Good combustion controls were selected by the applicant as BACT. The costs per ton associated with the installation of either a thermal or catalytic oxidizer (with or without good combustion controls) exceed the MPCA's cost threshold. The MPCA considers good combustion controls, in conjunction with limited use of natural gas, to be BACT for this unit.

The applicant proposes a limit of 70 ppm at three percent oxygen on a six-hour average as BACT. This reflects the results stack tests (18 ppm, according to the BACT analysis) performed at the pilot plant plus a safety factor. The MPCA will set a limit of 60 ppm (corrected to seven percent oxygen) on a three-hour average as BACT.

A performance test will be required to demonstrate initial compliance with this limit. The need for ongoing performance tests will be determined on the basis on this initial test.

***Volatile organic compounds.*** When performance tests were conducted at the pilot plant, higher-than-expected VOC levels were observed. Using those results, the applicant estimates emissions at the commercial-scale green ball dryer to be 19.4 pounds of VOCs per hour (or 84.8 tpy).

The technologies described above for CO control are also appropriate for VOC control. In the applicant's BACT analysis, each of the add-on controls was rejected due to cost; the applicant selected good combustion controls as BACT. Rather than proposing a VOC limit, the applicant indicated that the 70 ppm CO limit would ensure the best VOC removal.

The MPCA agrees that good combustion controls are BACT for the green ball dryer when it burns natural gas, and will set a limit of 19.4 pound of VOCs per hour as BACT. However, since the green ball dryer will not have a CO CEMS, the MPCA believes that performance tests for VOCs are a more appropriate method of demonstrating compliance. Due to the concerns over the pilot plant results, the permit will require an initial performance test to ensure that the actual VOC level falls within the expected range. Ongoing compliance will be assessed by periodic performance tests.

***Nitrogen oxides.*** The applicant has chosen to install low-NO<sub>x</sub> burners. With these controls, the applicant determined that the maximum emissions would be 29.6 tons per year. (This reflects the limited use of the natural gas for drying.) Low-NO<sub>x</sub> burners are determined to be BACT.

Due to the problems with the pilot plant burners, the MPCA will require an initial performance test while natural gas is being used to set the limit on NO<sub>x</sub> emissions. Ongoing compliance will be ensured by the facility's compliance with the operation and maintenance program for the burners and by periodic performance tests.

***Startup/shutdown/malfunction considerations.*** The BACT analyses for the green ball dryer are based on normal operating conditions. Higher emissions may occur during malfunctions of the drying system, particularly the gas-fired combustion system. However, a problem that causes emissions to exceed permitted levels is typically considered to be a malfunction only the first time the problem occurs. The problem should then be diagnosed and remedied.

The baghouse must be maintained to ensure good particulate control at all times, including startup, shutdown and malfunction.

### ***Pulverizer/Dryers and the Product Separator Dryer***

Coal and fluxes arrive at the facility in sizes that are too large to be used in the process. These materials must be pulverized prior to their use. In addition, the materials contain moisture that must be removed before the materials enter the furnace. A portion of this drying occurs at the pulverizer/dryer.

Combustion gases from a gas-fired unit will be used to dry these materials. In addition, these gases may convey the pulverized material to storage bins. (The particulate emissions from the pulverization operations are conveyed with the pulverized materials. The BACT discussion over particulate emissions follows in the materials handling section, below.)

***Combustion emissions.*** The heat for the pulverizer/dryers comes from firing natural gas. The size of the heaters in these emission units ranges from 9 to 36 million BTU per hour. Using natural gas (or propane, as a backup fuel) limits the amount of sulfur dioxide emitted, and the MPCA considers its use of natural gas to be BACT for this emission unit. The natural gas is fired in low-NO<sub>x</sub> burners to minimize NO<sub>x</sub> formation. With the low levels of NO<sub>x</sub> produced, the MPCA considers the use of low-NO<sub>x</sub> burners to be BACT as well. The maximum annual SO<sub>2</sub> emissions, assuming the constant use of the natural gas-fired dryers, are 0.1 tons for the largest dryer. Emissions of NO<sub>x</sub> from these dryers range from 2.0 to 7.8 tons per year.

Other combustion gases are emitted by these units. Since the emission levels are small, the MPCA considers good combustion practices to be BACT for CO and VOCs. Maximum annual emissions range from 3.4 to 13.0 tons of CO and from 0.2 to 0.9 tons of VOCs.

### ***Coal and Flux Unloading; Materials Handling; Rail Loadout***

Coal and fluxing agents will arrive at the facility by rail car. By state rule, coal-containing rail cars must be unloaded in a building to limit particulate emissions. A total enclosure, such as a

building, captures emissions that would otherwise drift off and helps route them to control equipment.

After unloading, the materials are moved to their desired locations via convey belts, screw conveyors, or pneumatic piping. Hoods cover transfer locations inside buildings and route the particulate emissions to a “fugitive dust collection system.” A hood capture efficiency of eighty percent will be required in the permit. The permit will also require certifications that the hoods meet the standards set forth in Minn. R. 7011.0070, Subp. 1.

Materials produced at this facility (iron nuggets and possibly slag) are loaded into rail cars to be delivered to customers. All emissions from the loading of the rail cars are expected to be particulate matter. The physical properties of the iron nuggets suggest that the handling of them will generate very little dust (if any). Handling of the slag is more likely to generate particulates.

***Particulate matter and particulate matter less than ten microns in diameter.*** To control particulate emissions from these applications (as only particulate emissions are anticipated), the applicant examined five particulate control technologies: fabric filter, wet scrubber, (dry) electrostatic precipitator, wet electrostatic precipitator, and cyclones. Dry electrostatic precipitators were determined to be infeasible because the particulate matter is conductive, which causes it to stick to the collection plates of the electrostatic precipitator.

The applicant proposes the use of fabric filters, or baghouses, as BACT. This is the technology with the highest control efficiency. The MPCA agrees with this determination.

The applicant proposed a limit of 0.005 gr PM<sub>10</sub>/dscf as BACT, indicating that this is equivalent to the limit set in the National Emission Standard for Hazardous Air Pollutants: Taconite Iron Ore Processing (the Taconite MACT; see 40 CFR 63 Subpart RRRRRR). The taconite iron ore processing industry uses materials that are the same or similar to those that will be used at the iron nugget production facility. The MPCA agrees that the recently promulgated (October 30, 2003) Taconite MACT limit represents BACT, and sets the limit at 0.005 gr/dscf, measured as indicated in the Taconite MACT. (The test method is Method 5.)

Compliance with the limit will be demonstrated by initial performance tests at each baghouse. Those tests will also be used to set acceptable pressure drops across each baghouse. The pressure drops will be monitored to ensure ongoing compliance.

### ***Emergency Generator***

An emergency diesel generator will be operated only when needed to provide emergency power to the facility when external power is interrupted or when testing is needed to ensure that the generator is able to perform when needed. The operation of this back-up generator is restricted to 100 hours per year.

***Particulate matter and particulate matter less than ten microns in diameter.*** In addition to the restriction of operating hours, the applicant identified three options to control particulate emissions: good combustion practices, an oxidation catalyst, and a diesel particulate filter. All technologies are feasible, but the use of the oxidation catalyst and the diesel particulate exceeds the MPCA’s cost threshold for control of particulate matter. The MPCA selects good

combustion practices, in conjunction with a 100 hour per year operating restriction, at BACT for controlling particulate matter. The emergency generator's potential to emit PM and PM<sub>10</sub> is 0.3 tons per year.

***Sulfur dioxide.*** The applicant identified low-sulfur fuel and add-on controls as potential candidates for BACT. The expected annual SO<sub>2</sub> emissions from this unit, when using low-sulfur fuel (not greater than 0.05 percent sulfur), are 0.3 tons. While no specific add-on controls were investigated, add-on controls are infeasible due to the intermittent use of the emergency generator.

Without considering specific technologies, the MPCA does not categorically agree with the assertion that all add-on controls are infeasible. However, the cost per ton associated with almost any additional control technology will be excessive. For this reason, the MPCA agrees with the applicant's selection of low-sulfur fuel and the 100 hour per year operating restriction as BACT for this unit.

***Carbon monoxide and volatile organic compounds.*** After reviewing the RBLC, the applicant proposed two methods to minimize emissions of CO and VOCs from the emergency generator beyond limiting the hours of operation. Good combustion practices and an oxidation catalyst were examined. Good combustion practices were proposed as BACT. An oxidation catalyst was ruled out as not being cost effective.

The MPCA agrees with the applicant's determination. With the restricted hours of operation and good combustion practices, the maximum annual emissions are 0.9 tons of CO and 0.3 tons of VOCs.

***Nitrogen oxides.*** The applicant investigated three means of controlling NO<sub>x</sub> emissions from the emergency generator: good combustion practices, selective catalytic reduction, and non-selective catalytic reduction. SCR was determined to be infeasible since it needs to be used with lean-burn engines; diesel engines operate as rich-burn engines. Good combustion practices were proposed as BACT. NSCR was ruled out as not being cost effective.

The MPCA agrees with the applicant's determination. With the restricted hours of operation and good combustion practices, the maximum NO<sub>x</sub> emissions are 4.3 tons per year.

### ***RHF Product Cooler***

Iron nuggets are cooled in a product cooler. Heat from the nuggets is carried away by cooling water. The gases that circulate around the RHF products will primarily contain particulates from the products – primarily from the slag.

This relatively small air stream will be directed to the RHF's wet scrubber. The wet scrubber has already been selected as BACT for RHF emissions.

### ***Cooling Towers***

The project will have two cooling water systems, each served by its own set of cooling tower cells. The clean water system provides clean cooling water to cool machinery (e.g., pumps and

compressors). The process cooling water system provides cooling water for the scrubber water, rotary cooler, and other process components.

Particulate matter emissions from cooling towers arise from the creation of small aerosol particles as water cascades over the internal structure of the cooling tower. (This promotes evaporation and thus cooling.) These aerosols contain dissolved minerals (also called total dissolved solids). Both the aerosols themselves and the dissolved minerals constitute the particulate matter emissions.

The applicant proposes to use mist eliminators to coalesce the small aerosol particles into droplets that are large enough to fall back into the cooling tower by gravity. The applicant also proposes to limit the total dissolved solids content of the cooling water by periodically “blowing down” high solids content water and replacing it with fresh water. The clean water cooling tower will blow down to the process cooling water tower, while the process water cooling tower will blow down to the water treatment system primarily via a blow down stream from the wet scrubber where the pollutants are the most concentrated.

The MPCA will require the applicant to install mist eliminators and to monitor the circulation rate of each tower and the concentration of dissolved solids.

### ***Fugitive Emissions***

Fugitive dust (i.e., PM and PM<sub>10</sub>) emanates from railcar loading; from raw material and product stockpiles (and the drop points to those stockpiles); from handling materials with heavy equipment (front-end loaders); and from roadways. The applicant identified five methods of controlling fugitive dust: wet suppression, enclosures, paving, good housekeeping, and proper orientation of storage piles. Each of these methods was determined to be feasible, at least in some applications.

***Raw materials.*** The applicant has proposed the use of a (heated) total enclosure for the iron ore concentrate primarily to keep it workable. Since the concentrate contains a high percentage of moisture (greater than nine percent), fugitive dust emissions are unlikely.

Coal and fluxes will be kept out of doors, primarily in stockpiles. Fugitive dust from material transfer to the stockpile and from wind erosion of the stockpiles will be controlled with wet suppression.

***Heavy equipment use.*** Front-end loaders move the coal and fluxes from the stockpiles to the pulverizer dryers. Wet suppression and good housekeeping will be used to minimize fugitive emissions.

***Roads.*** Traffic on paved and unpaved roads generates fugitive dust. These emissions will be minimized by paving where appropriate, wet suppression, and good housekeeping.

The applicant describes the use of wet suppression methods and good housekeeping practices in the fugitive dust control plan.

***Conclusion.*** The MPCA supports the practices described in application as BACT. Based on a review of BACT determinations, the MPCA will include opacity limits of five percent at the

stockpiles, material transfer operations, and from the roads. Compliance with these limits will be based on an initial opacity test. Ongoing compliance will be assured by weekly visible emission (VE) readings.

### **Ambient Air Quality Compliance Demonstrations (Class II)**

PSD and State Rules require that the applicant demonstrate that the emission impacts from the project do not threaten ambient air quality standards (National Minnesota Ambient Air Quality Standards, or NAAQS, and Minnesota Ambient Air Quality Standards, or MAAQS).

Furthermore, the overall growth in emissions from all the emission increases in an area cannot exceed the PSD increments for SO<sub>2</sub>, PM<sub>10</sub>, and NO<sub>x</sub>. The demonstrations are made using ambient air quality models with the emission rates from the proposed facility and from other facilities that may be expected to have an impact on air quality in the area.

EPA has designated the area surrounding the proposed facility as a Class II area that is in attainment with or unclassifiable for the NAAQS for SO<sub>2</sub>, PM<sub>10</sub>, and NO<sub>x</sub>.

### ***Clean Unit Designations***

In 2002, the U.S. Environmental Protection Agency promulgated revisions to the New Source Review program.<sup>7</sup> These revisions included the creation of a new class of emission units referred to as Clean Units. The revisions became effective in Minnesota on March 3, 2003.

One way for an emission unit to become a Clean Unit is to undergo a BACT analysis for a specific pollutant and apply add-on control equipment. Clean Units are exempt from New Source Review (for the pollutant for which they are a Clean Unit) for up to ten years provided that they continue to comply with the conditions on which the BACT analysis was based. At the Erie Nugget facility, the wet scrubber, the air injection system, and the baghouses are add-on control equipment. Since the wet scrubber has been determined to be BACT for SO<sub>2</sub>, PM, PM<sub>10</sub>, fluorides, lead, and sulfuric acid, the rotary hearth furnace become a Clean Unit for these pollutants. The RHF also becomes a Clean Unit for CO and VOCs since the air injection system was determined to be BACT for these pollutants. Baghouses were also determined to be BACT for a variety of sources, including the green ball dryer, the pulverizer/dryers, unloading and loading operations, and for materials handling. Each unit where a baghouse was determined to be BACT becomes a Clean Unit for particulate matter.

### ***NAAQS and MAAQS***

The NAAQS are set to be protective of human health and the environment. EPA has established NAAQS for sulfur dioxide (SO<sub>2</sub>), particulate matter (PM<sub>10</sub>), nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), ozone (O<sub>3</sub>), and lead. A PSD review includes an analysis of ambient impacts from the proposed change. The initial review looks only at impacts from the facility or modification in question; a more detailed analyses is required if the predicted impacts exceed proscribed levels (Significant Impact Levels [SILs]). If the predicted impacts from a proposed

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<sup>7</sup> See 67 FR 80185 (December 31, 2002).

facility or modification exceed an ambient standard, adjustments – possibly including additional control equipment or physical changes to the planned facility – must be made to ensure compliance with the NAAQS or MAAQS.

The following tables summarize the modeled ambient impacts from the proposed Erie Nugget project and compare those impacts to relevant thresholds.

Pollutant	Averaging Time	SIL ( $\mu\text{g}/\text{m}^3$ )	Modeled Impact ( $\mu\text{g}/\text{m}^3$ )
CO	1-hour	2000	91
	8-hour	500	35

Predicted concentrations from other pollutants exceeded the SILs and required a more detailed analysis, including impacts from nearby sources and background concentrations.

Pollutant	Averaging Time	Ambient Standard ( $\mu\text{g}/\text{m}^3$ )	Modeled Impact ( $\mu\text{g}/\text{m}^3$ )
SO <sub>2</sub>	1-hour (state standard)	1300	1342 <sup>8</sup>
	3-hour	915	542
	24-hour	365	141
	Annual (state standard)	60	17
PM <sub>10</sub>	24-hour	150	72
	Annual	50	21
NO <sub>x</sub>	Annual	100	17
Lead	Quarterly	1.5	0.06

As the data in the tables indicate, the project's impacts are below the NAAQS and MAAQS.

### ***PSD Increments***

PSD Increments limit the amount of air quality degradation that can occur in an area after a specified date. The degradation is measured through air quality modeling. Federal rules require these increments be protected. Again, a project may require modifications to ensure that the increments are protected.

The following table summarizes the modeled ambient impacts from the proposed project.

Pollutant	Averaging Time	PSD Increment ( $\mu\text{g}/\text{m}^3$ )	Modeled Impact ( $\mu\text{g}/\text{m}^3$ )
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<sup>8</sup> The high modeled concentration is attributable to the Minnesota Power – Syl Laskin power plant. Minnesota Power has proposed new SO<sub>2</sub> limits that will bring their impacts into compliance. Mesabi Nugget does not contribute to this concentration. The predicted 1-hour SO<sub>2</sub> concentration from Mesabi Nugget is 164  $\mu\text{g}/\text{m}^3$ .

Pollutant	Averaging Time	PSD Increment ( $\mu\text{g}/\text{m}^3$ )	Modeled Impact ( $\mu\text{g}/\text{m}^3$ )
SO <sub>2</sub>	3-hour	515	91
	24-hour	91	31
	Annual	20	2.3
PM <sub>10</sub>	24-hour	30	18
	Annual	17	2.2
NO <sub>x</sub>	Annual	25	2.7

### **Ambient Air Quality Compliance Demonstrations (Class I)**

The proposed location for the iron nugget facility is roughly 35 kilometers from the nearest Class I area, the Boundary Waters Canoe Area Wilderness (BWCAW). Other Class I areas are also nearby, including Voyageurs National Park (~85 km). (These areas are on the boundary between Minnesota and Canada.) Isle Royale National Park in Michigan and Rainbow Lakes Wilderness Area in Wisconsin are between 200 and 300 km away. Due to the proximity of the proposed site to these areas, the applicant was required to assess the potential impacts of the new facility on the Air Quality Related Values (AQRVs) in the Class I areas. The applicant provided analysis of several AQRVs, including Class I PSD increments, visibility impairment, sulfur and nitrogen deposition, and mercury deposition. (However, visibility is not an AQRV at Rainbow Lakes.)

Federal Land Managers (FLMs) in the National Park Service (in the U.S. Department of the Interior) and the U.S. Forest Service (in the U.S. Department of Agriculture) provide input to the project proposer and to the MPCA on the AQRVs that apply to their Class I areas. If the maximum modeled impact at a Class I area exceeds established thresholds, the FLM for that area will request additional analysis and may also request emission reductions.

***Class I PSD increments.*** Modeling performed by the applicant indicates that the impacts from the proposed project fall below each the PSD increment Significant Impact Levels (SILs) at three of the four Class I areas. (As noted above, PSD increments – and thus, their corresponding SILs – are established for SO<sub>2</sub>, PM<sub>10</sub>, and NO<sub>x</sub>.) The modeled impacts exceed the SO<sub>2</sub> and PM<sub>10</sub> SILs only at the BWCAW.

A full increment analysis examines the increases and decreases at not only the proposed site, but considers other changes to emissions since the increment trigger date. For that reason, it is helpful to consider emission decreases at the new Erie Nugget facility. The new facility will be built on a portion of the (former) LTV Steel Mining Company's taconite ore mining and processing facility.

The potential of the Erie Nugget plant to emit PM<sub>10</sub> and SO<sub>2</sub> will be less than the most recent actual emissions from LTV. The maximum PM<sub>10</sub> emissions from the new facility are roughly 75 percent lower than those from the LTV's operations, while the nugget plant's SO<sub>2</sub> maximum emissions will be just over half of LTV's actual emissions. Because there is a reduction in these pollutants at this site – in particular, the new emissions are offset by a factor of two to four by



the elimination of LTV's emissions – the MPCA believes no further analysis is needed to ensure that the Class I PSD increments are protected.

**Visibility impairment.** Visibility is a complex regional issue. A variety of constituents react in the atmosphere to create the compounds that absorb or scatter light, impairing visibility. The raw materials for these atmospheric reactions come from many sources, including not only emissions from cars and buses, factories and utilities, but also naturally-occurring materials. Emissions from nearby sources play a significant role, but the effects from long-range transport may also be important. Materials identified as key contributors to visibility impacts include SO<sub>2</sub>, NO<sub>x</sub>, coarse particulate matter, fine particulate matter, elemental carbon, soluble organic aerosols, and sulfates. The importance of the airborne reaction requires that the modeling for impacts rely not only on wind direction and speed but also atmospheric chemistry.

Following FLM guidance, the applicant modeled visibility impacts at the BWCAW, Voyageurs National Park, and Isle Royale National Park. Using the existing background, impacts surpassing the five percent level were noted at the BWCAW and at Voyageurs National Park.<sup>9</sup> The maximum impact of ten percent was noted at the BWCA. The maximum impact at Voyageurs National Park was about five percent.

The applicant also modeled using an estimate that represented a pristine background. As expected, these modeling results indicated more visibility impairment; impacts surpassing the five percent level were noted at all three Class I areas. Again, the maximum impact – nearly thirty percent – was identified at the BWCA.

The Environmental Protection Agency (U.S. EPA) and Regional Planning Organizations such as the Central States Regional Air Partnership (CENRAP) are leading efforts to identify strategies that will be effective in improving visibility. (Minnesota participates in CENRAP, as do the FLMs.) With the help of these efforts, states will develop State Implementation Plans by 2008 that will lead to reductions in regional haze (i.e., visibility impairment).

**Sulfur and nitrogen deposition.** The applicant modeled the impacts of sulfur and nitrogen deposition from the proposed facility at Class I areas. Deposition was below “Green Line Values” (i.e., one of the established thresholds) for three of four Class I areas; the Green Line Value was exceeded at Voyageurs National Park for sulfur deposition. As noted above, the SO<sub>2</sub> emissions from the Erie Nugget plant will be roughly half of those from the LTV facility, so the sulfur that will be deposited by the new plant is more than offset by the elimination of LTV's emissions.

**Mercury deposition.** The potential of the Erie Nugget plant to emit mercury is 75 pounds per year, or slightly less than the actual emission rate of the LTV taconite ore processing plant (83 pounds per year). The vast majority of the mercury that will be emitted by the iron nugget facility is in elemental form. The applicant's mercury deposition analysis indicates that elemental mercury is not expected to deposit in any significant amount locally. In the

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<sup>9</sup> The FLMs have set levels at which they become concerned about visibility impacts in Class I areas. The current threshold for Class I areas is a five percent (daily) impact.

concentration found in the source's emissions, this elemental form of mercury is not readily removable in current emission control systems.<sup>10</sup>

### **Additional Impacts Analysis**

The additional impacts analysis submitted by the applicant considers the effect of project-related air emission on visibility, soils, and vegetation. It also addresses air quality impacts from regional growth related to the project.

The assessment for Class II visibility focused on the visibility of the RHF plume. The RHF may have a water vapor plume due to its high moisture content. Such a plume dissipates quickly. The assessment showed that an observer at Giants Ridge (a ski and golf resort) would be able to notice the plume under normal meteorological conditions when looking directly at the facility as it operates. The observation of the plume was determined not to impair visibility. An observer at Bearhead Lake State Park would be able to see the plume only under the worst meteorological conditions. Since northeastern Minnesota is generally heavily forested and lakes are surrounded by trees, the potential for seeing the plume from Bearhead Lake State Park is low under typical meteorological conditions.

The analysis of the project's impact on soils found them to be far below the state acid deposition standard. The project's damage to vegetation was determined to be small, due in part to the control of SO<sub>2</sub> emissions with a scrubber and control of fugitive dust with a fugitive dust control plan.

Upon startup, Erie Nugget will employ about fifty individuals. The direct and indirect impacts of these employees on the area due to this growth will be minor. Most, if not all, of the needed infrastructure already exists. In the years before it closed, the LTV taconite ore processing facility employed about 1400 employees. (Cliffs-Erie now employs only a handful.)

### **3.3 Maximum Achievable Control Technology Requirements**

A case-by-case determination of the Maximum Achievable Control Technology (MACT) was required prior to the construction of a proposed iron nugget manufacturing facility near Hoyt Lakes, Minnesota. The applicant's permit application for the proposed facility contains a proposed MACT determination as well as a proposal for the Best Available Control Technology, or BACT, at many of the units that emit Hazardous Air Pollutants (HAPs). Data in the permit application includes stack test data from the applicant's pilot plant at Silver Bay, Minnesota. The application also refers to several promulgated MACT standards. The MPCA reviewed several other promulgated MACT standards to supplement the information in the application.

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<sup>10</sup> The permit will contain conditions requiring the investigation of control options to reduce mercury emissions to the air. However, those conditions will be "state-only" conditions and not federally-enforceable, as there are no mercury control options known to be effective for this application.

## Rotary hearth furnace

The rotary hearth furnace (RHF), the RHF product cooler, the dryers (including the green ball dryer, the coal and flux pulverizers, and the product separator), materials handling equipment, and fugitive sources are all subject to the MACT determination.

**Background and analysis.** The rotary hearth furnace emits a variety of HAPs. They take the form of metals, acid gases, and organic HAPs. Controlling these three groups of HAPs generally requires multiple strategies because of their differing properties. Most metallic HAPs are solids themselves or chemically adhere to particles. Because of this, controlling particulate emissions is proposed to control the majority of the metallic HAPs. However, particulate controls are not effective in capturing the mercury emitted by the RHF as it is not a solid at this temperature and the form of the mercury emitted does not adhere to particulate matter.

Acid gases can be captured with water mists or alkaline solutions. The acids are attracted to the polarity of these molecules. These compounds can also be condensed by cooling them. Organic molecules, including the HAPs, are controlled by ensuring good combustion.

In its proposal, the applicant identified four MACT standards (for Integrated Iron and Steel Manufacturing,<sup>11</sup> Taconite Ore Processing,<sup>12</sup> Iron and Steel Foundries,<sup>13</sup> and Commercial, Industrial, and Institutional Boiler and Process Heaters<sup>14</sup>) that control particulate as a surrogate for filterable and condensable solids. The following table augments the application by presenting MACT standards from metal processing facilities and combustion sources for comparison with the iron nugget process. (The table includes the standards identified in the permit application.)

Industry	Source	Pollutant	MACT Standard for New Units
Primary Aluminum Reduction <sup>15</sup>	Potlines	Total fluorides	1.2 lb/ton of aluminum produced
		POM	0.63 lb/ton of aluminum produced
Ferroalloys Production <sup>16</sup>	Submerged arc furnaces	PM (surrogate for metal HAPs)	0.15 gr/dscf; 0.51 lb/hr/MW

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<sup>11</sup> National Emission Standards for Hazardous Air Pollutants: Integrated Iron and Steel Manufacturing; Final Rule (68 FR 27646; May 20, 2003).

<sup>12</sup> National Emission Standards for Hazardous Air Pollutants: Taconite Iron Ore Processing; Final Rule (68 FR 61868; October 30, 2003).

<sup>13</sup> National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries; Final Rule (69 FR 21906; April 22, 2004).

<sup>14</sup> National Emission Standards for Hazardous Air Pollutants for Commercial, Industrial and Institutional Boiler and Process Heaters; Final Rule (69 FR 55218; September 13, 2004).

<sup>15</sup> National Emission Standards for Hazardous Air Pollutants: Primary Aluminum Reduction Plants; Final Rule (62 FR 52384; October 7, 1997)

Industry	Source	Pollutant	MACT Standard for New Units
Primary Lead Smelting <sup>17</sup>	Blast furnace	Lead	1.0 lb/ton of lead produced
Primary Copper Smelting <sup>18</sup>	Smelting furnace	PM (surrogate for metal HAPs)	6.2 mg/dscm <b>(0.0027 gr/dscf)</b>
Integrated Iron & Steel Manufacturing	Blast furnace	PM (surrogate for metal HAPs)	<b>0.003 gr/dscf</b>
	Sinter furnace	PM (surrogate for metal HAPs)	0.3 lb/ton of product sinter
			<b>0.01 gr/dscf</b>
Primary Magnesium Refining <sup>19</sup>	~ <sup>20</sup>	~	~
Taconite Ore Processing	Indurating furnace	PM (surrogate for metal HAPs)	<b>0.006 gr/dscf</b>
Iron & Steel Foundries	Cupola metal melting furnace	PM (surrogate) ( <i>total metal HAP</i> )	<b>0.002 gr/dscf</b> (0.0002 gr/dscf)
		VOHAP	<b>20 ppmv (10% O<sub>2</sub>)</b>
Commercial, Industrial and Institutional Boilers and Process Heaters	Large solid fuel boiler or process heater	PM ( <i>Total Selected Metals</i> )	0.025 lb/MMBtu of heat input (0.0003 lb/MMBtu of heat input)
		HCl	0.02 lb/MMBtu of heat input
		Mercury	0.000003 lb/MMBtu of heat input
		CO	<b>400 ppmv (7% O<sub>2</sub>)</b>

A number of the limits that EPA established are based on the production rate of the emission unit. Translating such a limit from one type of metal to another confounds the limit-setting process. Similarly, translating a limit based on heat input for a boiler or process heater to the

<sup>16</sup> National Emission Standards for Hazardous Air Pollutants for Ferroalloys Production: Ferromanganese and Silicomanganese; Final Rule (64 FR 27450; May 20, 1999)

<sup>17</sup> National Emission Standards for Hazardous Air Pollutants for Primary Lead Smelting; Final Rule (64 FR 30194; June 4, 1999)

<sup>18</sup> National Emission Standards for Hazardous Air Pollutants for Primary Copper Smelting; Final Rule (67 FR 40478; June 12, 2002)

<sup>19</sup> National Emission Standards for Primary Magnesium Refining; Final Rule (68 FR 58615; October 10, 2003)

<sup>20</sup> In this and subsequent tables, the "~" indicates that the MACT standard has no similar emission unit that can be used for comparison.

rotary hearth is complicated since the fuel supplying the heat input comprises the sole raw material charged to the emission unit. In contrast, a variety of raw materials are charged to the rotary hearth; basing a limit on one of several reactants will not work. Unless the units associated with the MACT limits can be readily translated to units that are meaningful for iron nugget production, they will not be included in the discussion. For completeness, however, they are included in the summary table. The cells in the table that appear in bold contain the limits included in the analysis.

**Metal HAPs.** The table shows PM concentrations ranging from 0.002 to 0.006 gr/dscf. These levels represent MACT controls for metal HAPs at a number of combustion sources or metal melting furnaces. This suggests that a value in the same range may be appropriate for MACT for the rotary hearth used in iron nugget production.

However, stack tests performed at the iron nugget pilot plant measured post-scrubber PM concentrations at about 0.010 gr/dscf. The pilot plant results suggest that the levels met at other types of facilities cannot be met at the RHF. To accommodate the pilot plant results and their scale-up to a commercial-scale plant, the MPCA adopts the same limit determined to be BACT, 0.015 gr PM/dscf,<sup>21</sup> based on a scaled-up version of the pilot plant results, as MACT for particulate HAPs.

**Organic HAPs.** The reducing environment of the rotary hearth furnace allows a portion of the volatile organic compounds that are in the raw materials to remain uncombusted. Some of these compounds are HAPs. Volatile HAPs are also created in the combustion of natural gas and in the reduction process. The vast majority of these compounds are combusted in the air injection system. Testing performed at the pilot plant indicated very low VOC concentrations. The VOC emissions at the commercial-scale plant may be somewhat higher, due in part to the potential for poorer mixing in the air injection system. Still, VOC emissions are expected to be low.

EPA established a limit of 20 ppmv (at ten percent oxygen) for Volatile Organic HAPs as MACT for new cupola metal melting furnaces. (This corresponds to a limit of roughly 16 ppmv at seven percent O<sub>2</sub>.) It also set a limit of 400 ppmv (at seven percent oxygen) CO as a surrogate limit on volatile organic HAP emissions from commercial, industrial and institutional boilers and process heaters.

Rather than setting a direct limit for volatile organic HAPs, the MPCA will set a surrogate limit for CO (as EPA did with the commercial, industrial and institutional boilers and process heaters). The BACT analysis identified a limit of 60 ppm CO at seven percent oxygen to be BACT. The MPCA will recognize compliance with that limit as meeting the MACT requirements for volatile organic HAPs.

**Acid gas HAPs.** Hydrochloric and hydrofluoric acids will be emitted by the rotary hearth furnace. The proposed control technology, a wet scrubber operated with alkaline additives, effectively removes most acid gases. This was demonstrated at the pilot plant, where the difference between the front-catch particulate matter (the filterable material containing metal

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<sup>21</sup> This limit will be subject to the same escalator clause described in the discussion on the BACT limit for PM.

HAPs) and the total particulate (including the condensable fraction, where the acid gases are collected) was very low (typically less than 0.005 gr/dscf).

This review of other MACT standards discovered no concentration-based acid gas limits. As with the metal HAPs, the MPCA will rely on pilot plant results and scale them up to the commercial scale-facility.

The MPCA established a BACT limit of 0.020 gr PM<sub>10</sub>/dscf, or 0.005 gr/dscf higher than the front-catch limit for metal HAPs. The MPCA will adopt this value as MACT for the RHF for acid gas HAPs.<sup>22</sup>

**Mercury.** This review of other MACT standards discovered no concentration-based limits for mercury. The MPCA will base its determination of a MACT control limit on the information provided in the permit application.

Most mercury generated by the RHF is in the form of elemental mercury. The wet scrubber removes a small portion (~ six percent) of the overall mercury but a large fraction of the oxidized mercury. Thus, the existing stream contains mercury that is almost all in elemental form (99.3 percent elemental).

Existing mercury control technologies are not very effective in removing elemental mercury. In particular, no current technologies were found that would work well with the technology selected as BACT for the RHF (the wet scrubber) and achieve significant mercury removals.

At full production, the maximum controlled mercury emissions are expected to be 75 pounds per year. The MPCA adopts a standard for this facility based on that rate of emissions, setting the limit at 0.0086 pounds of mercury per hour. Compliance with the limit will be determined through periodic performance tests, beginning with an initial performance test. A second test is required prior to the submittal of the permit application for renewing the operating permit for this facility. Performance tests are also required at two year intervals thereafter should permit reissuance lag.

The applicant has committed to undertake a mercury reduction testing program, which is described below.

### **RHF Product Cooler**

As iron nuggets leave the RHF, they are cooled in a product cooler using water to remove heat from the nuggets. Gases from the RHF may be carried over into the product cooler. In addition, metallic particles from the nuggets and slag may become entrained in the gas stream. For this reason, those gases are planned to be routed to the same control equipment and emission point as the RHF emissions.

Currently promulgated MACT standards from metallurgical sources do not address product cooler emissions, but the MPCA will adopt the standard identified for controlling metal HAPs at

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<sup>22</sup> This limit will be subject to the same escalator clause described in the discussion on the BACT limit for PM<sub>10</sub>.

the RHF (0.015 gr PM/dscf)<sup>23</sup> to control these emissions as well. In addition, the standard set for acid gas HAPs from the RHF (0.020 gr/dscf)<sup>24</sup> will be adopted to control acid gas HAPs.

### Green Ball Dryer

The largest dryer at this facility is the green ball dryer. The following table summarizes the dryer standards for source categories in the metallurgical industry.

Industry	Source	Pollutant	MACT Standard for New Units
Primary Aluminum Reduction	~	~	~
Ferroalloys Production	~	~	~
Primary Lead Smelting	~	~	~
Primary Copper Smelting	~	~	~
Integrated Iron & Steel Manufacturing	~	~	~
Primary Magnesium Refining	~	~	~
Taconite Ore Processing	Ore dryers	PM	0.025 gr/dscf (flow-weighted)
Iron & Steel Foundries	~	~	~

The only metallurgical industry MACT standard with a limit for a dryer addresses ore dryers at taconite ore processing facilities. The promulgated limit at those sources is 0.025 gr/dscf averaged across all ore dryers. The applicant's proposed a limit for the green ball dryer of 0.015 gr PM/dscf, to be achieved using baghouses for control. This limit is more stringent than the taconite MACT limit for ore dryers, both in its value and because it includes condensable as well as filterable particulate. The MPCA adopts the proposed limit as MACT.

### Materials Handling

There will be a variety of material handling operations at the Erie Nugget facility. Pulverized materials will be pneumatically conveyed from coal and flux pulverizers to storage bins; other materials will be moved via conveyors. Emissions from drop points inside buildings will be captured with total enclosures or with hoods, where necessary.

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<sup>23</sup> This is the same limit established as BACT for PM (and MACT for metal HAPs). It retains the escalator clause described in the discussion on the BACT limit for PM.

<sup>24</sup> This is the same limit established as BACT for PM<sub>10</sub> (and MACT for acid gas HAPs). It retains the escalator clause described in the discussion on the BACT limit for PM<sub>10</sub>.

Since the majority of the material handling operations occur at relatively cool temperatures (room temperature or ambient conditions), emission from materials handling take the form of filterable particulate emissions. Metal HAPs will be constituents of these emissions, so the limit will be based on filterable particulates.

The following table presents the MACT standards approved by EPA for the metallurgical industry.

<b>Industry</b>	<b>Source</b>	<b>Pollutant</b>	<b>MACT Standard for New Units</b>
Primary Aluminum Reduction	~	~	~
Ferroalloys Production	~	~	~
Primary Lead Smelting	~	~	~
Primary Copper Smelting	~	~	~
Integrated Iron & Steel Manufacturing	~	~	~
Primary Magnesium Refining	~	~	~
Taconite Ore Processing	Ore crushing and handling units	PM	0.005 gr/dscf (flow-weighted)
Iron & Steel Foundries	~	~	~
Commercial, Industrial and Institutional Boiler and Process Heaters	~	~	~

As shown above, the taconite industry is the only source in the table that has a limit for materials handling. Many of the material handling operations at the Erie Nugget facility are quite similar to those at taconite facilities. Because the MPCA believes that the limit of 0.005 gr/dscf PM (front-catch) can be met with the planned control equipment (baghouses) and that it is achievable for the Nugget facility, this limit is selected as MACT for material handling operations.

### **Fugitive Emissions**

Emissions from fugitive sources (including fugitive emissions of metal HAPs) occur outside buildings and at ambient conditions. Since metal HAPs are constituents of particulate matter, controlling particulate matter also controls these HAPs. The following table indicates the control strategies for fugitive emissions promulgated for other metallurgical industries.



<b>Industry</b>	<b>Source</b>	<b>Pollutant</b>	<b>MACT Standard for New Units</b>
Primary Aluminum Reduction	~	~	~
Ferroalloys Production	Individual fugitive dust sources	PM	Fugitive dust control plan that has been approved by the designated authority
Primary Lead Smelting	Roadways, furnace areas, etc.	PM	Standard operating procedures manual detailing measures to control fugitive dust emissions, to be approved by the designated authority
Primary Copper Smelting	Roads when transporting dusty materials, etc.	PM	Written fugitive dust control plan that has been approved by the designated authority
Integrated Iron & Steel Manufacturing	~	~	~
Primary Magnesium Refining	Unpaved roads other unpaved surfaces	PM	Fugitive dust emissions control plan
Taconite Ore Processing	Stockpiles, material transfer points, yard areas	PM	Fugitive dust emissions control plan
Iron & Steel Foundries	~	~	~

As shown in the table above, a fugitive dust control plan approved by the permitting authority<sup>25</sup> is the standard requirement for controlling metal HAPs from fugitive emission sources. The applicant's submittal agrees with this, as a site-specific fugitive control plan was proposed as MACT for metal HAPs from fugitive sources. The permit application contains that fugitive (dust) control plan. When approved, that plan (or a revised one) will represent the conditions under which it must operate the sources of fugitive emissions.

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<sup>25</sup> In this case, the MPCA is the permitting authority.

### **3.4 Environmental Review**

In 2004,<sup>26</sup> the Minnesota Legislature passed a law that would exclude the first iron nugget demonstration project from environmental review, provided certain conditions were met. As amended in 2005, that law indicated that a qualifying project must:

- Be the first iron nugget production facility in Minnesota;
- Involve a single rotary hearth furnace of maximum pitch circle diameter of 60 meters;
- Be located outside the area adjacent to the north shore of Lake Superior classified as the lake orientation zone in the Department of Natural Resources report entitled “North Shore Characterization Study”; and
- Have complete permit applications submitted to the appropriate state agencies by June 30, 2005 for all permits required to construct and operate the facility.

The Erie Nugget project was judged to have met these criteria. Thus, no environmental review is required for this project.

### **3.5 Air Emission Risk Analysis**

Although the project was not subject to environmental review, the MPCA requested that the project proposer submit an Air Emission Risk Analysis, or AERA. The AERA process involves risk screening for certain air pollution point sources using tools developed by the MPCA

The applicant submitted the AERA to the MPCA for review. The applicant also filled out and submitted the MPCA’s HG-2003 form, in which the impacts of mercury releases to ambient air are assessed. In that form, the applicant summarized possible means to reduce mercury emissions from the proposed facility.

Based on the information provided, the MPCA concluded that the air emissions that are reasonably expected to occur from this facility do not have the potential for significant environmental or health effects. The AERA documents are available in Attachment 8.

### **3.6 Mercury Reduction Effort**

The legislation that authorized the project to move forward without environmental review included a condition requiring that “[t]he Pollution Control Agency shall strive in the permitting process to assure the lowest mercury emissions reasonably possible.” Given the elemental form of mercury emitted and the current state of the technology, only a limited removal of the mercury appears to be achievable.

However, the permit contains conditions requiring the permittee to identify possible methods, including technologies currently being developed, that have the potential to reduce mercury emissions by at least fifty percent. The goals of the permit conditions are to:

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<sup>26</sup> See Laws of Minnesota Chapter 220 (2004).

- Ensure that the facility is designed to accommodate the potential future use of mercury-reducing technologies;
- Establish “baseline condition” for mercury emissions from the facility, including conducting an initial stack performance test for mercury emissions; and
- Investigate and implement actions with the goal to reduce mercury emissions by at least 50% from “baseline” emissions.

With these goals in mind, the permit requires:

- The rotary hearth furnace and its control equipment to be configured so that mercury control equipment may be installed;
- A baseline mass balance to be created by determining the mercury discharges to the air, to the water, and to solid materials based on measurements taken at the commercial-scale plant;
- A “mercury options report” that, after describing activities that may reduce the mass of mercury emitted, lays out three options for the MPCA to select for the permittee to implement; and
- Performance testing to demonstrate the effectiveness of the chosen options in reducing mercury emissions.

### **3.7 Calculations of Potential to Emit**

Attachment 1 to this TSD contains Form GI-07, which summarizes the PTE of the emission units at the facility. Attachment 2 contains spreadsheets and supporting information prepared by the Permittee.

### **3.8 Compliance Assurance Monitoring**

Federal Compliance Assurance Monitoring (CAM) rules (40 CFR Part 64) require that permits include enhanced monitoring and compliance requirements to provide a reasonable assurance of compliance with applicable regulations under the Clean Air Act. For a facility’s first Part 70 (i.e., Title V) permit, CAM applies to large pollutant-specific emissions units. For a specific pollutant, those units (1) must meet an applicable regulation; (2) have an uncontrolled (i.e., prior to control) potential-to-emit that exceeds the major source threshold for that specific pollutant; (3) have add-on controls that reduce the emissions of the regulated pollutant; and (4) have a controlled potential-to-emit (i.e., after controls) that exceeds the major source threshold for that specific pollutant. Two of the emissions units at the proposed Erie Nugget facility are subject to CAM. The applicability analysis for these units is summarized in the table below.

Emissions unit	Pollutant	Applicable regulation	Major source threshold (tpy) <sup>27</sup>	PTE prior to control (tpy)	PTE after control (tpy)
Rotary hearth furnace (EU001)	SO <sub>2</sub>	BACT (40 CFR 52.21(j))	100	8111	811
	Sulfuric Acid Mist	BACT (40 CFR 52.21(j))	100	2188	219
	PM	BACT (40 CFR 52.21(j))	100	2426	194
	PM <sub>10</sub>	BACT (40 CFR 52.21(j))	100	2426	194
	Fluorides	BACT (40 CFR 52.21(j))	100	3908	117
	CO	BACT (40 CFR 52.21(j))	100	84936	255
	HAPs	Case-by-case MACT (40 CFR 63.43(g)) <sup>28</sup>	25	1083	92
Green Ball Dryer (EU002)	PM	BACT (40 CFR 52.21(j))	100	14292	154
	PM <sub>10</sub>	BACT (40 CFR 52.21(j))	100	14292	154

As indicated in the table, CAM must be established at the RHF for SO<sub>2</sub> and sulfuric acid mist; for PM, PM<sub>10</sub>, and particulate (metal) HAPs; for fluorides and acid gas HAPs, and for CO and

<sup>27</sup> These are the Part 70 major source thresholds, not the PSD major source thresholds.

<sup>28</sup> Units for which a NESHAP has been promulgated under Part 63 are not subject to CAM (as they meet the compliance requirements of the NESHAP. However, no NESHAP has been promulgated for iron nugget facilities, so CAM must be developed for the Mesabi Nugget facility.

volatile (organic) HAPs. The pollutants subject to CAM at the RHF, except for CO and the volatile HAPs, are controlled by the wet scrubber. CO and the volatile HAPs are controlled by the air injection system.

At the GBD, CAM must be established for PM and PM<sub>10</sub>. Three baghouses control the PM and PM<sub>10</sub> emitted there.

### ***Rotary Hearth Furnace***

The applicant proposed a number of monitoring requirements for the pollutants that triggered CAM at the RHF. In a number of cases, the company proposed that the monitoring for one pollutant would provide the needed monitoring for one or more additional pollutants. The MPCA decided that this was appropriate only in certain cases.

***Sulfur dioxide, sulfuric acid mist, and hydrofluoric acid.*** The applicant proposed the use of a continuous emission monitor system (CEMS) as CAM to measure SO<sub>2</sub> concentrations. As indicated in 40 CFR 64.3(d), the use of CEMS that satisfies certain monitoring requirements meets the general design requirements for CAM. The CEMS will need to operate in accordance with 40 CFR Part 60.13 and the performance specifications of 40 CFR Part 60, Appendix B. In addition, oxygen must also be monitored in accordance with 40 CFR Part 60.13 and the performance specifications of 40 CFR Part 60, Appendix B. SO<sub>2</sub> concentrations must be monitored at least four times per hour and averaged once per hour.

It is reasonable to use sulfur dioxide as a surrogate for sulfuric acid mist since the sulfur for both pollutants emanate from the raw materials. If the sulfur content of the raw materials is reduced, the amount of sulfur dioxide and sulfuric acid mist will be decreased. Also, since SO<sub>2</sub> and SAM are both polar molecules that are attracted to water, an increase in the scrubber's removal of SO<sub>2</sub> will also result in a similar increase in the removal of SAM.

The same relationship does not exist between SO<sub>2</sub> and HF. The primary difference is that a reduction of sulfur in the raw materials does not cause a reduction in HF emissions. For that reason, monitoring SO<sub>2</sub> emissions is not a good surrogate for monitoring HF emissions.<sup>29</sup>

***PM, PM<sub>10</sub>, and particulate HAPs.***<sup>30</sup> The application indicates that all particulate matter emitted from the RHF is less than ten microns in diameter, so controlling PM<sub>10</sub> will also control PM. The particulate HAPs, which are primarily metals (but not mercury), are found in the particulate matter as well. Thus, CAM for PM<sub>10</sub> is appropriate as CAM for PM and particulate HAPs.

A scrubber with BACT limits for PM and PM<sub>10</sub> and a MACT limit for particulate HAPs will control particulate emissions. The applicant proposed to monitor pressure drop across the scrubber as well as liquid flow rate as CAM.

During its review of the CAM proposal for the wet scrubber, the MPCA examined the Taconite Iron Ore Processing NESHAP (40 CFR 63 Subpart RRRRR). Wet scrubbers are used

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<sup>29</sup> Hydrofluoric acid, or HF, is an acid gas HAP. CAM for HF emissions is discussed in section entitled "Fluorides and acid gas HAPs."

<sup>30</sup> The particulate HAPs emitted in the greatest quantities are manganese and lead.

throughout the taconite iron ore industry; the MPCA believes that adopting the requirements developed in the Taconite NESHAP for wet scrubbers would also be appropriate for the wet scrubber used with the RHF.

The requirements that were adopted from Taconite NESHAP require that the pressure drop be recorded at least very fifteen minutes, with valid data for at least 95 percent of every daily averaging period. A daily average pressure drop is then determined. If the pressure drop falls outside the approved range for the offgas flow rate, the permittee must follow a series of steps to get the pressure drop back within the acceptable range. During the operation of the pilot plant, it was observed that the differential pressure across the scrubber depends on the offgas flow rate through the scrubber. Thus, the differential pressure requirement will be a function of the offgas flow rate.

***Carbon monoxide and organic HAPs.*** Carbon monoxide is produced in the RHF's reducing environment. An air injection system immediately following the RHF reduces CO concentrations by injecting oxygen (i.e., air) at a high temperature. The company proposed the use of a CEMS as CAM for CO to measure CO concentration. As indicated in 40 CFR 64.3(d), the use of CEMS that satisfies certain monitoring requirements meets the general design requirements for CAM. The CEMS will need to operate in accordance with 40 CFR Part 60.13 and the performance specifications of 40 CFR Part 60, Appendix B. In addition, oxygen must also be monitored in accordance with 40 CFR Part 60.13 and the performance specifications of 40 CFR Part 60, Appendix B. CO concentrations must be monitored at least four times per hour and averaged once per hour.

The use of natural gas and coal in the RHF's reducing environment gives rise to organic HAPs. Control of organic HAPs is achieved by combustion by the air injection system. The CO concentration is a good surrogate for a direct measurement of organic HAP emissions, as poor combustion will cause a rise in emissions of both organic HAPs and CO. The rise in CO emissions will be detected by the CO CEMS.

***Fluorides (including hydrofluoric acid) and other acid gas HAPs.*** The wet scrubber at the RHF will be used to control fluorides and acid gases emitted by the RHF. The parameters used to monitor for PM, PM<sub>10</sub>, and particulate HAPs – pressure drop across the wet scrubber and the liquid flow rate – are necessary but not sufficient to ensure good removal of the fluorides (in the form of hydrofluoric acid) and other acid gases. The alkalinity of the scrubber water will play a large role in determining the effectiveness of the scrubber in removing these acids, so a minimum pH – a surrogate for alkalinity – must be established through performance testing.

### ***Green Ball Dryer***

CAM must be established for the baghouses that will remove the PM and PM<sub>10</sub> emitted at the Green Ball Dryer. The applicant originally proposed monitoring the pressure drop across the baghouses as CAM. However, a review of the Taconite NESHAP identified bag leak alarms as an appropriate technology for monitoring problems at baghouses. This was accepted by the applicant.

When one of a large number of bags in a baghouse tears or breaks, the impact on the pressure drop is relatively small. Such a small change may not be detectable by monitoring changes in pressure across a baghouse. In contrast, a bag leak alarm monitors small changes in particulate matter through the baghouse. The difference in the amount of particulate matter that comes through a baghouse when the first bag tears or breaks is significant, and an alarm is sounded. When the facility makes the appropriate response (as required in the permit) to the alarm, continued good performance of the baghouse is ensured.

Most of the CAM requirements for the bag leak alarm system are taken from the requirements for baghouses in the Taconite NESHAP.

### 3.9 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 considers the following:

- The likelihood of feasibility of possible periodic monitoring methods; and
- The kind of monitoring violating the applicable requirements;
- Whether add-on controls are necessary to meet the emission limits;
- 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 found on similar units elsewhere.

Table 4 summarizes the periodic monitoring requirements for those emission units for which the monitoring required by the applicable requirement is nonexistent or inadequate.

**Table 4. Periodic Monitoring**

<b>Emission Unit or Group</b>	<b>Requirement (basis)</b>	<b>Additional Monitoring</b>	<b>Discussion</b>
EU001, EU013	SO <sub>2</sub> ≤ 123 lb/hr (BACT)  SO <sub>2</sub> ≤ 4 lb/MMBtu (Minn. R.	SO <sub>2</sub> CEMS (SO <sub>2</sub> concentration; air flow)  Performance testing  Coal sampling for	SO <sub>2</sub> CEMS will (1) ensure initial and ongoing compliance with the SO <sub>2</sub> lb/hr limit and (2) be used as a surrogate parameter to demonstrate ongoing compliance with the lb/hr limit for sulfuric acid mist.  Initial performance testing is needed to (1)

<sup>31</sup> This limit retains the escalator clause described in the discussion on the BACT limit for PM.

<sup>32</sup> This limit retains the escalator clause described in the discussion on the BACT limit for PM<sub>10</sub>.

<b>Emission Unit or Group</b>	<b>Requirement (basis)</b>	<b>Additional Monitoring</b>	<b>Discussion</b>
	<p>7011.0610)</p> <p>Percent S in coal <math>\leq 1.0</math> percent by weight</p> <p>PM <math>\leq 0.015</math> gr/dscf @ 7% O<sub>2</sub><sup>31</sup> (BACT, MACT)</p> <p>PM<sub>10</sub> <math>\leq 0.020</math> gr/dscf @ 7% O<sub>2</sub><sup>32</sup> (BACT, MACT)</p> <p>Opacity <math>\leq 10\%</math></p> <p>NO<sub>x</sub> <math>\leq 125</math> ppmv @ 7% O<sub>2</sub> (BACT)</p> <p>NO<sub>x</sub> <math>\leq 205.8</math> lb/hr (BACT)</p> <p>CO <math>\leq 60</math> ppmv @ 7% O<sub>2</sub> (BACT, MACT)</p> <p>VOCs <math>\leq 4.9</math> lb/hr (BACT)</p> <p>Fluorides <math>\leq 24.6</math> lb/hr (BACT)</p> <p>Sulfuric Acid Mist <math>\leq 33.3</math> lb/hr (BACT)</p> <p>Lead <math>\leq 0.96</math> lb/hr (BACT)</p>	<p>sulfur concentration and heat content</p> <p>CPMS: Continuous pressure drop, water flow, and pH monitoring</p> <p>Weekly VEs</p> <p>NO<sub>x</sub> CEMS (NO<sub>x</sub> concentration; air flow; oxygen concentration)</p> <p>CO CEMS (CO concentration; air flow; oxygen concentration)</p>	<p>show initial compliance with PM and PM<sub>10</sub> grain loading limits, the opacity limit, and the VOC, fluorides, sulfuric acid mist, lead, and mercury lb/hr limits; (2) establish correlation between sulfuric acid mist and SO<sub>2</sub>; and (3) set appropriate ranges for CPMS parameters.</p> <p>Subsequent performance testing is needed to ensure ongoing compliance with (1) lb/hr limits for VOC, fluorides, sulfuric acid mist, lead, and mercury lb/hr limits and (2) PM and PM<sub>10</sub> grain loading limits.</p> <p>A scrubber optimization study is needed to set removal efficiencies for SO<sub>2</sub>, fluorides, and sulfuric acid mist.</p> <p>Coal sampling and testing will be used to demonstrate compliance with Minnesota's direct heating equipment rule.</p> <p>CPMS will (1) ensure ongoing compliance with PM and PM<sub>10</sub> limits and (2) ongoing compliance with removal efficiencies</p> <p>Weekly VEs will ensure ongoing compliance with the opacity limit.</p> <p>NO<sub>x</sub> CEMS will ensure initial and ongoing compliance with the NO<sub>x</sub> concentration and lb/hr limits.</p> <p>CO CEMS will (1) ensure initial and ongoing compliance with the CO concentration limit and (2) be used as a surrogate parameter to demonstrate ongoing compliance with the lb/hr limit for VOCs.</p>



<b>Emission Unit or Group</b>	<b>Requirement (basis)</b>	<b>Additional Monitoring</b>	<b>Discussion</b>
	Mercury $\leq$ 0.0086 lb/hr (MACT)		
EU002	<p>Annual natural gas consumption <math>\leq</math> 352 million scf (BACT)</p> <p>SO<sub>2</sub> – use of natural gas (BACT)</p> <p>SO<sub>2</sub> <math>\leq</math> 4 lb/MMBtu (Minn. R. 7011.0610)</p> <p>Opacity <math>\leq</math> 10%</p> <p>PM <math>\leq</math> 0.015 gr/dscf (BACT, MACT)</p> <p>PM<sub>10</sub> <math>\leq</math> 0.015 gr/dscf (BACT)</p> <p>Opacity <math>\leq</math> 10%</p> <p>NO<sub>x</sub> – low-NO<sub>x</sub> burners (BACT)</p> <p>CO <math>\leq</math> 70 ppmv (BACT)</p> <p>VOCs <math>\leq</math> 19.4 lb/hr (BACT)</p>	<p>Tracking hours of operation</p> <p>Weekly VEs</p> <p>Performance testing</p> <p>Bag alarms</p>	<p>Tracking hours of operation will help ensure compliance with the basis of the BACT determination</p> <p>Weekly VEs will ensure ongoing compliance with the opacity limit.</p> <p>Initial performance testing is needed to (1) show initial compliance with PM and PM<sub>10</sub> grain loading limits, the opacity limit, the CO concentration limit, and the VOC lb/hr limit; and (2) set appropriate ranges for the bag alarms.</p> <p>Subsequent performance testing is needed to ensure ongoing compliance with PM and PM<sub>10</sub> grain loading limits, the CO concentration limit, and the VOC lb/hr limit.</p>

<b>Emission Unit or Group</b>	<b>Requirement (basis)</b>	<b>Additional Monitoring</b>	<b>Discussion</b>
EU003	SO <sub>2</sub> – use of natural gas (BACT) NO <sub>x</sub> – low-NO <sub>x</sub> burners (BACT) CO – good combustion practices (BACT) VOCs – good combustion practices (BACT)	Weekly VEs Performance testing	<p>Weekly VEs will ensure ongoing compliance with the opacity limit.</p> <p>Initial performance testing is needed to (1) show initial compliance with PM and PM<sub>10</sub> grain loading limits, the opacity limit, the CO concentration limit, and the VOC lb/hr limit; and (2) set appropriate ranges for the CPMS.</p> <p>Subsequent performance testing is needed to ensure ongoing compliance with PM and PM<sub>10</sub> grain loading limits, the CO concentration limit, and the VOC lb/hr limit.</p> <p>CPMS will (1) ensure ongoing compliance with PM and PM<sub>10</sub> limits and (2) ongoing compliance with removal efficiencies.</p>
EU004, EU005	SO <sub>2</sub> – use of natural gas (BACT) NO <sub>x</sub> – low-NO <sub>x</sub> burners (BACT) CO – good combustion practices (BACT) VOCs – good combustion practices (BACT)	Weekly VEs Performance testing	<p>Weekly VEs will ensure ongoing compliance with the opacity limit.</p> <p>Initial performance testing is needed to (1) show initial compliance with PM and PM<sub>10</sub> grain loading limits, the opacity limit, the CO concentration limit, and the VOC lb/hr limit; and (2) set appropriate ranges for the CPMS.</p> <p>Subsequent performance testing is needed to ensure ongoing compliance with PM and PM<sub>10</sub> grain loading limits and the opacity limit.</p> <p>CPMS will ensure ongoing compliance with PM and PM<sub>10</sub> limits.</p>

<b>Emission Unit or Group</b>	<b>Requirement (basis)</b>	<b>Additional Monitoring</b>	<b>Discussion</b>
EU006, EU012	SO <sub>2</sub> – use of natural gas (BACT) NO <sub>x</sub> – low-NO <sub>x</sub> burners (BACT) CO – good combustion practices (BACT) VOCs – good combustion practices (BACT)	Weekly VEs Performance testing	<p>Weekly VEs will ensure ongoing compliance with the opacity limit.</p> <p>Initial performance testing is needed to (1) show initial compliance with PM and PM<sub>10</sub> grain loading limits, the opacity limit, the CO concentration limit, and the VOC lb/hr limit; and (2) set appropriate ranges for the bag alarms.</p> <p>Subsequent performance testing is needed to ensure ongoing compliance with PM and PM<sub>10</sub> grain loading limits, the CO concentration limit, and the VOC lb/hr limit.</p> <p>CPMS will ensure ongoing compliance with PM and PM<sub>10</sub> limits.</p>
EU007	PM, PM <sub>10</sub> ≤ 0.005 gr/dscf (BACT) Opacity ≤ 10% (BACT)	Performance testing Weekly VEs	<p>Initial performance testing is needed to (1) show initial compliance with PM and PM<sub>10</sub> grain loading limits and the opacity limit; and (2) set appropriate ranges for the CPMS.</p> <p>Subsequent performance testing is needed to ensure ongoing compliance with PM and PM<sub>10</sub> grain loading limits and the opacity limit.</p> <p>CPMS will ensure ongoing compliance with PM and PM<sub>10</sub> limits.</p> <p>Weekly VEs will ensure ongoing compliance with the opacity limit.</p>

<b>Emission Unit or Group</b>	<b>Requirement (basis)</b>	<b>Additional Monitoring</b>	<b>Discussion</b>
EU008	PM, PM <sub>10</sub> ≤ 0.005 gr/dscf (BACT)  Opacity ≤ 10% (BACT)	Performance testing  Weekly VEs	Initial performance testing is needed to (1) show initial compliance with PM and PM <sub>10</sub> grain loading limits and the opacity limit; and (2) set appropriate ranges for the CPMS.  Subsequent performance testing is needed to ensure ongoing compliance with PM and PM <sub>10</sub> grain loading limits and the opacity limit.  CPMS will ensure ongoing compliance with PM and PM <sub>10</sub> limits.  Weekly VEs will ensure ongoing compliance with the opacity limit.
EU009	Opacity ≤ 20% (Minn. R. 7011.0110)	Weekly VEs	Initial performance testing is needed to show initial compliance with the opacity limit.  Subsequent performance testing is needed to ensure ongoing compliance with the opacity limit.  Weekly VEs will ensure ongoing compliance with the opacity limit.
EU010	PM, PM <sub>10</sub> ≤ 0.005 gr/dscf (BACT)  Opacity ≤ 10% (BACT)	Performance testing  Weekly VEs	Initial performance testing is needed to (1) show initial compliance with PM and PM <sub>10</sub> grain loading limits and the opacity limit; and (2) set appropriate ranges for the CPMS.  Subsequent performance testing is needed to ensure ongoing compliance with PM and PM <sub>10</sub> grain loading limits and the opacity limit.  CPMS will ensure ongoing compliance with PM and PM <sub>10</sub> limits.  Weekly VEs will ensure ongoing compliance with the opacity limit.

<b>Emission Unit or Group</b>	<b>Requirement (basis)</b>	<b>Additional Monitoring</b>	<b>Discussion</b>
EU011	<p>Annual hours of operation <math>\leq</math> 100 (BACT)</p> <p>Opacity <math>\leq</math> 20% (Minn. R. 7011.2300)</p> <p>SO<sub>2</sub> – use of low-sulfur fuel (BACT)</p> <p>NO<sub>x</sub> – good combustion practices (BACT)</p> <p>CO – good combustion practices (BACT)</p> <p>VOCs – good combustion practices (BACT)</p>	<p>Tracking hours of operation</p> <p>Performance testing</p> <p>Weekly VEs</p>	<p>Tracking hours of operation will help ensure compliance with the basis of the BACT determination and the RICE standard.</p> <p>Initial performance testing is needed to show initial compliance with the opacity limit.</p> <p>Subsequent performance testing is needed to ensure ongoing compliance with the opacity limit.</p> <p>Weekly VEs will ensure ongoing compliance with the opacity limit.</p>
FS009	Opacity $\leq$ 5% (BACT)	<p>Performance testing</p> <p>Weekly VEs</p>	<p>Initial performance testing is needed to show initial compliance with the opacity limit.</p> <p>Subsequent performance testing is needed to ensure ongoing compliance with the opacity limit.</p> <p>Weekly VEs will ensure ongoing compliance with the opacity limit.</p>
GP007	Opacity $\leq$ 5% (BACT)	<p>Performance testing</p> <p>Weekly VEs</p>	<p>Initial performance testing is needed to show initial compliance with the opacity limit.</p> <p>Subsequent performance testing is needed to ensure ongoing compliance with the opacity limit.</p> <p>Weekly VEs will ensure ongoing compliance with the opacity limit.</p>

<b>Emission Unit or Group</b>	<b>Requirement (basis)</b>	<b>Additional Monitoring</b>	<b>Discussion</b>
GP008	Opacity $\leq$ 0% (BACT)	Weekly VEs	Weekly VEs will ensure ongoing compliance with the opacity limit.

### **3.10 Insignificant Activities**

The Erie Nugget facility has several operations which are classified as insignificant activities. These are listed in Appendix B to the permit. These insignificant emission units (IEU) are subject to the state general applicable requirements. It is the MPCA's belief that IEUs listed in Appendix B to the permit associated with inconsequential environmental impacts and present little potential for violations of generally applicable requirements, therefore no monitoring will be required.

### **3.11 Permit Organization**

In general, the permit meets the MPCA Delta Guidance for ordering and grouping of requirements. One area where this permit deviates slightly from Delta guidance is in the use of appendices. While appendices are fully enforceable parts of the permit, in general, any requirement that the MPCA thinks should be tracked (e.g., limits, submittals, etc.), should be in Table A or B. The main reason is that the appendices are word processing sections and are not part of the tracking system. Violation of the appendices can be enforced, but the computer system will not automatically generate the necessary enforcement notices or documents. Staff must generate these.

The requirements for the parametric monitoring for metal (particulate) HAPs are listed in GP001.

Requirements applicable to all emissions units subject to the case-by-case MACT are found in GP005 in addition to any requirements listed at the EU level.

The baghouses for the green ball dryer (EU002; baghouses are CE007, CE009, and CE010) are subject to CAM. CAM is fulfilled with a bag leak alarm system; GP003 contains the requirements for that system. Compliance for the other baghouses will be demonstrated through pressure drop; the requirements are listed in GP004.

The requirements for continuous emission monitors used for compliance with both BACT and MACT requirements (MR003 – SO<sub>2</sub>, MR005 – CO, MR009 – air flow, and MR010 – O<sub>2</sub>) are found in GP009. The corresponding requirements for MR004, the NO<sub>x</sub> CEM, are found at the MR level; it will not be used for MACT compliance, so some of the requirements differ.

Groups used in the permit:

<b>Group #</b>	<b>Name</b>	<b>Group Members</b>
GP001	Particulate MACT Monitoring Equipment	MR001, MR002, MR006, MR007, MR009, MR010, MR012, MR013, MR014
GP002	Process Water Cooling Towers	EU014, EU015
GP003	Green Ball Dryer Baghouses	CE007, CE009, CE010
GP004	Baghouses not subject to CAM	CE003, CE004, CE005, CE006, CE008, CE011, CE012, CE013, CE014, CE015, CE016
GP005	Emission Units subject to MACT	EU001, EU002, EU003, EU004, EU005, EU006, EU007, EU008, EU010, EU011, EU012, EU013
GP006	<i>Not used</i>	<i>None</i>
GP007	Material Handling Operations – Fugitives	FS001, FS003, FS005, FS007
GP008	Storage Piles – Fugitives	FS002, FS004, FS006, FS008
GP009	Continuous Monitors subject to BACT and MACT	MR003, MR005, MR009, MR010
GP010	<i>Not used</i>	<i>None</i>

There is no Table C or Appendix A to this permit.

### **3.12Comments Received**

In Minnesota, a notice of the proposal to issue the draft/proposed air quality permit is published in at least one newspaper. The public comment period usually lasts for thirty days. The Environmental Protection Agency has forty-five days to review the permit. EPA's review period began on the date that a permit containing the final revisions were made and submitted to EPA.

The MPCA held a public meeting on this permit from 6:00 p.m. to 9:00 p.m. on May 25, 2005. The meeting will be held in the Hoyt Lakes Arena Multi-purpose Room located at 102 Kennedy Memorial Drive in Hoyt Lakes. The first part of the meeting included a presentation from MPCA. Then there was an opportunity for questions, followed by an open house where staff were available to answer questions individually.

Public Notice Period:	May 14, 2005 – June 13, 2005
Public Meeting:	May 25, 2005
EPA 45-day Review Period:	July 15, 2005 – August 29, 2005
EAB Appeal Period	July 29, 2005 – August 31, 2005

During the public comment period, the MPCA received a total of 44 comments from the public, Indian Tribes, and governmental bodies (including the Environmental Protection Agency and the U.S. Forest Service). In addition, the MPCA received comments from the National Park Service (NPS) after the public comment period. (The MPCA failed to provide notice of the comment period to the NPS until June 13, 2005. Comments from NPS arrived on July 15, 2005.) The comments received included adverse comments on a number of applicable requirements of the permit. The MPCA made changes to the permit were made as a result of the comments.

This permit was presented to the Citizens' Board of the Minnesota Pollution Control Agency on July 26, 2005. A summary of the changes made to the permit after the start of the comment period and prior to the Board meeting is provided as Attachment 11 to the Technical Support Document. Following presentation to and discussion on the permit, the Board voted unanimously to approve the issuance of the permit. However, the Board's approval was contingent upon the following a provision that any applicable construction authorization is not made effective until:

- (a) the U.S. Environmental Protection Agency Prevention of Significant Deterioration (PSD) appeal period has expired, and the PSD regulations allow applicable construction authorizations; and
- (b) Mesabi Nugget, LLC, has fully exercised and implemented all options and related agreements necessary to possess and control properties integral to the implementation and compliance with water quality and air quality permits and has submitted a written certification to MPCA verifying the completion of this precondition.

Two additional changes were made to the permit following Board approval. The pound per hour limits for sulfur dioxide and sulfuric acid mist emissions at the rotary hearth furnace were reduced to reflect a previous reduction in the maximum sulfur content of the coal to be used in the rotary hearth furnace. The sulfur dioxide limit was reduced from 95.0 lb/hr to 75.0 lb/hr, while the sulfuric acid mist limit was reduced from 25.6 lb/hr to 20.2 lb/hr. (These limits can be found on pages A-26 and A-27 of the permit, respectively.)

On July 15, 2005, the MPCA sent EPA the revised permit for its 45-day, which ended on August 29, 2005. EPA had no further comments on the permit.

The authorization for constructing and operating under 40 CFR § 52.21 and Clean Air Act Section 112(g)(2)(B) was issued on July 29, 2005. However, PSD permits issued in Minnesota, including this permit, can be appealed to the Environmental Appeals Board (EAB), as long as the appeal is based on an issue raised during the public comment period by one of the commenters. The MPCA notified commenters of this period on July 29, 2005. The period for appeal ended on August 31, 2005; the permit was not appealed.

On January 24, 2007, Mesabi Nugget submitted documentation showing access to and possession and control of areas within the ambient air boundary, as required by the air quality permit. On January 25, 2007, the MPCA responded to Mesabi Nugget's submittal in a letter. With that letter, the air quality permit was made effective.



#### 4. Conclusion

Based on the information provided by Mesabi Nugget LLC, the MPCA has reasonable assurance that the proposed operation of the emission facility, as described in the Air Emission Permit No. 13700318-001 and this technical support document, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

Staff Members on Permit Team:	Richard Cordes (permit writer/engineer)
	Bob Beresford (enforcement)
	Dan Brady (AERA)
	Anne Jackson (HG-2003)
	Chris Nelson (Class II modeling)
	Paula Connell (peer reviewer)
	Andrew Place (stack testing)

Attachments:

1. GI-07 (from Delta)
2. PTE Summary Calculation Spreadsheets
3. Facility Description and CD-01 Forms
4. Confidentiality Determination
5. Applicant's BACT Analysis
6. Applicant's MACT Submittal
7. Applicant's CAM Submittal
8. Applicant's AERA Risk Managers' Decision
9. Applicant's Modeling Submittals
10. Applicant's Additional Impacts Analysis
11. Changes Made to the Permit as a Result of Comments Received

**Attachment 1 to the Technical Support Document  
for Permit Action Number 13700318-001**  
*Emission Summary (GI-07 from Delta)*

**FACILITY DESCRIPTION: Potential-to-emit (by item)**

Show: Active and Pending Records

AQD Facility ID: 13700318

Facility Name: Mesabi Nugget LLC

Item	Pollutant	Added By (Action)	Retired By (Action)	Hourly Potential (lbs per hr)	Unrestricted Potential (tons per yr)	Limited Potential (tons per yr)	Actual Emissions (tons per yr)
EU 001							
	Acetaldehyde	PER 001		4.690E-02	2.050E-01	2.054E-01	2.054E-01
	Acetonitrile	PER 001		3.730E-03	1.630E-02	1.632E-02	1.632E-02
	Acetophenone	PER 001		1.130E-03	4.930E-03	4.934E-03	4.934E-03
	Acrolein	PER 001		2.180E-02	9.540E-02	9.539E-02	9.539E-02
	Benzene	PER 001		2.400E-02	1.050E-01	1.050E-01	1.050E-01
	Arsenic compounds	PER 001		8.970E-02	3.930E-01	2.200E-01	2.200E-01
	Benzyl chloride	PER 001		5.260E-02	2.300E-01	2.303E-01	2.303E-01
	Bis(2-ethylhexyl) phthalate	PER 001		5.480E-03	2.400E-02	2.401E-02	2.401E-02
	Bromoform	PER 001		2.930E-03	1.280E-02	1.283E-02	1.283E-02
	Bromomethane	PER 001		1.200E-02	5.260E-02	5.263E-02	5.263E-02
	Barium	PER 001		2.120E-01	9.310E-01	3.127E-02	3.127E-02
	Beryllium	PER 001		7.750E-02	3.390E-01	8.821E-02	8.821E-02
	Carbon disulfide	PER 001		9.760E-03	4.280E-02	4.276E-02	4.276E-02
	2-Chloroacetophenone	PER 001		5.260E-04	2.300E-03	2.303E-03	2.303E-03
	Chlorobenzene	PER 001		1.650E-03	7.240E-03	7.237E-03	7.237E-03
	Chloroethane	PER 001		3.150E-03	1.380E-02	1.382E-02	1.382E-02
	Chloroform	PER 001		4.430E-03	1.940E-02	1.941E-02	1.941E-02
	Cadmium compounds	PER 001		7.630E-03	3.340E-02	1.203E-02	1.203E-02
	Cyanide compounds	PER 001		1.880E-01	8.220E-01	8.223E-01	8.223E-01
	Carbon Monoxide	PER 001		1.939E+04	8.494E+04	2.548E+02	2.548E+02
	Cobalt compounds	PER 001		9.930E-02	4.350E-01	4.348E-02	4.348E-02
	Chromium compounds	PER 001		4.350E-01	1.910E+00	5.340E-01	5.340E-01
	Copper	PER 001		3.030E-01	1.330E+00	1.510E-01	1.510E-01
	Cumene	PER 001		3.980E-04	1.740E-03	1.743E-03	1.743E-03
	1,4-Dichlorobenzene	PER 001		2.510E-04	1.100E-03	5.490E-05	5.490E-05
	1,2-Dichloroethane	PER 001		3.000E-03	1.320E-02	1.316E-02	1.316E-02
	Dimethyl sulfate	PER 001		3.600E-03	1.580E-02	1.579E-02	1.579E-02
	2,4-Dinitrotoluene	PER 001		2.100E-05	9.210E-05	9.210E-05	9.210E-05
	Ethylbenzene	PER 001		7.060E-03	3.090E-02	3.092E-02	3.092E-02
	Formaldehyde	PER 001		1.800E-02	7.890E-02	7.895E-02	7.895E-02
	Hexane	PER 001		3.760E-01	1.650E+00	8.229E-02	8.229E-02
	Fluorides	PER 001		8.192E+02	3.588E+03	1.076E+02	1.076E+02
	Methyl ethyl ketone (MEK)	PER 001		2.930E-02	1.280E-01	1.283E-01	1.283E-01
	Methyl methacrylate	PER 001		1.500E-03	6.580E-03	6.579E-03	6.579E-03
	Methyldiazine	PER 001		1.280E-02	5.590E-02	5.590E-02	5.590E-02
	Naphthalene	PER 001		9.760E-04	4.280E-03	4.276E-03	4.276E-03
	Mercury	PER 001		9.130E-03	4.000E-02	3.760E-02	3.760E-02
	Phenol	PER 001		1.200E-03	5.260E-03	5.263E-03	5.263E-03
	Styrene	PER 001		1.190E-02	5.230E-02	5.226E-02	5.226E-02
	Tetrachloroethylene	PER 001		3.230E-03	1.410E-02	1.414E-02	1.414E-02
	Toluene	PER 001		2.060E-02	9.020E-02	9.023E-02	9.023E-02
	1,1,1-Trichloroethane	PER 001		1.500E-03	6.580E-03	6.579E-03	6.579E-03
	Vinyl acetate	PER 001		5.710E-04	2.500E-03	2.500E-03	2.500E-03
	Xylenes (mixed isomers)	PER 001		2.780E-03	1.220E-02	1.217E-02	1.217E-02
	Hydrochloric acid	PER 001		9.010E+01	3.950E+02	1.974E+01	1.974E+01
	Manganese compounds	PER 001		1.438E+02	6.301E+02	6.301E+01	6.301E+01

# Attachment 2 to the Technical Support Document for Permit Action Number 13700318-001 PTE Summary Calculation Spreadsheets

Table 1: Calculation of Potential Emissions, New Facility

Stack ID	Emission Unit		APCD ID	Throughput				Pollutant	Type	Include in PTE?	Emission Factor		Max. Uncontrolled Emissions (1)		Control Efficiency		
	ID	Description		Maximum							Unit	(lb/Unit)	Note	(lb/hr)	(ton/yr)	(%)	M
				(Units/hr)	Note	(Units/yr)	Note										
SV 001 SV 008	EU 001	Rotary Health Furnace	CE 001 CE 002	73,521 [301]		661,566 [302]	Short term	NOx	[NOx]	Yes	2.725 [151b]	205.82	901.49	0	15		
								PM10	[PM10]	Yes	7.334 [151]	553.86	2,425.92	92.0	15		
								P	[P]	Yes	10.847 [151]	819.20	3,588.10	97	15		
								SO3	[SO3]	Yes	3.395 [151]	256.21	1,122.22	90	15		
								VOC	[VOC]	Yes	0.064 [151]	4.88	21.29	0	15		
								CO	[CO]	Yes	258.771 [151]	19,392	84,936	99.7	15		
								Mercury (7439-97)	[HAU]	Yes	1.21E-04 [151]	0.01	0.04	6	15		
								Pb	[HAU]	Yes	1.27E-01 [151]	9.37	41.32	90	15		
								Barium (7440-39)	[HAU]	Yes	1.01E-03 [151]	0.08	0.34	74	15		
								Manganese (7440)	[HAU]	Yes	1.80E+00 [151]	143.83	630.56	90	15		
								SiO2	[SiO2]	Yes	1.26E+01 [151]	949.49	4,159.53	90	15		
								Acetone	[HAU]	Yes	1.000 [520]	8.16E-01	3.58E+00	90	52		
								Acetone (7440-39)	[HAU]	Yes	1.000 [520]	8.97E-02	3.95E-01	44	52		
								Benzene (7440-39)	[Ha]	Yes	1.000 [520]	2.12E-01	9.31E-01	97	51		
								Chloroform (7440-4)	[HAU]	Yes	1.000 [520]	7.63E-03	3.34E-02	64	51		
								Chlorobenzene (7440-3)	[HAU]	Yes	1.000 [520]	4.35E-01	1.91E+00	72	52		
								Cobalt (7440-48-4)	[HAU]	Yes	1.000 [520]	9.95E-02	4.35E-01	90	52		
								Copper	[Cu]	Yes	1.000 [520]	3.05E-01	1.33E+00	89	51		
								Nickel (7440-00-0)	[HAU]	Yes	1.000 [520]	8.71E-01	3.81E+00	90	52		
								Phosphorus	[P]	Yes	1.000 [520]	8.71E-01	3.81E+00	82	52		
								Selenium (7782-4)	[HAU]	Yes	1.000 [520]	1.00E-01	4.36E-01	90	52		
								Zinc	[Zn]	Yes	1.000 [520]	2.53E+02	1.12E+01	73	51		
								Acetaldehyde	[HAU]	Yes	1.000 [520]	4.69E-02	2.05E-01	0	21		
								Acetonitrile	[HAU]	Yes	1.000 [520]	3.73E-03	1.63E-02	0	21		
								Styrene	[HAU]	Yes	1.000 [520]	1.19E-02	5.23E-02	0	21		
								Toluene (108-88-3)	[HAU]	Yes	1.000 [520]	2.06E-02	9.02E-02	0	21		
								Benzene (71-43-2)	[HAU]	Yes	1.000 [520]	2.40E-02	1.05E-01	0	21		
								PCDD/F	[Dioxin]	Yes	1.000 [527]	3.11E-04	1.36E-03	0	21		
								PCDD	[Dioxin]	Yes	1.000 [527]	3.12E-04	1.37E-03	0	21		
								PCDD	[HAU]	Yes	1.000 [527]	6.10E-02	2.67E-04	0	21		
								PCDD	[Dioxin]	Yes	1.000 [527]	1.81E-04	7.91E-04	0	21		
								1,2,3,4,7,8-HxCDD	[Dioxin]	Yes	1.000 [527]	2.19E-10	9.61E-10	0	21		
								1,2,3,6,7,8-HxCDD	[Dioxin]	Yes	1.000 [527]	2.05E-10	8.96E-10	0	21		
								1,2,3,7,8,9-HxCDD	[Dioxin]	Yes	1.000 [527]	2.05E-10	8.89E-10	0	21		
								HxCDD	[Dioxin]	Yes	1.000 [527]	5.92E-11	2.59E-10	0	21		
								OCDD	[Dioxin]	Yes	1.000 [527]	1.89E-11	8.30E-11	0	21		
								PCDF	[Dioxin]	Yes	1.000 [527]	2.27E-04	9.95E-04	0	21		
								PCDF	[Dioxin]	Yes	1.000 [527]	1.66E-10	7.28E-10	0	21		
								1,2,3,7,8-PeCDF	[Dioxin]	Yes	1.000 [527]	1.33E-10	5.84E-10	0	21		
								2,3,4,7,8-PeCDF	[Dioxin]	Yes	1.000 [527]	1.18E-09	5.19E-09	0	21		
								1,2,3,4,7,8-HxCDF	[Dioxin]	Yes	1.000 [527]	2.20E-10	9.65E-10	0	21		
								1,2,3,6,7,8-HxCDF	[Dioxin]	Yes	1.000 [527]	2.19E-10	9.57E-10	0	21		
								2,3,4,6,7,8-HxCDF	[Dioxin]	Yes	1.000 [527]	2.19E-10	9.57E-10	0	21		
								1,2,3,7,8,9-HxCDF	[Dioxin]	Yes	1.000 [527]	8.19E-11	3.59E-10	0	21		
								1,2,3,6,7,8-HpCDF	[Dioxin]	Yes	1.000 [527]	3.57E-11	1.56E-10	0	21		
								1,2,3,4,7,8,9-HpCDF	[Dioxin]	Yes	1.000 [527]	1.25E-11	5.47E-11	0	21		
								OCDF	[Dioxin]	Yes	1.000 [527]	6.05E-12	2.65E-11	0	21		
				0.209 [27]		1.829 [302]	MM on R	Benzene (71-43-2)	[HAU]	Yes	2.1E-02 [101a]	0.02044	0.02	95	22		
								Dichlorobenzene (1)	[HAU]	Yes	1.2E-03 [101a]	0.02025	0.02	95	22		
								Formaldehyde (50)	[HAU]	Yes	7.5E-02 [101a]	0.01566	0.07	95	22		
								Benzene (710-54-3)	[HAU]	Yes	1.8E+00 [101a]	0.37577	1.49	95	22		
								Naphthalene (91-2)	[HAU]	Yes	6.1E-04 [101a]	0.00013	0.02	95	22		
								Toluene (108-88-3)	[HAU]	Yes	3.4E-03 [101a]	0.02071	0.02	95	22		
								PAH Total	[HAU]	Yes	8.8E-05 [101a]	0.00002	0.02	95	22		
								PCM	[HAU]	Yes	8.8E-05 [101a]	0.00002	0.02	95	22		
				75 [29]		637,876 [302]	none	Naphthalene (91-2)	[HAU]	Yes	1.32E-05 [101b]	9.76E-04	4.28E-03	0	21		
								PAH Total	[HAU]	Yes	2.08E-05 [101b]	1.56E-03	6.84E-03	0	21		
								Acetaldehyde	[HAU]	Yes	5.72E-04 [101b]	4.28E-02	1.87E-01	0	21		
								Acetophenone	[HAU]	Yes	1.52E-05 [101b]	1.15E-03	4.95E-03	0	21		
								Acrolein	[HAU]	Yes	2.93E-04 [101b]	2.18E-02	9.54E-02	0	21		
								Benzene (71-43-2)	[HAU]	Yes	1.32E-05 [101b]	9.76E-02	4.28E-01	0	21		
								Benzyl chloride	[HAU]	Yes	7.05E-04 [101b]	5.26E-02	2.36E-01	0	21		

File: P:\2769889 Munkh\Nagat\Hep Lake\Air Modeling\Emission Calc\EmissionCalc2005MPCA Calc Reduced 05\_30\_05.xls  
Sheet: Calc

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**Attachment 3 to the Technical Support Document  
for Permit Action Number 13700318-001**  
*Facility Description and CD-01 Forms*

Show: Active and Pending Records

Action: PER 001

AQD Facility ID: 13700318

Facility Name: Mesabi Nugget LLC

	ID No.	Added By (Action)	Retired By (Action)	Include in EI	Operator ID for item	Group Description	Group items
1	GP 001	PER 001		<input type="checkbox"/>		Particulate MACT Monitoring Equipment	MR 001, MR 002, MR 005, MR 007, MR 009, M 014
2	GP 002	PER 001		<input type="checkbox"/>		Process Water Cooling Towers	EU 014, EU 015
3	GP 003	PER 001		<input type="checkbox"/>		Green Ball Dryer Baghouses	CE 007, CE 009, CE 010
4	GP 004	PER 001		<input type="checkbox"/>		Baghouses not subject to CAM	CE 003, CE 004, CE 005, CE 006, CE 008, CE 015, CE 016
5	GP 005	PER 001		<input type="checkbox"/>		Emission Units subject to MACT	EU 001, EU 002, EU 003, EU 004, EU 005, EU 011, EU 012, EU 013
6	GP 007	PER 001		<input type="checkbox"/>		Material Handling Operations - Fugitives	FS 001, FS 003, FS 005, FS 007
7	GP 008	PER 001		<input type="checkbox"/>		Storage Piles - Fugitives	FS 002, FS 004, FS 006, FS 008
8	GP 009	PER 001		<input type="checkbox"/>		Continuous Monitors subject to BACT and MACT	MR 003, MR 006, MR 009, MR 010

## COMPLIANCE PLAN CD-01

Facility Name: Mesabi Nugget LLC

Permit Number: 13700318 - 001

Subject Item: Total Facility

	NC/ CA	Citation	Requirement
1.0		ndr	SOURCE-SPECIFIC REQUIREMENTS
2.0		Title I Condition: 40 CFR Section 52.21(r)(2); BACT and Minn. R. 7007.3000; Title I Condition: 40 CFR Section 63.43(g)(4); MACT and Minn. R. 7007.3010	The construction authorization expires 18 months after permit issuance. The Permittee must keep a record of the dates of installation and start-up on site.
3.0		Minn. Stat. Section 116.07, subd. 4a; Minn. R. 7007.0100; Minn. R. 7007.0600, subp. 2; Minn. R. 7011.0150; Minn. R. 7009.0020	Comply with Fugitive Emission Control Plan: The Permittee shall follow the actions and record keeping specified in the control plan. The plan may be amended by the Permittee with the Commissioner's approval. If the Commissioner determines the Permittee is out of compliance with Minn. R. 7011.0150 or the fugitive control plan, then the Permittee may be required to amend the control plan and/or to install and operate particulate matter ambient monitors as requested by the Commissioner.
4.0		Title I Condition: 40 CFR Section 52.21(k) and Minn. R. 7007.3000	Parameters Used in Modeling: Stack heights, emission rates, and other parameters used in the modeling for this permit (13700318-001) are listed in Appendix B of this permit. The Permittee must submit to the Commissioner for approval any revisions of these parameters and must wait for a written approval before making such changes. The information submitted must include, at a minimum, the locations, heights and diameters of the stacks, locations and dimensions of nearby buildings, the velocity and temperatures of the gases emitted, and the emission rates. The plume dispersion characteristics due to the revisions of the information must be equivalent to or better than the dispersion characteristics modeled for Air Emission Permit 13700318-001. The Permittee shall demonstrate this equivalency in the proposal. If the information does not demonstrate equivalent or better dispersion characteristics, or if a conclusion cannot readily be made about the dispersion, the Permittee must remodel.
5.0		Title I Condition: 40 CFR Section 52.21(k) and Minn. R. 7007.3000	For changes that do not involve an increase in an emission rate and that do not require a permit amendment, this proposal must be submitted as soon as practicable, but no less than 60 days before beginning actual construction of the stack or associated emission unit.  For changes involving increases in emission rates and that require a minor permit amendment, the proposal must be submitted as soon as practicable, but no less than 60 days before beginning actual construction of the stack or associated emission unit.  For changes involving increases in emission rates and that require a permit amendment other than a minor amendment, the proposal must be submitted with the permit application.
6.0		Title I Condition: 40 CFR Section 52.21(x)(7) and Minn. R. 7007.3000	Report of loss of Clean Unit CU status: The Permittee shall submit written notification of a deviation of the MPCA if Clean Unit status for SO <sub>2</sub> , PM, PM <sub>10</sub> , CO, VOCs, lead, fluorides, or sulfuric acid mist is lost due to noncompliance with 40 CFR Section 52.21(x)(7). The Permittee shall report the deviation from CU maintenance requirements, specifying the pollutant for which CUD is lost, on the Semiannual Deviations Report (see Table B) and according to the schedule in the permit for "Deviations Endangering Human Health or the Environment" (see Table A, Total Facility Requirements) if applicable. The Permittee and the Agency shall each attach a copy of the notification to the permit. The Permittee shall submit an application for a major amendment within 30 days of discovery of loss of CU status.
7.0		Title I Condition: 40 CFR Section 52.21(x)(7) and Minn. R. 7007.3000	Loss of Clean Unit status occurs if any of the following occur:  - the Permittee fails to comply with the emission limit or work practice(s) specified in the permit with the Clean Unit Designation;  - the Permittee makes any physical or operational change to the Clean Unit that causes the unit to operate in a manner inconsistent with any physical or operational characteristic that is part of the basis of the Clean Unit Designation;  - the Permittee fails to comply with any term in the permit that is related to the Clean Unit Designation; or  - the Permittee replaces the emissions unit or control technology  The Permittee Shall not use the clean unit applicability test (40 CFR Section 52.21(a)(2)(iv)(c)) for the pollutant for which the CUD is lost for all subsequent changes to the Clean Unit until the unit qualifies as a Clean Unit.

**Attachment 4 to the Technical Support Document  
for Permit Action Number 13700318-001**  
*Confidentiality Determination*



## Office Memorandum

DATE: May 11, 2005

TO: James L. Warner, P.E.  
Director  
Industrial Division

FROM: Richard Cordes, P.E.  
Senior Engineer  
Air Quality Permits Section  
Industrial Division

THRU: Carolina Espejel-Schutt, P.E.  
Supervisor  
Air Quality Permits Section  
Industrial Division

PHONE: (651) 296-8157  
(651) 296-7711

SUBJECT: Request to Grant Confidential Status to Certain Information in Mesabi Nugget LLC's  
Application for its Part 70/Prevention of Significant Deterioration Air Emission Permit

### ISSUE:

The purpose of this memorandum is to address a recommendation to grant a request from Mesabi Nugget LLC (Permittee) to keep certain information confidential in accordance with the procedural memorandum from Jim Warner dated December 17, 2001 (copy attached). A letter to the Permittee is also attached to this memorandum for your signature.

The Permittee submitted a permit application for the construction of a new facility near Hoyt Lakes, Minnesota. According to established procedures, the data was kept confidential pending a determination that it qualified for confidential treatment. Staff reviewed the request during the review of the air permit application prior to drafting the air emission permit. The Minnesota Pollution Control Agency (MPCA) staff has determined that the requested data should be kept confidential for the following reasons: 1) It reveals processes or methods of production unique to the owner or operator; and (2) It would tend to affect adversely the competitive position of the owner or operator. See Minn. Stat. § 116.075, subd. 2., "trade secret" data.

The Permittee has prepared a copy of the permit application for the general public (Public copy) and a copy of the permit application with confidential data for review by MPCA staff (Confidential copy). The Public copy presents worst-case calculations based on general descriptions of the raw materials and physical conditions, rather than the specific details contained in the Confidential copy.

May 11, 2005

Mr. Larry Lehtinen, President  
Mesabi Nugget LLC  
10 Outer Drive  
Silver Bay, MN

RE: Request for Confidentiality, Air Emission Permit Application for Mesabi Nugget, LLC's  
Erie Nugget Plant near Hoyt Lakes, Minnesota

Dear Mr. Lehtinen:

The Minnesota Pollution Control Agency (MPCA) staff has reviewed your request that certain data contained in the submittal received by the MPCA dated May 2, 2005 should be treated as confidential.

The data claimed confidential was treated confidentially during the preparation of your permit. The MPCA staff member has reviewed your application materials in preparing a draft permit for your facility and now has made a determination on your request for confidential treatment of information related to the formulation of the materials entering the rotary hearth furnace.

Under Minn. Stat. § 116.075, the MPCA is required to keep the following information confidential, if the information is certified as being confidential by the submitter:

1. information relating to sales figures;
2. information on process or method of production unique to the owner or operator; and
3. information which would tend to adversely affect the competitive position of the owner or operator.

However, the MPCA may disclose any information, whether or not otherwise considered confidential, which it is obligated to disclose in order to comply with federal laws and regulations. Also, agreement on the part of the MPCA to keep the information confidential does not guarantee that U.S. Environmental Protection Agency (EPA) will also agree to keep the information confidential. The EPA will apply its own rules in determining confidentiality of information submitted to it.

The MPCA is aware of the competitive nature of Mesabi Nugget, LLC's business, and will hold in confidence the data which qualifies under the Statute. Your submittal to the MPCA dated May 2, 2005 provides enough information to determine that the data requested qualify for confidential treatment.

**Attachment 5 to the Technical Support Document  
for Permit Action Number 13700318-001**  
*BACT Submittal*

**Mesabi Nugget, LLC  
Hoyt Lakes, Minnesota**

**Best Available Control Technology Review**

**November, 2004  
Revised March, 2005  
Revised April, 2005  
Revised May, 2005**

Page 1 of 157

**Attachment 6 to the Technical Support Document  
for Permit Action Number 13700318-001**  
*MACT Submittal*

**Mesabi Nugget, LLC  
Hoyt Lakes, Minnesota**

**Permit Application for  
Case by Case  
Maximum Achievable Control Technology  
Determination**

**July 30, 2004  
Revised November, 2004  
Revised May, 2005**

Page 1 of 45

**Attachment 7 to the Technical Support Document  
for Permit Action Number 13700318-001**  
*CAM Submittal*

**Compliance Assurance Monitoring Plan  
Wet Scrubber for Sulfur Dioxide Emissions Control  
from the Rotary Hearth Furnace**

**I. Background**

**A. Source Information**

Facility:	Mesabi Nugget, LLC Hoyt Lakes Mining Area Hoyt Lakes, MN 55750
Emission Unit(s) Description:	Rotary Hearth Furnace (RHF)
Emission Unit(s) ID:	EU001
Stack ID:	SV001
APCD ID:	CE001

**B. Applicable Regulation, Emissions Limit, and Monitoring Requirements**

Regulation:	BACT under PSD.
Emissions Limit:	95 lbs Sulfur Dioxide /hr.
Monitoring Requirements:	SO <sub>2</sub> CEM

**C. Control Technology:** Wet scrubber.



**Attachment 8 to the Technical Support Document  
for Permit Action Number 13700318-001**  
*AERA Submittal and Risk Managers' Decision*

**Air Emissions Risk Analysis**  
**Mesabi Nugget Large Scale Demonstration Plant (LSDP)**  
**Cliffs Erie Site, Hoyt Lakes, Minnesota**

November 2004  
Revised May 2005

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P:\23\69\880 Mesabi Nugget Hoyt Lakes\Draft Permit\Final Synched Application\AERA\AERA Report 050509.doc

i



1a) AQ Facility ID No.: 13700318

1b) AQ File No.: 4238

2) Facility Name: Mesabi Nugget, LLC

3) Date of Submittal: November 10, 2004

4) Date Form Completed: April 7, 2005

4a) Project Team Members: Mary Dymond, Chris Nelson, Dan Brady, Dick Cordes, Anne Jackson, Shelley Burman, Ann Foss, Hillary Carpenter (MDH)

5) Date of Risk Management Recommendation: April 11, 2005

#### 6. General Information

This facility will produce iron nuggets from iron ore and coal at the Cliffs Erie mining site located outside of Hoyt Lakes in St. Louis County. Iron ore concentrate will be shipped by rail to this site from Northshore Mining Company in Silver Bay.

- Emissions calculations are based on PTE (8760 hours of operation per year) and stack testing at a pilot plant.
- The facility will emit approximately 75 lbs/year of mercury. In stack tests performed at the pilot plant, over 99% of the mercury was reported to be in the elemental form.
- No sensitive receptors have been identified within a one mile radius of the facility although there are recreational trails on the Cliffs Erie property.
- A statute passed by the Minnesota Legislature exempted this project from environmental review (see Minnesota Session Law 2004, Chapter 220.).

#### 7. Near Field (the area at or between the Mesabi Nugget property boundary and the Cliffs Erie property boundary)

Air Toxics Screen											
Total Inhalation Screening Hazard Indices and Cancer Risks				Total Indirect Pathway Screening Hazard Indices and Cancer Risks				Total Multipathway Screening Hazard Indices and Cancer Risks			
Acute [1]	Subchronic Noncancer [1]	Chronic Noncancer [1]	Cancer [2]	Farmer Noncancer [1]	Farmer Cancer [2]	Resident Non-cancer [1]	Resident Cancer [2]	Farmer Noncancer [1]	Farmer Cancer [2]	Resident Non-cancer [1]	Resident Cancer [2]
1	0.04**	0.9*	7E-06*	0.0003	7E-06	—	5E-07	0.9	1.3E-05	0.9	7.0E-06

\* Values represent the maximum annual air concentration for a receptor located between the Mesabi Nugget boundary and the Cliffs Erie boundary

\*\* Values represent the maximum monthly air concentration for a receptor in the location described above – see attached map for further detail

#### Far Field (the area of the Cliffs Erie property boundary and beyond)

Air Toxics Screen											
Total Inhalation Screening Hazard Indices and Cancer Risks				Total Indirect Pathway Screening Hazard Indices and Cancer Risks				Total Multipathway Screening Hazard Indices and Cancer Risks			
Acute [1]	Subchronic Noncancer [1]	Chronic Noncancer [1]	Cancer [2]	Farmer Noncancer [1]	Farmer Cancer [2]	Resident Noncancer [1]	Resident Cancer [2]	Farmer Noncancer [1]	Farmer Cancer [2]	Resident Noncancer [1]	Resident Cancer [2]
—	—	0.3	1.8E-06	0.00009	2E-06	—	2E-07	0.3	4E-06	0.3	2.0E-06

**Attachment 9 to the Technical Support Document  
for Permit Action Number 13700318-001**  
*Modeling Documents*

**Class I Air Modeling Report**  
**Mesabi Nugget, LLC**  
**Hoyt Lakes, Minnesota**

Prepared by:  
Mesabi Nugget, LLC  
Hoyt Lakes, Minnesota

Barr Engineering Company  
Minneapolis, Minnesota

October 26, 2004  
Revised March, 2005  
Revised May, 2005

**Mesabi Nugget, LLC**  
**Hoyt Lakes, Minnesota**

**Air Dispersion Modeling Report**

**October 2004**

**Revised March 2005**

**Revised May 2005**

**Attachment 10 to the Technical Support Document  
for Permit Action Number 13700318-001**  
*Additional Impacts Analysis*

**Mesabi Nugget, LLC**  
**Hoyt Lakes, Minnesota**

**Additional Impacts Analyses Report**  
**March 2005**



**Attachment 11 to the Technical Support Document  
for Permit Action Number 13700318-001**  
*Changes Made to the Permit as a Result of Comments Received*

## ATTACHMENT 9

## Minnesota Pollution Control Agency (MPCA)

## Mesabi Nugget, LLC

## ERRATA

## Draft Air Emission and Water Quality Permits

Page #	Condition #	Change	Comment
Cover	Facility Description	(Mesabi Nugget) Replace each "will" with "may"	Permittee's discretion
Cover	Table of Contents	Correct list of appendices	Correction
A-1 FC	New	MPCA/FS: Add language for Protection of Visibility in Class I Areas	Regulatory requirement.
A-1 FC	New	(EPA) Insert re-opener language.	Use new information to set BACT limits.
A-1 FC	New	MPCA: Add language related to ambient boundary.	
A-1 FC	3	MPCA: Change reference from Appendix B to Appendix C.	Correction.
A-1 FC	5	(Mesabi Nugget) Change "of" to "to".	Correction.
A-1 FC	5	MPCA: Delete condition.	Clean Unit provisions vacated.
A-1 FC	6	MPCA: Delete condition.	Clean Unit provisions vacated.
A-2	4	(Mesabi Nugget, MPCA) Insert "Prior to startup of pollution control equipment," prior to "retain at the stationary source"	Clarifies timing of required action.
A-3 FC	3	(Mesabi Nugget) Insert "Prior to startup of each CEM," prior to "develop and implement"	Clarifies timing of required action.
A-5 FC	4	(Sierra Club) Revised the language to read "Conduct a performance test for mercury at least 60 days after but not more than 180 after implementing the selected option to implement the goal of achieving at least a fifty percent reduction in baseline mercury emissions."	Make condition consistent with condition 1 on page A-5.

