

AIR EMISSION PERMIT NO. 11900016- 001

IS ISSUED TO

UNIVERSITY OF MINNESOTA

University of Minnesota - Crookston
2900 University Avenue
Crookston, Polk County, MN 56716

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
Major Amendment Application	5/5/03 Amended 1/16/04
Moderate Amendment Application	4/1/03
Minor amendment application	10/09/01
Total Facility Operating Permit	6/27/96

This permit authorizes the Permittee to operate 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 defined in the state air pollution control rules unless the term is explicitly defined in the permit.

Permit Type: State; / Limits to Avoid Pt. 70 and NSR

Issue Date: January 10, 2005

Expiration: State Permit does not expire
All Title I Conditions do not expire.

Richard J. Sandberg, Manager
Air Quality Permits Section
Industrial Division

for Sheryl A. Corrigan
Commissioner
Minnesota Pollution Control Agency

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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 facility is the Crookston undergraduate rural campus of the University of Minnesota System. The main campus consists of approximately 30 buildings, including classrooms, laboratories, dormitories, offices, garages, a central heating plant and the University of Minnesota's Northwest Experiment Station. This facility currently operates four boilers, six emergency generators and the experiment station, which consists of several pieces of grain processing equipment and several insignificant activities.

This permit action incorporates a minor modification for the operation of the fifth emergency generator, a moderate permit amendment to authorize operation of a sixth emergency generator, a major amendment to authorize installation and operation of two new gas boilers to replace the existing coal boilers No. 1 and 2 and the addition of a research laboratory. This permit action also defines conditions under which pre-authorized installation of additional emergency generators may occur.

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/14/05

Facility Name: University of Minnesota - Crookston

Permit Number: 11900016 - 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

What to do	Why to do it
SOURCE-SPECIFIC REQUIREMENTS	hdr
Nitrogen Oxides: less than or equal to 90 tons/year using 12-month Rolling Sum based upon the fuel use restrictions, processing rate and hours of operation limitations, calculation procedures and other applicable requirements in the permit. To be calculated by the 15th day of each month for the previous 12-month period as described later in this permit. All emission units or stacks added to GP 002 as allowed in this permit shall be included in this calculation, including the contributions from insignificant activities within this group. The permittee may implement the pre-authorized changes in GP002 provided that the total facility emissions do not exceed any other limitations and provided that the total facility potential to emit (including the contributions of all insignificant activities) after assessment of the modification does not exceed 100 tons per year.	Title I Condition: Limit to avoid classification as major source and modification under 40 CFR Section 52.21; to avoid major source classification under 40 CFR Section 70.2
OPERATIONAL REQUIREMENTS	hdr
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: 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 shall include a preventative maintenance program for that equipment, a description of (the minimum but not necessarily the only) corrective actions to be taken to restore the equipment 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 the records kept to demonstrate plan implementation.	Minn. R. 7007.0800, subp. 14 and Minn. R. 7007.0800, subp. 16(J)
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
Periodic Inspections: At least once per calendar quarter, or more frequently as required by the manufacturing specifications, the Permittee shall inspect the control equipment components. The Permittee shall maintain a written record of these inspections.	Minn. R. 7007.0800, subp. 4, 5 and 14
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 facility currently uses ozone-depleting substances as defined in 40 CFR pt. 82. Sections 601-618 of the 1990 Clean Air Act Amendments and 40 CFR pt. 82 may apply to your facility. Read Sections 601-618 and 40 CFR pt.82 to determine and comply with all the requirements that apply to your facility.	40 CFR Section 82
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
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

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/14/05

Facility Name: University of Minnesota - Crookston

Permit Number: 11900016 - 001

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.	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)
RECORDKEEPING	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)
REPORTING/SUBMITTALS	hdr
Submittal: due before the end of each 60 months following Effective Date of Permit. If the permittee has completed or commenced any of the pre-authorized construction under GP002, the permittee shall submit the appropriate permit modification application to incorporate any new or modified equipment changes into this permit.	Minn. R. 7007.1150 through Minn. R. 7007.1500
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

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/14/05

Facility Name: University of Minnesota - Crookston

Permit Number: 11900016 - 001

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
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. 7019.3010
Emission Fees: due 60 days after receipt of an MPCA bill.	Minn. R. 7002.0005 through Minn. R. 7002.0095

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/14/05

Facility Name: University of Minnesota - Crookston

Permit Number: 11900016 - 001

Subject Item: GP 001 Solid Fuel Boilers**Associated Items:** CE 001 Electrostatic Precipitator - Medium Efficiency

EU 001 Boiler 1

EU 002 Boiler 2

EU 004 Boiler 4

SV 001 Heating Plant

What to do	Why to do it
A. OPERATIONAL REQUIREMENTS	hdr
Fuel type for EU 001, EU002 and EU004: sub-bituminous coal and lignite, by design.	Minn. R. 7005.0100, subp. 35a, Minn. R. 7007.0800 subp. 2, Minn. R. 7007.0800 subp. 11
Sulfur Content of Fuel: less than or equal to 0.5 percent by weight for sub-bituminous coal, less than or equal to 1.2 percent by weight for lignite. The permittee shall maintain a file of fuel supplier certifications for each shipment of every type of fuel received, including the name of the vendor.	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200
Installation, Operation and Maintenance of Fuel Usage Meters. The permittee shall install, operate and maintain instrumentation and methods to measure the amount of fuel burned in each solid fuel boiler in accordance with the fuel usage record keeping and reporting requirements in this permit. For EU001 and EU002, this requirement expires on the date these boilers are dismantled and removed.	Minn. R. 7007.0800, subp. 4 and 5
PERFORMANCE TESTING	hdr
Operating Conditions for Performance Testing. Whenever emissions testing is required, the permittee shall test each the emission unit in this group while burning the maximum heat input from sub-bituminous coal and lignite coal that the permittee wishes to be allowed to burn.	Minn. R. 7017.2025, subp. 2
B. RECORDKEEPING	hdr
Recordkeeping: The permittee shall maintain monthly fuel use records, calculate the 12-month rolling sum and compare with the annual limits for each fuel by the 15th day of each month for the previous 12-month period . For EU001 and EU002, this requirement expires on the date these boilers are dismantled and removed.	Title I Condition: Limit to avoid classification as major source and modification under 40 CFR Section 52.21; to avoid major source classification under 40 CFR Section 70.2
Recordkeeping: The permittee shall maintain a record of monthly calculations of nitrogen dioxide emissions from this group based on actual monthly fuel usages. The permittee shall use emission factors consistent with the information provided in the permit application. This information shall be submitted to the MPCA with the annual compliance certification that is required by Table B of this permit.	Title I Condition: Limit to avoid classification as major source and modification under 40 CFR Section 52.21; to avoid major source classification under 40 CFR Section 70.2
Fuel usage records shall include the information listed in Appendix B of this permit.	Minn. R. 7007.0800, subp. 4 - 5.

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/14/05

Facility Name: University of Minnesota - Crookston

Permit Number: 11900016 - 001

Subject Item: GP 002 Emergency generators**Associated Items:** EU 005 Lysaker Gym Generator

EU 006 Conference Center Generator

EU 007 Heating Plant Generator

EU 009 Kiehle Hall Generator

EU 010 Student Center Generator

EU 013 Heating Plant Portable Generator

What to do	Why to do it
A. EMISSION LIMITS	hdr
Opacity: less than or equal to 20 percent opacity using 6-minute Average once operating temperatures have been attained.	Minn. R. 7011.2300, subp. 1
Sulfur Dioxide: less than or equal to 0.5 lbs/million Btu heat input for diesel generators (0.29 lbs/million BTU heat input per equipment design).	Minn. R. 7011.2300, subp. 2
B. OPERATIONAL REQUIREMENTS	hdr
Fuel type for EU 005, EU009, EU010 and EU013: diesel only, by design. The permittee may burn biodiesel in these units without having to apply for a permit amendment if no engine modification is needed to burn biodiesel.	Minn. R. 7005.0100, subp. 35a, Minn. R. 7007.0800 subp. 2, Minn. R. 7007.0800 subp. 11
Fuel type for EU006 and EU007: Natural gas only by design.	Minn. R. 7005, subp. 35a, Minn. R. 7007.0800 subp. 2, Minn. R. 7007.0800 subp. 11
Operating Hours: less than or equal to 500 hours/year using 12-month Rolling Sum for each individual emergency generator in GP002. The Permittee shall maintain documentation on site that each unit listed in this group are emergency generators by design that qualify under the U.S. EPA memorandum entitled "Calculating Potential to Emit (PTE) for Emergency Generators" dated September 6, 1995, limiting operation to 500 hours per year.	Minn. R. 7005.0100, subp. 35a, Minn. R. 7007.0800, subp. 2, Minn. R. 7007.0800, subp. 11.
MONITORING REQUIREMENTS	hdr
Metering of Hours of Operation: The permittee shall install, operate and maintain metering equipment and methods to measure the hours of operation for each individual emergency generator in GP002	Minn. R. 7007.0800, subp. 4 and 5
C. RECORDKEEPING	hdr
Hours of Operation: The Permittee shall maintain monthly records of the 12-month rolling sum of hours of operation for each emergency generator. The 12-month rolling sum shall be calculated by the 15th day of each month for the previous 12-month period. This information shall be used in the monthly calculations showing that nitrogen oxide limits for the facility have not been exceeded.	Title I Condition: Limit to avoid classification as major source and modification under 40 CFR Section 52.21; to avoid major source classification under 40 CFR Section 70.2. Minn. R. 7007.0800, subp. 4 & 5
Recordkeeping, Fuel Type: The permittee shall keep records of the fuel burned in the emergency generators when in operation.	Minn. R. 7007.0800, subp. 4 & 5
Sulfur Content of Fuel: less than or equal to 0.5 percent by weight. Obtain and maintain a fuel supplier certification for each shipment of diesel fuel, certifying that the sulfur content of the fuel meets this limit. This requirement can be met by securing a fuel supplier contract which specifies the maximum amount of sulfur in the fuel to be delivered and by obtaining a receipt for each shipment which documents that the fuel was supplied by the same contractor.	Minn. R. 7007.0800, subps. 4 & 5
Fuel usage records shall include the information listed in Appendix B of this permit.	Minn. R. 7007.0800, subp. 4 - 5.
Recordkeeping: The permittee shall maintain a contemporaneous record of all pre-authorized changes within GP002, including the date of the change, the location of the new, modified or replaced emergency generator, and monthly calculations showing that the nitrogen oxides limits for the facility have not been exceeded. The calculations shall include the contributions of insignificant activities at the facility. The permittee shall use emission factors consistent with the information provided in the permit application. This information shall be submitted to the MPCA with the annual compliance certification that is required by Table B of this permit.	Title I Condition: Limit to avoid classification as major source and modification under 40 CFR Section 52.21; to avoid major source classification under 40 CFR Section 70.2

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/14/05

Facility Name: University of Minnesota - Crookston

Permit Number: 11900016 - 001

Subject Item: GP 003 Northwest Experiment Station**Associated Items:** CE 002 Centrifugal Collector - High Efficiency

EU 008 Grain Grinding

FS 004 Grain Unloading

FS 005 Grain Handling

FS 006 Grain Loading

What to do	Why to do it
A. OPERATIONAL REQUIREMENTS	hdr
The Permittee shall clean up commodities spilled on the driveway and other facility property as required to minimize fugitive emissions to a level consistent with RACT (reasonably available control technology).	Minn. R. 7011.1005, subp. 1(A)
The permittee shall maintain air pollution control equipment in proper operating condition and utilize the air pollution control systems as designed.	Minn. R. 7011.1005, subp.1(B)
Opacity: less than or equal to 5 percent from truck unloading stations, railcar unloading stations, railcar loading stations, and handling operation.	Minn. R. 7011.1005, subp. 3(A)
Opacity: less than or equal to 10 percent from truck loading stations.	Minn. R. 7011.1005, subp. 3(B)
Opacity: less than or equal to 10 percent from control equipment	Minn. R. 7011.1005, subp. (D)
Total Particulate Matter: greater than or equal to 80 percent control efficiency for control equipment. CE002 is rated at 99% for the size distribution of particulate matter it controls. This requirement also applies to the control device for the cracker mill which is an insignificant activity.	Minn. R. 7011.1005, subp. 3(E)
The permittee may not operate or maintain a dry bulk agricultural facility that creates public nuisance.	Minn. R. 7011.1010
Quarterly Inspections. At least once per calendar quarter, the permittee shall inspect the control equipment external system components, including but not limited to the electrical systems. The permittee shall maintain a written record of the inspection and any corrective actions taken during the inspection.	Minn. R. 7007.0800, subp. 4, 5 and 14
Corrective Actions: The permittee shall take corrective actions as soon as possible if any of the following occur: - excessive visible emissions from any of the grain handling or grain processing operations - any of the components in the the polution control equipment are found during the inspections to need repair. Corrective actions shall return the operation control equipment to within the recommended or required ranges in the Operations and Maintenance Plan, eliminate excessive visible emissions, and/or include completions of necessary repairs identified during the inspections as applicable. Corrective actions include, but are not limited to, those outlined in the O&M Plan for the control equipment. The permittee shall keep record of the type and date of any corrective action taken.	Minn. R. 7007.0800 subp. 4, 5 and 14

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/14/05

Facility Name: University of Minnesota - Crookston

Permit Number: 11900016 - 001

Subject Item: GP 004 Coal Handling**Associated Items:** FS 001 Coal Unloading

FS 002 Coal Conveying

FS 003 Coal Stockpiles

What to do	Why to do it
OPERATIONAL REQUIREMENTS	hdr
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. 7011.1110 and 7011.0150
Dust suppressants: during freezing temperatures, owners or operators shall not be required to apply water or dust suppressants. The permittee is not authorized to use 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. 7011.1120 and 7011.1140
The permittee shall not conduct any nonessential coal handling operations that are not shielded from the wind or enclosed in a building when steady wind speed exceed 30 miles per hour.	7011.1125 Cessation of Operations

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/14/05

Facility Name: University of Minnesota - Crookston

Permit Number: 11900016 - 001

Subject Item: GP 005 Older Solid Fuel Boilers**Associated Items:** EU 001 Boiler 1

EU 002 Boiler 2

What to do	Why to do it
A. EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.6 million Btu's/hour heat input. This limit applies individually to each emission unit in this group.	Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent except for one six-minute period per hour of not more than 60 percent opacity. This limit applies individually to each emission unit in this group	Minn. R. 7011.0510, subp. 2
B. OPERATIONAL REQUIREMENTS	hdr
Emission units in GP005 may not be operated concurrently with emission units in GP006.	Title I Condition: Limit to avoid classification as major source and modification under 40 CFR Section 52.21; to avoid major source classification under 40 CFR Section 70.2
Emission units in GP005 may not be operated concurrently with EU004.	Minn. R. 7007.0800, subp. 2
Permanent Shutdown (Equipment Removal or Dismantlement) of old coal boilers EU001 and EU002: Within 180 days of start-up of new boilers EU011 and EU012	Title I Condition: Limit to avoid classification as major source and modification under 40 CFR Section 52.21; to avoid major source classification under 40 CFR Section 70.2

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/14/05

Facility Name: University of Minnesota - Crookston

Permit Number: 11900016 - 001

Subject Item: GP 006 New Gas Boilers**Associated Items:** EU 011 Boiler No. 5

EU 012 Boiler No. 6

What to do	Why to do it
A. OPERATIONAL REQUIREMENTS	hdr
Combined EU011 and EU012 Propane Fuel Usage: less than or equal to 1200000 gallons/year using 12-month Rolling Sum	Title I Condition: Limit to avoid classification as major source and modification under 40 CFR Section 52.21; to avoid major source classification under 40 CFR Section 70.2
At all times, including periods of start up, shutdown, and malfunction, the Permittee shall, to the extent practicable, maintain and operate any affected facility, including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions.	40 CFR Section 60.11(d)
No owner or operator shall 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
Fuel type for EU011 and EU012: natural gas and propane only, by design.	Minn. R. 7005.0100, subp. 35a, Minn. R. 7007.0800 subp. 2, Minn. R. 7007.0800 subp. 11
Emissions for EU011 and EU012 were calculated assuming low NOx burners with emission factors equal to 0.00005 lb.NOx per cubic foot of natural gas and 0.019 lb. of NOx per gallon of propane burned. If the final manufacturer's guarantee for the boilers is higher than these values, the permittee must report this information with the first emission inventory submitted for the operation of these units. The permittee must use the emission factors guaranteed by the manufacturer in all calculations. The permittee shall operate and maintain the boilers in accordance with the conditions of the manufacturer's guarantee and terms.	Title I Condition: Limit to avoid classification as major source and modification under 40 CFR Section 52.21; to avoid major source classification under 40 CFR Section 70.2. Minn. R. 7005.0100, subp. 35a, Minn. R. 7007.0800 subp. 2
Installation, Operation and Maintenance of Fuel Usage Meters. The permittee shall install, operate and maintain instrumentation and methods to measure the amount of propane burned in each boiler in this group in accordance with the fuel usage recordkeeping and reporting requirements in this permit.	Minn. R. 7007.0800, subp. 4 and 5
B. RECORDKEEPING	hdr
Recordkeeping: Record and maintain records of the amounts of each fuel combusted in each boiler on a monthly basis. Natural gas records may consist of purchase records or receipts. Records shall include the information listed in Appendix B of this permit.	40 CFR Section 60.13(i) and February 20, 1992, EPA memorandum to meet the requirements of 40 CFR Section 60.48c(g) and (i). Minn. R. 7007.0800, subp. 4 - 6.
Recordkeeping: The permittee shall maintain monthly propane use records, calculate the 12-month rolling sum and compare with the annual limits for each fuel by the 15th day of each month for the previous 12-month period.	Title I Condition: Limit to avoid classification as major source and modification under 40 CFR Section 52.21; to avoid major source classification under 40 CFR Section 70.2
Recordkeeping: 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 inoperative.	40 CFR Section 60.7(b), Minn. R. 7019.0100, subp. 1
Recordkeeping: Maintain a file of all measurements, maintenance, reports and records for at least five years.	40 CFR Section 60.7(f); Minn. R. 7019.0100, subp. 1
Recordkeeping: The permittee shall maintain a records of monthly calculations of nitrogen dioxide emissions from this group based on actual monthly fuel usages. The permittee shall use emission factors consistent with the information provided in the permit application. This information shall be submitted to the MPCA with the annual compliance certification that is required by Table B of this permit.	Title I Condition: Limit to avoid classification as major source and modification under 40 CFR Section 52.21; to avoid major source classification under 40 CFR Section 70.2

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/14/05

Facility Name: University of Minnesota - Crookston

Permit Number: 11900016 - 001

Subject Item: SV 001 Heating Plant**Associated Items:** EU 001 Boiler 1

EU 002 Boiler 2

EU 004 Boiler 4

GP 001 Solid Fuel Boilers

What to do	Why to do it
PERFORMANCE TESTING	hdr
Performance Test: due 365 days after Effective Date of Permit. Performance Test for PM, PM-10 and Opacity is required for EU004. Test shall be conducted at the maximum hourly production rate at which the equipment discharging through this stack will be operated and with the maximum MMBTUH from lignite and sub-bituminous coal the permittee wishes to be authorized to operate. Testing shall require proximate fuel analysis. Test results for PM and PM-10 must be expressed as lb/MMBTU heat input and as lb/ton of fuel. PM-10 test results are to be used to generate a facility specific emission factor.	Minn. R. 7017.2020, subp. 1, subpart 2 and subpart 3
Performance Test: due 730 days after Effective Date of Permit. PM, PM-10 and Opacity test is required for EU001 and EU002 if construction of EU011 and EU012 has not begun. Testing shall require proximate fuel analysis. Test shall be conducted at the maximum hourly production rate at which the equipment discharging through this stack will be operated and with the maximum MMBTUH from lignite and sub-bituminous coal the permittee wishes to be authorized to combust. Test results for PM and PM-10 must be expressed as lb/MMBTU heat input and as lb/ton of fuel. PM-10 test results are to be used to generate a facility specific emission factor.	Minn. R. 7017.2020, subp. 1, subpart 2 and subpart 3
Testing required at other times by an applicable requirement or compliance document and at additional times if the commissioner requests a performance test.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Performance Test	Minn. R. 7017.2030, subp. 4
MODELING REQUIREMENTS	hdr
The protocol for PM-10 must include the facility specific emission factor as measured by stack testing if this value is higher than the emission factor provided in the permit application for this permit.	Minn. R. 7007.0800, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/14/05

Facility Name: University of Minnesota - Crookston

Permit Number: 11900016 - 001

Subject Item: EU 001 Boiler 1**Associated Items:** CE 001 Electrostatic Precipitator - Medium Efficiency

GP 001 Solid Fuel Boilers

GP 005 Older Solid Fuel Boilers

SV 001 Heating Plant

What to do	Why to do it
A. OPERATIONAL REQUIREMENTS	hdr
Sub-bituminous coal Fuel Usage: less than or equal to 1000 tons/year using 12-month Rolling Sum	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200
Lignite coal Fuel Usage: less than or equal to 300 tons/year using 12-month Rolling Sum	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/14/05

Facility Name: University of Minnesota - Crookston

Permit Number: 11900016 - 001

Subject Item: EU 002 Boiler 2**Associated Items:** CE 001 Electrostatic Precipitator - Medium Efficiency

GP 001 Solid Fuel Boilers

GP 005 Older Solid Fuel Boilers

SV 001 Heating Plant

What to do	Why to do it
A. OPERATIONAL REQUIREMENTS	hdr
Sub-bituminous coal Fuel Usage: less than or equal to 1000 tons/year using 12-month Rolling Sum	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200
Lignite coal Fuel Usage: less than or equal to 300 tons/year using 12-month Rolling Sum	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/14/05

Facility Name: University of Minnesota - Crookston

Permit Number: 11900016 - 001

Subject Item: EU 003 Boiler 3**Associated Items:** SV 002 Heating Plant

What to do	Why to do it
A. EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.6 million Btu's/hour heat input. This limit applies individually to each emission unit in this group.	Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent except for one six-minute period per hour of not more than 60 percent opacity. This limit applies individually to each emission unit in this group	Minn. R. 7011.0510, subp. 2
B. OPERATIONAL REQUIREMENTS	hdr
Fuel type for EU 003, natural gas and LP gas only, by design.	Minn. R. 7005.0100, subp. 35a, Minn. R. 7007.0800 subp. 2, Minn. R. 7007.0800 subp. 11
C. RECORDKEEPING	hdr
Recordkeeping: The permittee shall maintain monthly fuel use records, calculate the 12-month rolling sum and compare with the annual limits for each fuel by the 15th day of each month for the previous 12-month period.	Title I Condition: Limit to avoid classification as major source and modification under 40 CFR Section 52.21; to avoid major source classification under 40 CFR Section 70.2
Fuel usage records shall include the information listed in Appendix B of this permit.	Minn. R. 7007.0800, subp. 4 - 5.
Recordkeeping: The permittee shall maintain a records of monthly calculations of nitrogen dioxide emissions from this emission unit based on actual monthly fuel usages. The permittee shall use emission factors consistent with the information provided in the permit application. This information shall be submitted to the MPCA with the annual compliance certification that is required by Table B of this permit.	Title I Condition: Limit to avoid classification as major source and modification under 40 CFR Section 52.21; to avoid major source classification under 40 CFR Section 70.2

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/14/05

Facility Name: University of Minnesota - Crookston

Permit Number: 11900016 - 001

Subject Item: EU 004 Boiler 4**Associated Items:** CE 001 Electrostatic Precipitator - Medium Efficiency

GP 001 Solid Fuel Boilers

SV 001 Heating Plant

What to do	Why to do it
A. EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.4 lbs/million Btu heat input	Minn. R. 7011.0515, subp. 1
Opacity: less than or equal to 20 percent except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0515, subp. 2
B. OPERATIONAL REQUIREMENTS	hdr
Fuel Usage: less than or equal to 4000 tons/year using 12-month Rolling Sum of Sub-bituminous coal while GP005 is allowed to operate.	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200
Fuel Usage: less than or equal to 1200 tons/year using 12-month Rolling Sum of Lignite coal while GP005 is allowed to operate	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200
Fuel Usage: less than or equal to 5000 tons/year using 12-month Rolling Sum of Sub-bituminous coal after GP006 begins to operate.	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200
Fuel Usage: less than or equal to 1200 tons/year using 12-month Rolling Sum of Lignite coal after GP006 begins to operate	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/14/05

Facility Name: University of Minnesota - Crookston

Permit Number: 11900016 - 001

Subject Item: CE 001 Electrostatic Precipitator - Medium Efficiency**Associated Items:** EU 001 Boiler 1

EU 002 Boiler 2

EU 004 Boiler 4

GP 001 Solid Fuel Boilers

What to do	Why to do it
A. OPERATIONAL REQUIREMENTS	hdr
The Permittee shall operate and maintain CE001 at all times that any emission unit controlled by the electrostatic precipitator is in operation. CE001 shall be operated and maintained in accordance with the Operations and Maintenance (O&M) Plan.	Title I Condition: Limit taken to avoid classification as a major source and modification under 40 CFR Part 52.21, 40 CFR Part 70.2 Minn. R. 7007.0800, subp. 2, Minn. R. 7007.0800, subp. 14; Minn. R. 7007.0800, subp 16(J)
Total Particulate Matter: greater than or equal to 90 percent control efficiency Compliance with Minn. R. 7011.0510, subp. 1 and Minn. R. 7011.0515, subp. 1 is deemed sufficient to demonstrate compliance with this requirement.	Title I Condition: Limit taken to avoid classification as a major source and modification under 40 CFR part 52.21 and 40 CFR part 70.2, Minn. R. 7007.0800, subp. 2, Minn. R. 7007.0800, subp. 14; Minn. R. 7007.0800, subp 16(J)
CE001 must be operated with at least the minimum specific collection area (SCA) in service determined during the most recent particulate matter emissions test with results equal to or less than the particulate matter emissions limit. If the sections in the CE001 are physically and electrically equivalent, the Permittee can meet this requirement by operating CE001 with no less than the number of sections that were operating during the most recent particulate emission tests with results equal to or less than the particulate matter emission limit. If the the number of SCA or number of sections drop below the minimum required anytime that flue gases are going through the control equipment, this shall be reported as a deviation.	Title I Condition: Limit taken to avoid major source and major modification classification under 40 CFR Section 52.21 and 40 CFR Section 70.2, Minn. R. 7007.0800, subp. 2, Minn. R. 7007.0800, subp. 14; Minn. R. 7007.0800, subp 16(J)
Quarterly Inspections. At least once per calendar quarter, the permittee shall inspect the control equipment external system components, including but not limited to the electrical systems. The permittee shall maintain a written record of the inspection and any corrective actions taken during the inspection.	Minn. R. 7007.0800, subp. 4, 5 and 14
Corrective Actions: The permittee shall take corrective actions as soon as possible if any of the following occur: - visible emissions indicate evidence of pollution control malfunction; - the monitored secondary voltage and current, spark rate and rapping are outside the recommended range in the Operation and Maintenance (O & M) Plan; - the monitored SCA is less than what is required required; or - any of the components in the the electrostatic precipitator are found during the inspections to need repair. Corrective actions shall return the secondary voltage and current, the SCA and spark rate to within the recommended or required ranges, eliminate excessive visible emissions, and/or include completions of necessary repairs identified during the inspections as applicable. Corrective actions include, but are not limited to, those outlined in the O&M Plan for the electrostatic precipitator. The permittee shall keep record of the type and date of any corrective action taken.	Minn. R. 7007.0800 subp. 4, 5 and 14
B. RECORDKEEPING	hdr
Daily Monitoring and Recordkeeping. The permittee shall physically verify and record the identity and minimum number of electrostatic precipitator sections (or SCA if sections are not equivalent) in service each day that CE001 is operating. The permittee shall maintain a written record of the verification.	Minn. R. 7007.0100 subp. 35a; Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subp. 14; Minn. R. 7007.0800, subp. 16(J)
Operation and Maintenance Plan: This plan shall include the appropriate range of operation for the primary and secondary voltage and current and spark rate to ensure optimum performance for the lectrostatic precipitator.	Minn. R. 7007.0800, subp. 14 and Minn. R. 7007.0800, subp. 16(J)
C. MONITORING REQUIREMENTS	hdr
The permittee shall install, operate and maintain instrumentation to check and monitor the following electrostatic precipitator operating parameters: analog meters for primary voltage and current, digital monitors for secondary voltage and current and number of sections or SCA in operation. Secondary current and voltage shall be monitored at each transformer. The monitoring equipment must be installed, in use, and properly maintained whenever operation of the monitored control equipment is required.	Minn. R. 7007.0800, subp. 4(C)

TABLE B: SUBMITTALS

01/14/05

Facility Name: University of Minnesota - Crookston
Permit Number: 11900016 - 001

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.

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.

Send any application for a permit or permit amendment to:

Permit Technical Advisor
Permit Section
Air Quality Division
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

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.

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

Supervisor
Compliance Determination Unit
Air Quality Division
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

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

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

TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS

01/14/05

Facility Name: University of Minnesota - Crookston

Permit Number: 11900016 - 001

What to send	When to send	Portion of Facility Affected
Annual Report	due 91 days after Effective Date of Permit (April 1, for the previous calendar year). The permittee shall submit a list of contemporaneous changes, if any, and supporting calculations related to the pre-approved changes to GP002.	Total Facility
Computer Dispersion Modeling Protocol	due 180 days after Permit Issuance or 60 days after testing of EU004 for PM-10, whichever is later. This protocol is for PM-10 and will describe the proposed modeling methodology and input data, in accordance with MPCA modeling guidance for Title V air dispersion modeling analyses. The protocol will be based on projected operating conditions under the next permit term. This is a state-only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Total Facility
Computer Dispersion Modeling Results	due 546 days after Permit Issuance for PM-10. To be submitted after the MPCA has reviewed and approved the modeling protocol. The submittal should adhere to MPCA modeling guidance for Title V air dispersion modeling analyses. This is a state-only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Total Facility
Notification of the date of Equipment Removal/Dismantlement	due 15 days after Equipment Removal and/or Dismantlement This notification must be provided in writing and must state the date when the boilers are physically removed or dismantled to the point that they cannot longer function as designed.	GP005
Notification	due 15 days after Initial Startup. Notification to MPCA of the Actual Date of Initial Startup: due 15 days after Initial Startup	GP006
Notification	due 30 days after Start Of Construction Notification of the Date Construction (or reconstruction) Began: due 30 days after start of construction (or reconstruction). . Submit to MPCA the name and number of each unit, the date construction of each unit began, the design heat input capacity of each unit and identification of fuels to be combusted.	GP006
Notification	due 60 days after Startup. Notification to MPCA of any physical or operational change which increases emission rate: due 60 days (or as soon as practical) before the change is commenced. Within 180 days of completion of any physical or operational change subject to the control measures specified in 60.14(a), compliance with all applicable standards must be achieved.	GP006
Notification	due 60 days before Start Of Construction. Notification to MPCA of any physical or operational change which increases emission rate: due 60 days (or as soon as practical) before the change is commenced. Within 180 days of completion of any physical or operational change subject to the control measures specified in 60.14(a), compliance with all applicable standards must be achieved.	GP006

TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS

01/14/05

Facility Name: University of Minnesota - Crookston

Permit Number: 11900016 - 001

Testing Frequency Plan	due 60 days after Initial Performance Test for particulate 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. Please see other Performance Test Notifications and Submittals listed in Table A.	GP001
Testing Frequency Plan	due 60 days after Initial Performance Test for particulate 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. Please see other Performance Test Notifications and Submittals listed in Table A.	SV001

TABLE B: RECURRENT SUBMITTALS

01/14/05

Facility Name: University of Minnesota - Crookston

Permit Number: 11900016 - 001

What to send	When to send	Portion of Facility Affected
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.	Total Facility
Compliance Certification	due 30 days after end of each calendar year following Permit Issuance (for the previous calendar year). To be submitted to the Commissioner on a form approved by the Commissioner. This report covers all deviations experienced during the calendar year.	Total Facility
Fuel Supplier Certification	due 91 days after end of each calendar year following Permit Issuance For each shipment include the date, vendor name, heat content and sulfur content on a weight basis. To be submitted within 30 days of the calendar quarter if there are deviations greater than 5% of applicable limit.	GP001
Fuel Usage Report	due 91 days after end of each calendar year following Permit Issuance To be submitted within 30 days of the calendar quarter if there are deviations greater than 5% of an applicable limit. Fuel usage report for an emission unit is not needed after its removal.	GP001
Fuel Usage Report	due 91 days after end of each calendar year following Permit Issuance To be submitted within 30 days of the calendar quarter if there are deviations greater than 5% of an applicable limit. Fuel usage report for an emission unit is not needed after its removal.	GP006

APPENDIX MATERIAL**Facility Name: University of Minnesota - Crookston****Permit Number: 11900016- 001****APPENDIX A****Table 1 Insignificant Activities (Required to be Listed)**

Activity	Criteria for Insignificant Status
Two 1,000 gallon gasoline storage tanks and two 2,000 gallon storage tanks.	Minn. R. 7007.1300, subp. 3(E)(1)
Emissions from laboratory. There are eight laboratories located at the University Teaching and Outreach Center, Dowell Hall and Hill Hall. There is also application of pesticides to research crops.	Minn. R. 7007.1300, subp. 3(G)
Brazing, soldering, or welding equipment. There are six welders located at Kiser Maintenance Building, Soil and Water Building, Farm Shop, and North Agronomy Farm.	Minn. R. 7007.1300, subp. 3(H)(4)
Three grain dryers, grain handling operations, cracking mill and grain cleaning operations, each with potential to emit of less than 1 ton per year of the regulated pollutants. There are five parts cleaners located at Owens Hall, Kieser Maintenance Building, Heating Plant, and Farm Shops.	Minn. R. 7007.1300, subp. 3(I)
Coal unloading operations with potential to emit less than one ton per year of regulated pollutant	Minn. R. 7007.1300, subp. 3(I)
Sixteen silos with potential to emit less than one ton per year of regulated pollutant	Minn. R. 7007.1300, subp. 3(I)
Paint shop with portable paint sprayer – infrequent use	Minn. R. 7007.1300, subp. 3(K)
Combustion units with potential to emit less than one ton per year of regulated pollutant with potential to emit less than one ton per year of regulated pollutant – listed in Table 2	Minn. R. 7007.1300, subp. 3(I)

Generally Applicable Requirements	Minn. R. 7011.0610	Standards of Performance for Fossil-Fuel-Burning Direct Heating Equipment. These standards apply to driers and heaters.
Generally Applicable Requirements	Minn. R. 7011.0710 and Minn. R. 7011.0715	Standards of Performance for Industrial Process Equipment. These standards apply to miscellaneous sources of particulate matter.

APPENDIX A**Table 2 Insignificant Activities – Combustion Units (Required to be Listed)**

Unit	Rated Heat Input MMBH
Dryer XX DR-01	1
Dryer XX-DR-02	1
Dryer XX-DR-03	2
NW Experiment Station Heaters/Furnace SH-1	0.132
NW Experiment Station Heaters/Furnace SH-02	0.066
NW Experiment Station Heaters/Furnace SH-03	0.25
NW Experiment Station Heaters/Furnace SH-04	0.045
NW Experiment Station Heaters/Furnace SH-05	0.045
NW Experiment Station Heaters/Furnace SH-06	0.075
NW Experiment Station Heaters/Furnace SH-07	0.075
NW Experiment Station Heaters/Furnace SH-08	0.044
NW Experiment Station Heaters/Furnace SH-09	0.135
NW Experiment Station Heaters/Furnace SH-10	0.075
NW Experiment Station Heaters/Furnace SH-11	0.08
NW Experiment Station Heaters/Furnace SH-12	0.08
NW Experiment Station Heaters/Furnace SH-13	0.1
NW Experiment Station Heaters/Furnace SH-14	0.1
NW Experiment Station Heaters/Furnace SH-15	0.035
NW Experiment Station Heaters/Furnace SH-16	0.035
NW Experiment Station Heaters/Furnace SH-17	0.035
NW Experiment Station Heaters/Furnace SH-18	0.12
Research Lab. Boiler	0.5
Lysaker Gym Emergency Generator	0.28
Heating Plant Emergency Generator	0.275
Conference Center Emergency Generator	1.2

APPENDIX B
Compliance Demonstration
Fuel Use Limits and Specific Averaging Times

B1. Natural Gas Use. To the extent that record keeping will be used to demonstrate compliance with permitted emission limits, the permittee shall maintain records of natural gas use which include at least the following:

- A. Calendar dates of the compliance demonstration period; and
- B. Actual amount of fuel used since last compliance determination period and the value calculated per the limitation.

B2. Propane and LP gas) Use. To the extent that record keeping will be used to demonstrate compliance with permitted emission limits, the permittee shall maintain records of propane and LP gas use which include at least the following:

- C. Calendar dates of the compliance demonstration period; and
- D. Actual amount of fuel used since last compliance determination period and the value calculated per the limitation.

B3. Diesel Oil Use. To the extent that record keeping will be used to demonstrate compliance with permitted emission limits, the permittee shall maintain records of distillate oil use which include at least the following:

- A. Calendar dates of the compliance demonstration period.
- B. Actual amount of fuel used since last compliance determination period and the value calculated per the limitation.
- C. A certification, signed by the owner or operator, that the records of the fuel supplier certifications represent all of the fuel combusted during the period; and
- D. Fuel supplier certifications.

B4. Sub-bituminous Coal and Lignite Coal Use. To the extent that record keeping will be used to demonstrate compliance with permitted emission limits, the permittee shall maintain records of sub-bituminous and lignite coal use which include at least the following:

- A. Calendar dates of the compliance demonstration period.
- B. Actual amount of fuel used since last compliance determination period and the value calculated per the limitation.
- C. A certification, signed by the owner or operator, that the records of the fuel supplier certifications represent all of the fuel combusted during the period; and
- D. Fuel supplier certifications.

B5. Limitations Based on a 12-month rolling sum. To determine compliance with limitations using a 12-month rolling sum, the permittee shall calculate the total annual sum on a monthly

basis. For the first 12 months of operation compliance shall be based on the permittee's actual operating history prior to issuance of this permit.

B6. Monthly Nitrogen Oxides Emissions. When required to calculate nitrogen oxide emissions on a monthly basis in tons per month, once each month that any fuel oil is combusted in any combustion unit for which there is a fuel usage or hour of operation limit, the permittee shall:

- A. Establish the aggregate fuel combustion rate expressed in gallons per month, cubic feet per month or tons per month as appropriate, by measurements with instruments having an error of no greater than 1 percent.
- B. Establish the mass emission rate of nitrogen oxides in tons per month using the appropriate emission factor.

TECHNICAL SUPPORT DOCUMENT
For
AIR EMISSION PERMIT NO. 11900016-001

This Technical Support Document (TSD) is intended for all parties interested in the 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 determination to issue the permit.

1. General Information

1.1. Applicant and Stationary Source Location:

Owner and Operator Address and Phone Number	Facility Address (SIC Code: 8221)
University of Minnesota – Board of Regents Responsible Official: Mark Cox Asst. Vice President, Campus Health and Safety University of Minnesota – Crookston 310 TSB 511 Washington Avenue Minneapolis, MN 55455 Phone: (612) 625-3828	University of Minnesota - Crookston 2900 University Avenue Crookston, MN 56716 Polk County

1.2. Description of the Permit Action

The facility is the Crookston undergraduate rural campus of the University of Minnesota System. The main campus consists of approximately 30 buildings, including classrooms, laboratories, dormitories, offices, garages, a central heating plant and the University of Minnesota's Northwest Experiment Station. This facility currently operates four boilers, six emergency generators and the experiment station, which consists of several pieces of grain processing equipment and several insignificant activities.

This permit action incorporates a minor modification for the operation of the fifth emergency generator, a moderate permit amendment to authorize operation of a sixth emergency generator, a major amendment to authorize installation and operation of two new gas boilers to replace the existing coal boilers No. 1 and 2 and the addition of a research laboratory. This permit action also defines conditions under which pre-authorized installation of additional emergency generators may occur.

The authorized fuels are sub-bituminous coal and lignite for Boilers Nos. 1, 2 and 4. Particulate emissions from the solid fuel boilers are controlled by an electrostatic precipitator and are vented through a common stack. The authorized fuels for boiler No.3, and the new boilers Nos. 5 and 6 are natural gas and propane. There are no back-up burners installed in any of the boilers.

Each emergency generator is fueled by either natural gas, propane or diesel, and each unit is limited to a maximum of 500 operating hours per year.

There is an experimental grain handling and processing facility which had not been included before as part of the total facility. The significant emission units in Northwest Experiment Station include the grain loading and unloading operations and the grain grinding operations. There are several other grain processing units with insignificant emissions.

The pollutants of concern are primarily Particulate Matter (PM), fine Particulate Matter (PM₁₀), Sulfur Dioxide (SO₂), carbon monoxide (CO) and Nitrogen Oxides (NO_x), which are limited in this permit mainly through fuel use restrictions, process rate limitations and hours of operation limits. These emission units also emit relatively smaller quantities of Volatile Organic Compounds (VOC), and small amounts of Hazardous Air Pollutants (HAPs).

This permit action incorporates the operation of the Northwest Experiment Station and imposes more stringent fuel use restrictions than in the previous total facility permit in order to keep the facility below all major source thresholds following the installation of a new emergency generators and boilers.

1.3 Description of any changes allowed with this permit issuance

This permit is issued based on the application for a total facility operating permit received by the Minnesota Pollution Control Agency (MPCA) in June 1996, and upon the previous total facility operating permits issued by the MPCA in March 1992, May, 1985 and Installation Permit in February 1983. Since submitting the June 1996 application, the Permittee has submitted several applications for the installation and operation of two diesel emergency generators, two gas boilers and a research laboratory. These modifications are incorporated into this permit action as well as operating conditions to limit the facility potential to emit such that it is synthetic minor under Title I and Title V.

1.4 Description of all permits issued and applications received since the issuance of the last operating permit and to be included in the State permit

Permit Number and Issuance Date or Permit Application and Receipt Date	Action Authorized
Major Amendment Application Received – May 5, 2003. Amended 1/16/04	Installation and operation of two 25 million British thermal units per hour (MMBTUH) natural gas and propane boilers and a research laboratory.
Moderate Amendment Application Received – April 1, 2003	Installation and operation of 300 kilowatt (kW) emergency generator Letter authorizing construction was issued on April 21, 2003
Minor Amendment Application Received – October 9, 2001	Installation and operation of 85 kW emergency generator
State Total Facility Operating Permit Application Received – 6/27/96	Operation of the University of Minnesota Crookston Campus and Adjacent University of Minnesota's Northwest Experiment Station. Applicant requests synthetic minor limits to avoid being classified as a major facility under Title I and Title V of the Clean Air Act
Operating Permit 86C-92-OT-1 – Issued on 3/19/92	Operating permit for the campus physical plant. It authorizes the operation of the four boilers, coal storage and three emergency generators.
Operating Permit 86C-85-OT-1 – Issued on 5/28/85	Operating permit for the campus heating plant. It authorizes the operation of the four boilers and the coal storage and handling facilities.
Installation Permit 86C-83-I-2 Issued on 2/7/83	Installation of a 28 MMBTUH lignite boiler and electrostatic precipitator to control the emissions of the new boiler and the two existing lignite boilers.

1.5. Facility Emissions:

Attachment A and Attachment B contains emission calculations for the permitted facility. The facility is being authorized to operate under two scenarios. The first scenario involves operation of all units authorized by this permit before the installation and operation of the new boilers No. 5 and 6. The second scenario involves the operation of the units authorized by this permit after the installation and operation of boilers No. 5 and 6 and the removal of coal boilers No. 1 and 2.

Table 1. Change in Allowable Emissions Associated With this Permit Action in Tons per Year (tpy)

	PM tpy	PM₁₀ tpy	SO₂ tpy	NO_x tpy	VOC tpy	CO tpy	Lead (Pb) tpy	HAPs tpy
Total facility limited potential to emit (PTE), Scenario 1, includes quantified IA and fugitive sources (See Table 7, Attachment 1)	177.73	54.18	87.3	94.3	3.5	35.6	0.04	5.5
Total facility limited PTE, Scenario 2, quantified IA and fugitive sources (See Table 8, Attachment 1)	168.87	54.41	67.7	94.2	4.3	48.5	0.07	4.8
Allowable emissions from new units added or to be added since last permit issuance. (See Table 10, Attachment 1)	1.9	1.9	0.41	16.1	1.5	18.5		0.4
Change in limited PTE from fuel and operating restrictions on existing units. Scenario 1. (See Tables, 3, 4 and 7, Attachment 1)	- 69.08	- 17.1	- 330.9	- 89.1	+1.5	- 42.9	-0.08	
Change in Limited PTE from fuel and operating restrictions on existing units. Scenario 2. (See Tables, 3, 4 and 8, Attachment 1)	- 79.3	-18.2	- 350.5	- 89.2	+2.37	- 28	- 0.05	
Change in Limited PTE from pre-authorized emergency generators. Scenario 1. (See Tables 16 and 17 Attachment 1)	+ 2.0 ¹	+ 2.0 ¹	+ 1.9 ¹	+ 29.9	+ 2.4 ¹	+ 6.2 ¹	NG ¹	+0.04 ¹
Additional change in Limited PTE from pre-authorized emergency generators. Scenario 2. (See Tables 16 and 17 Attachment 1)	+ 1.8 ¹	+ 1.8 ¹	+ 1.7 ¹	+ 26	+ 2.1 ¹	+ 5.6 ¹	NG ¹	+ 0.04 ¹

¹ While the pre-authorized activities under would increase emissions of pollutants in addition to NO_x the MPCA has determined that a total facility cap on these emissions units is not necessary as the PTE from the generator group is significantly lower for those pollutants.

Table 2. Total Facility Potential to Emit (PTE) Summary

Item#	Emission Unit Description	PM Tpy	PM ₁₀ tpy	SO ₂ Tpy	NO _x tpy	CO tpy	VOC tpy	Pb tpy	All HAPs Tpy
FC	PTE without permit limitations. Scenario 1. See Attachment 1 Tables, 3, 4 and 6.	248.9	73.19 (275) ¹	421.6	287.9	112.2	8.4	0.12	> 5.5 < 25
FC	PTE without permit limitations. Scenario 2. See Attachment 1 Tables, 3, 4 and 6.	249.5	73.8 (276) ¹	420.4	269.5	108.2	6.9	0.12	>4.8 <25
FC	Limited PTE Total Facility. Scenario 1 See Attachment 1 Table 7 . (Excludes IA's other than emergency generators; includes fugitive emissions)	176.1	53.3	87.3	90	34.9	3.3	0.04	5.5
FC	Limited PTE Total Facility. Scenario 2 See Table 8 Attachment 1. . (Excludes IA's other than emergency generators; includes fugitive emissions)	167.2	53.6	67.7	90	47.8	4.2	.07	4.8
FC	Limited PTE Total Facility. Scenario 1 See Table 7 Attachment 1. (Including quantified IA's and fugitive emissions)	177.7	54.2	87.3	94.3 ²	35.6	3.5	.04	5.5
FC	Limited PTE Total Facility. Scenario 2 See Table 8 Attachment 1. (Including quantified IA's and fugitive emissions)	168.9	54.4	67.7	94.2 ³	48.5	4.3	.07	4.8
Of which....									
GP001	Heating Plant Blrs. Scenario 1. See Attachment 1, Table 7 and Attachment 2	33.0	5.7	84.9	53.9	27.1	0.4	.04	5.4
EU 004 and GP006	Heating Plant Blrs. Scenario 2. See Attachment 1, Table 8 and Attachment 2	24.4	6.2	65.5	56.7	40.6	1.5	0.07	4.7
		PM	PM ₁₀	SO ₂	NO _x	CO	VOC	Pb	All

		Tpy	tpy	Tpy	tpy	tpy	tpy	tpy	HAPs Tpy
EU008	Significant Point Source Northwest Experiment Station. See Attachment 1, Tables 7 and 19	18.2	4.6						
FS004FS 006	Significant Fugitive Sources Northwest Experiment Station. See Attachment 1, Tables 7 and 19	122.3	40.47						
EU009 EU012 EU013	Significant Units Emergency Gen.. See Attachment 1, Tables 7, 14 and 15	0.5	0.5	.46	7.15	1.52	0.58		.01
GP002	Allowable for pre-authorized emergency generators. Scenario 1. See Attachment 1, Tables 16 and 17	2.03	2.03	1.9	28.9	6.2	2.4		.04
GP002	Allowable for pre-authorized emergency generators. Scenario 2. See Attachment 1, Tables 16 and 17	1.8	1.8	1.7	26	5.6	2.2		.04
GP002	Insignificant Activities (existing emergency generators). See Attachment 1, Tables 7, 14 and 15	.026	.026	.021	1.33	0.11	.04		.0008
IA-C	Insignificant Activities (Combustion) See Attachment 1, Table 20	0.24	0.24	0.01	3.0	0.5	0.1		
FS001 FS002 FS003 FS005	Insignificant Units (particulate matter) grain and coal handling. See Attachment 1, Tables 7, 18 and 19	1.4	0.6						
Total Facility Actual Emissions ⁴ Currently Operating under Scenario 1.		20.8	4.4	18.15	14.45	7.6	0.1	0.01	-

¹ (1) Number in parenthesis represents PM₁₀ emissions without the permit condition to maintain the removal efficiency of the electrostatic precipitator at 90 percent for PM₁₀ and without any other operating restrictions. However, the facility requires the operation of the electrostatic precipitator at high level of efficiency for total particulate matter including organic condensibles in order to meet MN standards of performance.

(2) Total Facility Cap, allowing for pre-authorized changes. As currently configured (Scenario 1), allowable PTE would be 65.4 tpy. See Attachment 1 Table 7.

(3) Total Facility Cap, allowing for pre-authorized changes. Without pre-authorized emergency generators, allowable PTE for Scenario 2 would be 68.2 tpy. See Attachment 1 Table 7. See Attachment 1 Table 8.

(4) Based on 2002 Emission Inventory. See Attachment 1 Table 5

Table 3. Facility and Permit Classification

Classification (put x in appropriate box)	Major/Affected Source	*Synthetic Minor	*Minor
PSD (list pollutant)	-	NO _x , SO ₂ , PM ₁₀	PM, CO, VOC, Pb
NAAR (list pollutant)	NA	NA	NA
Part 70 Permit Program (list pollutant)	-	SO ₂ , CO, PM-10 and NO _x	VOC, Pb, HAPs

- Refers to potential emissions that are less than those specified as major by 40 CFR § 52.21. The major source threshold for this facility is 250 TPY pursuant to 52.21(b)(1)(i)(b), and fugitive emissions are not to be considered for this threshold in accordance with 52.21(b)(1)(iii)
- 40 CFR pt. 51 Appendix S, and 40 CFR pt. 70. PM is not considered a regulated pollutant for the purpose of defining major facility thresholds under part 70 according to EPA memorandum dated 10/16/95.

2. Regulatory and/or Statutory Basis

New Source Review, Part 70 Permit Program and National Emission Standards for Hazardous Air Pollutants (NESHAP)

The existing permit does not have synthetic minor limits and as such the allowable PTE is for a major facility under Title I and Title V (see Table 3 and 4 in Attachment A). In 1996 the Permittee requested federally enforceable limits to maintain the facility below major thresholds for all federal programs. The emission inventory indicates the actual emission rates are and have been below major thresholds. The only modifications to the facility since last permit have been the addition of two emergency generators (minor and moderate amendments), two natural gas boilers and a research laboratory to be permitted with this permit. The allowable emissions for all the combined new units is below any significant threshold. No area source NESHAPs were identified in the permit application.

New Source Performance Standards (NSPS)

The following New Source Performance Standards are applicable to the operations at this facility:
Subp. Dc Industrial-Commercial-Institutional Steam Generators > 10 MMBTUH and < 100 MMBTUH

Minnesota State Rules

Portions of the facility are subject to the following Minnesota Standards of Performance:

- Minn. R. 7011.0510 Standards of Performance for Existing Indirect Heating Equipment
- Minn. R. 7011.0515 Standards of Performance for New Indirect Heating Equipment
- Minn. R. 7011.0610 Standards of Performance for Fossil-Fuel-Burning Direct Heating Equipment: Insignificant activities.
- Minn. R. 7011.0710 Standards of Performance for Pre-1969 Industrial Process Equipment: Insignificant activities.
- Minn. R. 7011.0715 Standards of Performance for Post-1969 Industrial Process Equipment. Insignificant activities.
- Minn. R. 7011.2300 Standards of Performance for Stationary Internal Combustion Engines
- Minn. R. 7011.1000 Standards of Performance for Dry Bulk Agricultural Commodity Facilities
- Minn. R. 7011.1100 Standards of Performance for Existing Outstate Coal Handling Facilities
- Minn. R. 7011.0150 Standards of Performance for Control of Fugitive Particulate Matter

Table 4. Regulatory Overview of Facility

Summary Regulatory and/or Statutory Basis of the Emission or Operational Limit

EU, GP, CEor SV #	Applicable Regulations	Comments:
GP002	Minn. R. 7011.2300	Standards of Performance for Stationary Internal Combustion Engines: Opacity and sulfur content in fuels. No alternative limit has been established through modeling of compliance with the SO ₂ ambient air quality standards.
GP003	Minn. R. 7011.1000, 7011.1005 subp.1, 7011.1005 subp. 3, 7011.1010	Standards of Performance for Dry Bulk Agricultural Commodity Facilities: opacity limits and requirements for pollution control equipment. Determination of applicable requirement from rule: <ul style="list-style-type: none"> • The Northwest Experimental Station is a dry bulk agricultural commodity. • The grain elevator is considered a country elevator, with a permanent storage capacity less than 1,000,000 bushels. • Facility is located in a city with a population of 7,500 or more according to the most recent Census data. (The annual throughput is less than 5000 tons) • The grain dryer is equipped with a cyclone separator with the dual purpose of material recovery and control of emissions. The cracker mill is equipped with a control device, unlisted because it is an insignificant activity.
GP004	Minn. R. 7011.1100, Minn. R. 7011.1110, Minn. R. 7011.0150 Minn. R. 7011.1120, Minn. R. 7011.1140, Minn. R. 7011.1125	Standards of Performance for Existing Outstate Coal Handling Facilities. Determination of applicable requirements from rule: <ul style="list-style-type: none"> • Permittee operates an existing outstate coal handling facility
GP005 EU003 SV002	Minn. R. 7011.0510	Standards of Performance for Existing Indirect Heating Equipment: PM and opacity. Determination of applicable limit from rule: <ul style="list-style-type: none"> • the units were constructed before 1977 • the facility is located outside the cities in Table I; • the capacity for each unit is less than 250 MMBTUH; and • the facility has less than or equal to 250 MMBTUH of indirect heating equipment.

GP006	40 CFR Part 60 Subp. Dc, 40 CFR Parts 60.7(a)(1), 60.7(a)(3), 60.7(a)(4), 60.7(b), 60.7(f), 60.11(d), 60.12 60.13(i) EPA Memorandum dated February 20, 1992 authorizing an alternative fuel record requirement.	<p>NSPS for Small Industrial-Commercial-Institutional Steam Generators. Determination of applicable limit from rule:</p> <ul style="list-style-type: none"> the units are to be constructed after 06/09/89 the units have each rated heat input > 10 MMBTUH but < 100 MMBTUH Units are designed to burn only natural gas and propane. <p>Maintain records of the amount of natural gas and propane fired in each boiler on a monthly basis. Natural gas records may consist of purchase records or receipts. Boilers subject to 40 CFR Subpart Dc are allowed by the U.S. Environmental Protection Agency (EPA) to do an alternative monthly recordkeeping of fuel usage. (40 CFR § 40.48c(g) requires daily records of fuel combusted).</p> <p>Notification of beginning of construction: Delta guidance language was expanded to reflect the additional reporting requirements in 40 CFR § 60.48c(a) (fuels and boiler size).</p>
GP006	40 CFR § 52.21; 40 CFR § 70.2	<p>Title I Conditions to remain as a non-major facility under Title V and Title I:</p> <p>Annual fuel consumption limits for boilers, compliance is based on annual rolling sums.</p>
EU004	Minn. R. 7007.0515	<p>Standards of Performance for New Indirect Heating Equipment: particulate matter and opacity.</p> <p>Determination of applicable limit from rule:</p> <ul style="list-style-type: none"> the units were constructed after 1977 the facility is located outside the cities in Table I; the capacity for each unit is less than 250 MMBTUH; and the facility has less than or equal to 250 MMBTUH of indirect heating equipment.
IA Attachment A	Minn. R. 7011.0610	<p>Standards of Performance for Fossil-Fuel-Burning Direct Heating Equipment.</p> <p>There are driers and other miscellaneous sources of criteria pollutants in the list of insignificant activities. Since there are no other specific standards of performance applicable to these units, the above mentioned standards apply to these units.</p>
IA Attachment A	Minn. R. 7011.0710 and Minn. R. 7011.0715	<p>Standards of Performance for Industrial Process Equipment.</p> <p>There miscellaneous sources of PM in the list of insignificant activities. Since there are no other specific standards of performance applicable to these units, the above mentioned standards apply to these units.</p>
FC	40 CFR § 52.21; 40 CFR § 70.2	<p>Total facility emissions cap for NO_x in accordance with MPCA guidelines. Certain modifications are pre-authorized under GP002.</p> <p>After limiting emission of other significant pollutants through fuel usage limitations and operation of the electrostatic precipitator; the controlling pollutant for the pre-authorized emergency generators is NO_x.</p>

GP002	<p>40 CFR § 52.21; 40 CFR § 70.2 Minn. R. 7007.0800, subp. 4 and 5.</p> <p>Minn. R. 7005.0100, subp. 35a, Minn. R. 7007.0800, subp. 2, Minn. R. 7007.0800, subp. 11.</p>	<p>Recordkeeping ---Hours of Operation: The Permittee shall keep 12-month rolling sums of the hours of operation for each emergency generator. This requirement is necessary because this permit pre-authorizes installation of additional emergency generators and the hours of operation are needed to show the facility continues to be a synthetic minor source.</p> <p>In addition, the Permittee shall maintain documentation on-site that the unit is an emergency generator by design that qualifies under the EPA memorandum entitled "Calculating Potential to Emit (PTE) for Emergency Generators" dated September 6, 1995, limiting operation to 500 hours per year.</p>
GP005	<p>40 CFR § 52.21; 40 CFR § 70.2</p>	<p>Title I Conditions to remain as a non-major facility under Title V and Title I: Not allowed to operate simultaneously with boilers No. 5 and 6, to comply with scenarios allowed in this permit. Boilers shall be removed or dismantled within 180 days of start-up of boilers Nos. 5 and 6.</p>
GP006	<p>40 CFR § 52.21; 40 CFR § 70.2</p>	<p>Boilers No.5 and 6 must be equipped with low NO_x burners which have manufacturer's warranty to comply with the emission factors used in the calculations in this permit application.</p>
EU001, EU002,	<p>40 CFR § 52.21; 40 CFR § 70.2</p>	<p>Title I Conditions to remain as a non-major facility under Title V and Title I: Annual fuel consumption limits for boilers, compliance is based on annual rolling sums.</p>
EU004	<p>40 CFR § 52.21; 40 CFR § 70.2</p>	<p>Title I Conditions to remain as a non-major facility under Title V and Title I: Annual fuel consumption limits for boilers, compliance is based on annual rolling sums. Two scenarios of fuel consumption limits as requested by Permittee.</p>
CE001	<p>40 CFR § 52.21; 40 CFR § 70.2; Minn. R. 7007.0800, subp. 2, Minn. R. 7007.0800, subp. 14; Minn. R. 7007.0800, subp 16(J)</p>	<p>Title I Conditions to remain as a non-major facility under Title V and Title I for PM₁₀. Periodic monitoring requirements for PM. Operation of electrostatic precipitator: Requirement to operate the electrostatic precipitator when the coal boilers are in operation and in accordance with the Operations and Maintenance Plan. The electrostatic precipitator is required to operate at a removal efficiency of PM greater or equal to 90% as a surrogate performance indicator for PM₁₀. The electrostatic precipitator is required to operate the minimum specific collection area determined during the most recent performance test.</p>

CE001	40 CFR § 52.21; 40 CFR § 70.2; Minn. R. 7007.0800, subp. 2, Minn. R. 7007.0800, subp. 14; Minn. R. 7007.0800, subp 16(J) 40 CFR § 52.21; 40 CFR § 70.2; Minn. R. 7007.0800, subp. 2, Minn. R. 7007.0800, subp. 14; Minn. R. 7007.0800, subp 16(J)	Title I Conditions to remain as a non-major facility under Title V and Title I for PM ₁₀ . Periodic monitoring requirements for PM. Requirement to operate all installed pollution control equipment whenever the corresponding emission unit is operated. Emissions of PM and PM ₁₀ are calculated taking into account the operation of pollution control equipment.
FC GP003	Minn. R. 7005.0100 subp. 35a; Minn. R. 7007.0800, subp. 2, Minn. R. 7007.0800, subp. 14; Minn. R. 7007.0800, subp 16(J))	Requirement to operate all installed pollution control equipment whenever the corresponding emission unit is operated. Emissions of PM and PM ₁₀ are calculated taking into account the operation of pollution control equipment.
GP001, GP002, EU003, GP006	Minn. R. 7005.0100, subp. 35a, Minn. R. 7007.0800, subp. 2, Minn. R. 7007.0800, subp. 11.	Fuel limitations for emission units, fuel type, by design. This requirement is to limit the authorized fuels to those which can be accommodated by design.
GP002	Minn. R. 7005.0100, subp. 35a, Minn. R. 7007.0800, subp. 2, Minn. R. 7007.0800, subp. 11.	Allowance to burn biodiesel in an engine that requires no modification to burn this fuel. This is consistent with current MPCA policy.
GP005	Minn. R. 7007.0800, subp. 2	Not allowed to operate simultaneously with Boiler No. 4 due to system limitations. The system does not have enough capacity to operate all the coal boilers in a reliable manner.

3. Technical Information

The total facility emissions cap for NO_x, process limitations and requirements to operate pollution control equipment to restrict emissions of PM₁₀, SO₂ and CO were drafted in accordance with MPCA guidelines. Past emission inventory data shows that the facility consistently operates well below the thresholds for major facilities under federal regulations.

The numbering system for the groups, units and stacks has been organized to retain consistency with existing data in the Emission Inventory database. The numbering does not match the numbers used in the permit application for the emission units but stack numbers have been made to match as far as possible and the use of groups helps to cross reference the various documents.

Group 001: Coal Boilers and Electrostatic Precipitator

The facility operates an electrostatic precipitator to meet MN standards of performance for particulate matter. Calculations of particulate matter using AP-42 factors and expected performance of pollution control equipment at 90 percent while burning straight lignite at rated heat input for boiler No. 4 yields results above the applicable emission limits and a narrow margin of compliance for boilers Nos. 1 and 2. The last compliance test documented with the application was conducted in 1985 for boiler Nos. 1, 2 and 4 and demonstrated compliance while burning 100 percent lignite.

The Permittee wishes to be authorized to burn straight lignite coal and a combination of lignite and sub-bituminous coal. Although the lignite coal has the higher percentage of ash, burning 100 percent lignite coal might not be the worst operating condition because it has a relatively higher sulfur content which is known to enhance the operation of electrostatic precipitators by having the effect of reducing the electric resistivity of the dust. Sub-bituminous coal has a lower content of both, ashes and sulfur but no compliance test has been conducted under these operating conditions. Therefore the permit requires testing under these two operating scenarios.

Based on calculations, the electrostatic precipitator would have to have a performance level at or above 90 percent efficiency to maintain compliance with MN emission standards for total particulate matter (see Table 1 in Attachment A). Compliance with MN standards of performance is sufficient to keep the facility below the Title I major thresholds for PM.

In order to limit the facility PTE for PM₁₀ to less than 100 tons per year (TPY), the critical permit condition for Scenario 1 is the annual restriction on amounts and types of fuels and a reasonable level of performance for the electrostatic precipitator. For Scenario No. 2 (long-term scenario, the critical permit condition to limit the facility PTE for PM₁₀ to less than 100 TPY is the annual restriction on amounts and types of fuels burned in the boilers. Based on emission calculations with fuel restrictions, overall PM₁₀ emissions are significantly lower than PM emissions (see Table 2 above) and therefore, there is no need to impose unit-based emission unit limits for PM₁₀ or facility emissions cap for PM₁₀. The electrostatic precipitator is expected to control PM₁₀ to some extent. The Permittee assumes 90 percent control efficiency for PM and PM₁₀ calculations, but verification of this level of performance is not needed because:

- As long as the fuel restrictions are observed, and the operation of the coal boilers is in compliance with MN standards of performance the PM₁₀ emissions for the facility are expected add up to less than 100 TPY. This is because a control efficiency for PM₁₀ as low as 15 percent under Scenario 1 would suffice to maintain emissions under Title V thresholds.
- Testing methods for total particulate matter under MN standards of performance require inclusion of organic wet catch which is a portion of the PM₁₀ testing added to the filter catch. Therefore, showing compliance with MN rules for total particulate matter is indication of good performance for PM₁₀ in terms of control efficiency.
- The permit contains compliance assurance requirements in the permit such as appropriate periodic monitoring requirements for the electrostatic precipitator.
- The permit contains a requirement to conduct stack testing to verify the controlled emission factor for the boilers and this number will be used to report emissions for all regulatory purposes.

Notwithstanding the above, testing for PM₁₀ (which adds both the organic and inorganic wet catch to the filter mass) is required in the permit for the purpose of generating a site specific emission factor to be used in emission inventories and for any other compliance purpose in the future.

Group 002, Emergency Generators

EPA guidance allows the use of 500 hrs per year to define PTE of emergency generators. The record keeping requirement for hours of operation of GP002 units is required to document that the generators are indeed used only as emergency units only. This is in accordance with MPCA policy and guidance approved in Leads Minutes dated June 12, 2002.

Certain modifications are pre-authorized under GP002 provided that all emission limits are met and provided that annual emissions, including the contribution of insignificant activities, do not exceed 100 TPY of NO_x. The contribution of combustion and other related insignificant activities (i.e. contributors of PM₁₀, SO₂, CO and NO_x) was considered in order to ensure that the pre-authorized changes associated with the total facility cap, when combined with those insignificant activities, would not result in a limited PTE greater than 100 tpy for any of these pollutants. NO_x is the controlling pollutant from this group of emission units (see tables 16 and 17 in Appendix A). At the 90 tpy NO_x facility cap, there is an adequate buffer as it would take an almost doubling of NO_x insignificant activities (other than emergency generators) to reach the 100 tpy level.

State law requires all diesel fuel sold in Minnesota contain at least 2 percent biodiesel by June 30, 2005. Biodiesel fuel is recycled and processed vegetable oil and/or animal fat. Technical information available indicates that most diesel engines can burn fuel with up to 20 percent biodiesel without any modification. MPCA policy is to allow burning of fuels blended with biodiesel as long as the engine does not need to be modified. (Leads decision on 8-13-03). EPA tests show a small increase in NO_x as the percent biodiesel increases and larger decreases in PM, VOC and CO with the percent biodiesel. Therefore, the permit requires that the appropriate emission factors be used.

As the permit requires that the facility submit an appropriate permit application every five years if any of the pre-authorized construction has started by that time, the Permittee and the MPCA will need to review the impact of insignificant activities again at that time. The required application submittal is a means of keeping the permit current and, given that the facility does not anticipate frequent changes, is a reasonable means of keeping this as a non-expiring State permit.

Group 003 Northwest Experimental Station

The receiving capacity for the receiving grain elevator is 3, 500 bushels/hr (105 tons per hour). The Permittee states that there is a bottleneck in the grain feed rate which reduces this to 1500 bushels/hr. This bottleneck is based on the fact that the experimental station only has three trucks. Since this is not a design limitation for the system, PTE is calculated based on the capacity of the grain receiving elevator.

There is a grain drying process where grain is contained in bags and these are placed on racks in the dryer. This is not a traditional rack dryer since the grain is not subject to movement and thus no emissions are released from this process. Therefore, the grain dryers are not the type regulated under Minn. R. 70011.1005, subp.5 (B).

The grain milling/grinding operation is equipped with a cyclone separator with the dual purpose of material recovery and control of emissions. Based on the cyclone dimensions defined in Minn. R. 7011.0079 Subpart 1, it is classified as a “medium efficiency cyclone”. This is a fairly small emission unit, with an outlet diameter of only 6 inches and thus is not amenable for stack testing using reference methods. However, the Permittee submitted an efficiency evaluation based on the expected size distribution of the controlled material and based on this information, the cyclone is expected to perform well above the 80 percent control efficiency level required by MN rules. The permit also contains requirements to follow an operation and maintenance plan in accordance with manufacturer’s specifications.

The cracker mill is equipped with a control device, which is unlisted because it is an insignificant activity.

The Northwest Experimental Station is primarily a research and teaching facility. Although the installed receiving capacity is that of a country elevator, the annual throughput is less than 5000 tons. There is no history of complaints due to excessive fugitive emissions and thus, compliance demonstration with opacity limits will only be required if the MPCA deems it necessary based on inspections or complaints. However, the permit contains conditions requiring the Permittee to take action if excessive emissions are observed by operators.

3.1 Calculations of Potential to Emit

Emission calculations are included in Attachments 1 and 2 to this TSD. Emission calculations assumed AP-42 emission factors, estimated pollution control efficiencies, proposed fuel restrictions and other processing rate limitations. Attachment 1 includes calculation summaries prepared by MPCA staff to supplement and document the regulatory analysis for this facility. Attachment 2 is a corrected version of the calculation spreadsheet submitted as part of the permit application and other emission calculation explanations submitted as part of the application:

- Attachment 1, Tables 1 and 2 contain a summary of potential emissions from the boilers under the two operating scenarios authorized by this permit. These tables also contain a column to document a calculation check for compliance with MN standards of performance.
- Attachment 1, Table 3 and 4 contains a summary of calculations of the existing facility allowable emissions as previously permitted. This table shows the most relevant pollutants to control as a synthetic minor source.

- Attachment 1, Table 5 contains a summary of the existing facility actual emissions as reported in the 2002 emission inventory. This table shows a typical year of operation.
- Attachment 1, Table 6 contains a summary of calculations for the uncontrolled emissions from new emissions units being authorized by this permit. This table shows the most relevant pollutants to control and maintain the change as a non-major modification.
- Attachment 1, Table 7 and 8 contain a summary of calculations of the allowable emissions authorized for the facility under the two operating scenarios authorized by this permit. The emission estimates of particulate matter are conservative for the grain handling operations.
- Attachment 1, Table 9 contains calculations for the change in allowable emissions after removal of old boilers and installation of new gas boilers. There is not air emissions netting, this table only illustrates the benefits from the replacement of the coal boilers for gas boilers.
- Attachment 1, Table 10 contains a summary of calculations for the allowable emissions for new units being authorized by this permit. This table shows that the emissions from the new emission units authorized by this permit are below significant thresholds under any scenario.
- Attachment 1, Tables 11,12 and 13 contain calculations on allowable HAP emissions from the boilers under the two operating scenarios authorized by this permit.
- Attachment 1, Tables 14 and 15 contain calculations on allowable criteria and HAP emissions from the authorized emergency generators.
- Attachment 1, Tables 16 and 17 contain calculations on allowable criteria and HAP emissions from the pre-authorized generators under the two operating scenarios authorized by this permit. This calculation was necessary to evaluate the total allowable emissions authorized by this permit.
- Attachment 1, Table 18 contains a summary and calculations on allowable emissions from the coal handling facility.
- Attachment 1, Table 19 contains a summary and calculations on allowable emissions from the grain handling facilities.
- Attachment 1, Table 20 contains calculations on allowable emissions from the heaters.
- Attachment 1, Table 21 contains a summary of calculations on allowable emissions from Minn. R. 7007.1300, subp. 3 insignificant activities.

Air Quality Impact Analysis

As part of an ongoing permit rule making, Air Quality (AQ) staff ran screen dispersion models for several facilities, including the subject University of Minnesota (U of M) facility under currently proposed permitted operations. This was a very conservative modeling exercise. The initial screening for U of M showed problems with the 24-hr PM₁₀ and 1-hr SO₂ standards. Because of this, MPCA staff performed a more refined run to see if this could be resolved with relative ease. The results are such that the SO₂ issue was resolved but further modeling analysis is still needed to address this modeled non-compliance for the 24-hr PM₁₀ standard. In the latest screening modeling MPCA staff used the DISPERSE procedure to model the emissions from the coal and gas boilers, and used the SCREEN3 program to simulate the emissions from grain handling. MPCA staff used information in the permit application for the stack parameters and building dimensions. The detailed results can be found on Greg Pratt's public drive (H:\Public\Mid-flex\SUMMARYR-Crookston*.txt and H:\Public\Mid-flex\SCREEN-UofM Crookston grain handling.TXT). MPCA staff then incorporated the modeling results into a

spreadsheet for comparison with the standards (H:\Public\Mid-flex\MFRASS-UofM_Crookston.XLS). The results show that the estimated PM₁₀ concentrations are several times higher than the standard. For example, the 24-hour PM₁₀ standard is 150 ug/m³ and the estimated concentrations were 4.1 ug/m³ for the coal boilers, 7.1 ug/m³ for the gas boilers, and 2,000 ug/m³ for the grain handling. Thus, it is the grain handling that is creating a problem. Due to lack of proposed operating conditions for the grain operations, MPCA staff assumed very conservative operating conditions for this group. Attachment 3 includes a summary of results from the modeling calculations. Further analysis (e.g., further refined emissions calculations and/or modeling) is needed to resolve this issue. Proposed modeling protocol may build on the MPCA screening. After the refined analysis is done, the permit might require an amendment to incorporate emissions or process limitations based on the refined model inputs. We are assuming the emission factors for boiler No. 4 can be used for boilers No. 1 and No 2 unless it is otherwise demonstrated at a later time. Since these results represent very conservative estimates, at this point the permit does not contain restrictions on the increase emissions of PM₁₀ beyond permitted conditions.

3.2 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 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 feasibility of possible periodic monitoring methods; and
- The kind of monitoring found on similar units elsewhere.

Table 5 summarizes the periodic monitoring requirements for those emission units for which the monitoring required by the applicable requirement is nonexistent or inadequate.

Table 5. Periodic Monitoring

Emission Unit or Group	Requirement (basis)	Additional Monitoring	Discussion
FC, GP001, GP002, GP006	NO _x less than or equal to 90 TPY using a 12-month-rolling sum (limit to remain as a non-major source under Title I and Title V)	Recordkeeping: monthly records of fuel usage; monthly records of hours of operation for emergency generators; monthly calculations of emissions; records of implementation of operation and maintenance plan; records of pre-authorized changes for GP002.	Emission units are not operated continuously or at the same time. Fuel usage for boilers and heaters is metered continuously as well as the hours of operation for emergency generators. Records can be generated from monthly readings of meters for fuel usage and hours of operation. From monthly fuel and hours of operation records, calculations of emissions can be made with a better degree of accuracy. Because of all of these reasons, 12-month rolling limits are reasonable for this facility. Emissions of NO _x are dependent on proper operation of combustion sources and as such the permit requires evidence of implementation of an operation and maintenance plan.
GP001, EU001, EU002, EU004	Allowed fuels: Sub-bituminous coal and lignite. EU001 and EU002 are each allowed to burn up to 1000 TPY of sub-bituminous coal and 300 TPY of lignite on a 12-month rolling sum basis. EU004 is allowed to burn under Scenario 1 up to 4000 TPY of sub-bituminous coal and 1200 TPY of lignite on a 12-month rolling sum basis. EU004 is allowed to burn under Scenario 2 up to 5000 TPY of sub-bituminous coal and 1200 TPY of lignite on a 12-month rolling sum basis. (limits to remain as a non-major source under Title I and Title V)	Records of fuel usage based on monthly meter readings. Calculate 12-month rolling sum of fuel usage every month. Fuel usage report required on an annual basis. This requirement is needed to verify and document that the facility is meeting the fuel usage limitations for each solid fuel boiler.	Emission units are not operated continuously or at the same time. Fuel usage is metered continuously and records can be generated from monthly readings of meters for fuel usage with a better degree of accuracy. Because of all of these reasons, 12-month rolling limits are reasonable for this facility.

EU003 GP006,	<p>Allowed fuels: natural gas and propane.</p> <p>EU011 and EU012 combined are allowed to burn up to 1200000 gallons per year of propane on a 12-month rolling sum basis. (limit to remain as a non-major source under Title I and Title V)</p>	<p>Records of fuel usage based on monthly meter readings. Calculate 12-month rolling sum of fuel usage every month. This requirement expires for boilers No. 1 and 2 on the date the boilers are permanently dismantled and rendered non-operational.</p>	<p>Emission units are not operated continuously or at the same time. Fuel usage is metered continuously and records can be generated from monthly readings of meters for fuel usage with a better degree of accuracy. Because of all of these reasons, 12 month rolling limits are reasonable for this facility.</p>
GP001	<p>Sulfur content less than or equal to 0.34 % by weight for sub-bituminous coal; less than or equal to 1.2 % by weight for lignite. (limit to remain as a non-major source under Title I and Title V)</p>	<p>Records of fuel supplier certifications for every shipment of every fuel received</p>	<p>Fuel analysis is done on a routine basis from fuel supplier from more samples on large batches of fuel, and as such is expected to be more representative value of the quality of the fuel.</p>
GP002	<p>Sulfur content less than or equal to 0.5 lbs/MMBTU heat input for diesel. Minn. R. 7011.2300, subp 2</p>	<p>Records of fuel supplier certifications for every shipment of every fuel received</p>	<p>Fuel analysis is done on a routine basis from fuel supplier from more samples on large batches of fuel, and as such is expected to be more representative value of the quality of the fuel.</p>

GP001 CE001	<p>Boilers No. 1 and 2: total particulate matter: less than or equal to 0.6 million BTU's/hour heat input. Opacity: less than or equal to 20% except for one six-minute period per hour of not more than 60% opacity. Minn. R. 7011.0510 subp. 1-and 2</p> <p>Boiler No. 4 total particulate matter: less than or equal to 0.4 million BTU's/hour heat input. Opacity: less than or equal to 20% except for one six-minute period per hour of not more than 60% opacity. Minn. R. 7011.0515 subp. 1-and 2</p>	<p>Performance test within 365 days of the issuance of this permit while EU004 is in operation. If construction of boilers Nos. 5 and 6 does not begin within 2 years of permit issuance, boilers No. 1 and 2 need to be tested. Testing frequency plan is required. For the pollution control equipment, Permittee is required to keep records of:</p> <ul style="list-style-type: none"> - the identity and number of electrostatic precipitator sections or SCA in service every day of operation. - quarterly inspections - annual monitoring equipment calibration. - corrective actions <p>Operations and Maintenance (O & M) Plan shall include records of recommended range of operation for :</p> <ul style="list-style-type: none"> - secondary voltage - secondary amperes - spark rate. - rapping rate 	<p>The coal boilers and electrostatic precipitator has not been tested since 1985 and thus a stack test is justified. Testing required to measure PM, PM₁₀ and opacity. Testing shall require fuel analysis. PM₁₀ test results shall be used to generate a facility specific emission factor. Testing frequency plan is required because this is a non-expiring permit and the operation of the solid fuel boiler(s) needs to be evaluated on a periodic basis based on most recent performance test. Testing required at other the times required by an applicable requirement or compliance document and at additional times if the commissioner requests a performance test. The compliance assurance requirements are appropriate periodic monitoring requirements for the electrostatic precipitator. The Permittee reports that the system has analog meters for primary voltage and amperes and continuous monitors for secondary voltage, amperes, spark and rapping rate and number of active fields or sections. All this conforms with the manufacturers recommendations to monitor performance of the unit.</p>
GP003	<p>Opacity less than or equal to 5% from control equipment Minn. R. 7011.1005 subp. 3(D) Pollution control efficiency greater than or equal to 80%. Minn. R. 7011.1005 subp. 3(E)</p>	<p>Records of quarterly inspections of pollution control equipment</p>	<p>These compliance assurance requirements are appropriate periodic monitoring requirements for the small cyclones installed to control emissions from this group.</p>

3.3 Comments Received

This permit is for a federally enforceable state operating permit and as such there is no 45-day EPA review. The permit was sent to USEPA for review and comment during the regular public comment period.

Public Notice Period: November 16, 2004 – December 15, 2004

EPA Review Period: concurrent with public notice period.

No comments were received from the public during the public notice period. We received a note from the LacVieux Desert Band of Lake Superior indicating they have no interest in commenting on this permit (Attachment 4).

Comments were not received from EPA during their review period. Changes to the permit were not made for any other reason.

4. Conclusion

Based on the information provided by the University of Minnesota, the MPCA has reasonable assurance that the proposed operation of the emission facility, as described in the Air Emission Permit No. 11900016-001, and this TSD, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

Staff Members on Permit Team: Carolina Espejel-Schutt, Cary Hernandez and Sarah Kilgriff.

Peer Review: Peggy Bartz.

Attachments:

Attachment 1. Calculation Summaries

Attachment 2. Revised Permit Application Calculations

Attachment 3. Summary of Modeling Results

Attachment 4. Public Notice with note from LacVieux Desert Band of Lake Superior

Table 19
University of Minnesota Crookston
PTE Calculations for Grain Handling based on Design Capacity

Emission Unit ID	Rated capacity BPH	Worst case: weat, lb/bushel grains	Worst Case Grain rate ton/hr	Worst case PM Emission Factor lb/Ton	PM PTE lb/hr max.	Unlimited PM PTE TPY	Worst case PM-10 Emission Factor lb/Ton	PM-10 PTE lb/hr max.	Unlimited PM-10 PTE TPY	Other Process Limits, control %	Limited PTE due to trucks, TPY PM
EU008 Grain Grinding			4	1.04	4.16	18.2208	0.26	1.04	4.5552	"(1)	18.2
FS004 Grain receiving	3500	60	105	0.18	18.9	82.782	0.059	6.195	27.1341	45	35.478
* Grain handling				0.081		0.07	0.039		0.04		
FS006 Grain load out	3500	60	105	0.086	9.03	39.5514	0.029	3.045	13.3371	45	16.9506
* Grain drying- column	1200	60	36	grain is dried inside of bags							
* Silos 2,3,9,10,11				0.017			0.004			1.25	0.0001125
* Silos 1, 4, 5, 6, 7, 8, 12, 13, 14			air tight with breather bags								
* Cracker mill				0.77		0.71	0.38		0.35	80%	0.142
* Grain cleaning				0.375		0.345	0.094		0.09		
Total Insignificant						1.125113			0.480037		
Total					415.2561	141.6792		10.28	45.5064		71.1857125

Note: Permittee states that number of trucks limits material received, since the capacity of the equipment to receive grain is larger than the truck capacity, unlimited PTE calculations are based on receiving capacity .
MN Standards of performance for bulk agricultural facilities require operation of control equipment at 80% control efficiency. Cyclone is integral part of the process and is used for the dual purpose of material recovery and control of emissions(1)
For insignificant activities in this group is not necessary to add operating conditions to reflect how emissions were calculated

Limited PTE due to trucks, TPY PM-10
4.6
11.6289
5.7159
3.688E-05
0.07
22.144837

n the truck

is integral

Emission Unit ID	Stack ID Number	Rated Heat Input MMBH	Fuel Type	Limited Fuel Usage (tons or gallons)	Actual Fuel Usage tons	Fuel Consumption Rating (tons/hr) or (gal/hr)								
							AS	Cd	Cr	HAPs Emission Cobalt	Factors Lead	MN	Ni	HCOH
Heating Plant Boilers							lb/10 ¹² btu or lb/1000gal							
EU 001	1	10	Sub-bituminous Coal	1000	0	0.532	542	43	1570		507			221
EU 001	1	10	Lignite Coal	300	0	0.685	1100	47	1880				1160	
EU 001	1	10	Used Oil	25	0	72.73	0.11	0.0093	0.02	0.00021		0.068	0.011	
EU 002	1	10	Sub-bituminous Coal	1000	0	0.532	542	43	1570		507			221
EU 002	1	10	Lignite Coal	300	0	0.685	1100	47	1880				1160	
EU 002	1	10	Used Oil	25	0	72.73	0.11	0.0093	0.02	0.00021		0.068	0.011	
EU 004	1	28	Sub-bituminous Coal	4000	3126	1.489	542	43	1570		507			221
EU 004	1	28	Lignite Coal	1200	0	1.918	1100	47	1880				1160	
EU 004	1	28	Used Oil	200	0	203.64	0.11	0.0093	0.02	0.00021		0.068	0.011	
Total														

Potential Emissions

Coal: Rated Heat Input x Emission Factor x 8760 hr/day / 2000 lb/ton

$$10 \text{ MMBtu/hr} \times 542 \text{ lb/10}^{12} \text{ Btu} \times 8760 \text{ hr/yr} / 2000 \text{ lb/ton} = 0.0237 \text{ tpy}$$

Oil: Fuel Consumption Rate x Emission Factor x 8760 hr/year / 2000 lb/ton

$$72.7 \text{ gal/hr} \times 0.11 \text{ lb/1000gal} \times 8760 \text{ hr/year} / 2000 \text{ lb/ton} = 0.035 \text{ tpy}$$

Emission Rate

Coal : Rated Heat Input x Emission Factor

$$10 \text{ MM BTU/hr} \times 542 \text{ lb/10}^{12} \text{ Btu} = 0.0054 \text{ lb/hr}$$

Oil: Fuel Consumption Rate x Emission Factor

$$72.7 \text{ gal/hr} \times 0.11 \text{ lb/1000gal} = 0.0080 \text{ lb/hr}$$

Limited Emission Rate

Coal: Limited Fuel Usage x Heat Value x Emission Factor / 2000 lb/ton

$$1000 \text{ ton/yr} \times 542 \text{ lb/10}^{12} \times 18,800,000 \text{ Btu/ton} / 2000 \text{ lb/ton} = 0.0051 \text{ ton/yr}$$

Oil: Limited Fuel Usage x Emission Factor / 2000 lb/ton

$$25 \text{ gal/year} \times 0.11 \text{ lb/1000gal} / 2000 \text{ lb/ton} = 0.00000014 \text{ tpy}$$

Actual Emission Rate

Coal: Actual Fuel Usage x Heat Value x Emission Factor/ 2000 lb/ton

$$0 \text{ tons/yr} \times 18,800,000 \text{ Btu/ ton} \times 542 \text{ lb/ 10}^{12} \text{ Btu} / 2000 \text{ lb/ton} = 0 \text{ tpy}$$

Oil: Actual Fuel Usage x Emission Factor / 2000 lb/ton

$$0 \text{ gal/yr} \times 0.11 \text{ lb/1000gal} / 2000 \text{ lb/ton} = 0 \text{ tpy}$$

Emission Unit ID	Stack ID Number	Rated Heat Input MMBH	Fuel Type	Limited Fuel Usage (tons or gallons)	Actual Fuel Usage tons	Fuel Consumption Rating (tons/hr)or (gal/hr)								
							AS	Cd	Cr	Potential HAPs Cobalt	Emissions Lead	MN	Ni	HCOH
Heating Plant Boilers							tons per year							
EU 001	1	10	Sub-bituminous Coal	1000	0	0.532	0.0237	0.0019	0.0688		0.0222			0.0097
EU 001	1	10	Lignite Coal	300	0	0.685	0.0482	0.0021	0.0823				0.0508	
EU 001	1	10	Used Oil	25	0	72.73	0.0350	0.0030	0.0064	0.0001		0.0217	0.0035	
EU 002	1	10	Sub-bituminous Coal	1000	0	0.532	0.0237	0.0019	0.0688		0.0222			0.0097
EU 002	1	10	Lignite Coal	300	0	0.685	0.0482	0.0021	0.0823				0.0508	
EU 002	1	10	Used Oil	25	0	72.73	0.0000	0.0030	0.0000	0.0001		0.0217	0.0035	
EU 004	1	28	Sub-bituminous Coal	4000	3126	1.489	0.0665	0.0053	0.1925		0.0622			0.0271
EU 004	1	28	Lignite Coal	1200	0	1.918	0.1349	0.0058	0.2306				0.1423	
EU 004	1	28	Used Oil	200	0	203.64	0.0981	0.0083	0.0178	0.0002		0.0607	0.0098	
Total							0.4784	0.0331	0.7495	0.0003	0.1066	0.1040	0.2607	0.0465

Potential Emissions

Coal: Rated Heat Input x Emission Factor x 8760 hr/day / 2000 lb/ton
 $10 \text{ MMBtu/hr} \times 542 \text{ lb/10}^{12} \text{ Btu} \times 8760 \text{ hr/yr} / 2000 \text{ lb/ton} = 0.0237 \text{ tpy}$

Oil: Fuel Consumption Rate x Emission Factor x 8760 hr/year / 2000 lb/ton
 $72.7 \text{ gal/hr} \times 0.11 \text{ lb/1000gal} \times 8760 \text{ hr/year} / 2000 \text{ lb/ton} = 0.035 \text{ tpy}$

Emission Rate

Coal : Rated Heat Input x Emission Factor
 $10 \text{ MM BTU/hr} \times 542 \text{ lb/10}^{12} \text{ Btu} = 0.0054 \text{ lb/hr}$

Oil: Fuel Consumption Rate x Emission Factor
 $72.7 \text{ gal/hr} \times 0.11 \text{ lb/1000gal} = 0.0080 \text{ lb/hr}$

Limited Emission Rate

Coal: Limited Fuel Usage x Heat Value x Emission Factor / 2000 lb/ton
 $1000 \text{ ton/yr} \times 542 \text{ lb/10}^{12} \times 18,800,000 \text{ Btu/ton} / 2000 \text{ lb/ton} = 0.0051 \text{ ton/yr}$

Oil: Limited Fuel Usage x Emission Factor / 2000 lb/ton
 $25 \text{ gal/year} \times 0.11 \text{ lb/1000gal} / 2000 \text{ lb/yr} = 0.00000014 \text{ tpy}$

Actual Emission Rate

Coal: Actual Fuel Usage x Heat Value x Emission Factor/ 2000 lb/ton
 $0 \text{ tons/yr} \times 18,800,000 \text{ Btu/ ton} \times 542 \text{ lb/ } 10^{12} \text{ Btu} / 2000 \text{ lb/ton} = 0 \text{ tpy}$

Oil: Actual Fuel Usage x Emission Factor / 2000 lb/ton
 $0 \text{ gal/yr} \times 0.11 \text{ lb/1000gal} / 2000 \text{ lb/ton} = 0 \text{ tpy}$

0.9568 0.0663 1.4991 0.0006 0.2132 0.2079 ##### 0.0929
3.5583

Emission Unit ID	Stack ID Number	Rated Heat Input MMBH	Fuel Type	Limited Fuel Usage (tons or gallons)	Actual Fuel Usage tons	Fuel Consumption Rating (tons/hr)or (gal/hr)								
							AS	Cd	Cr	HAPs Emissions Cobalt	Rate Lead	MN	Ni	HCOH
Heating Plant Boilers							pounds per hr							
EU 001	1	10	Sub-bituminous Coal	1000	0	0.532	0.0054	0.0004	0.0157		0.0051			0.0022
EU 001	1	10	Lignite Coal	300	0	0.685	0.0110	0.0005	0.0188				0.0116	
EU 001	1	10	Used Oil	25	0	72.73	0.0080	0.0007	0.0015	0.0000		0.0049	0.0008	
EU 002	1	10	Sub-bituminous Coal	1000	0	0.532	0.0054	0.0004	0.0157		0.00507			0.0022
EU 002	1	10	Lignite Coal	300	0	0.685	0.0110	0.0005	0.0188				0.0116	
EU 002	1	10	Used Oil	25	0	72.73	0.0080	0.0007	0.0015	0.0000		0.0049	0.0008	
EU 004	1	28	Sub-bituminous Coal	4000	3126	1.489	0.0152	0.0012	0.0440		0.0142			0.0062
EU 004	1	28	Lignite Coal	1200	0	1.918	0.0308	0.0013	0.0526				0.0325	
EU 004	1	28	Used Oil	200	0	203.64	0.0224	0.0019	0.0041	0.0000		0.0138	0.0022	
Total							0.1172	0.0076	0.1726	0.0001	0.0243	0.0237	0.0595	0.0106

Potential Emissions

Coal: Rated Heat Input x Emission Factor x 8760 hr/day / 2000 lb/ton

$$10 \text{ MMBtu/hr} \times 542 \text{ lb}/10^{12} \text{ Btu} \times 8760 \text{ hr/yr} / 2000 \text{ lb/ton} = 0.0237 \text{ tpy}$$

Oil: Fuel Consumption Rate x Emission Factor x 8760 hr/year / 2000 lb/ton

$$72.7 \text{ gal/hr} \times 0.11 \text{ lb}/1000 \text{ gal} \times 8760 \text{ hr/year} / 2000 \text{ lb/ton} = 0.035 \text{ tpy}$$

Emission Rate

Coal : Rated Heat Input x Emission Factor

$$10 \text{ MM BTU/hr} \times 542 \text{ lb}/10^{12} \text{ Btu} = 0.0054 \text{ lb/hr}$$

Oil: Fuel Consumption Rate x Emission Factor

$$72.7 \text{ gal/hr} \times 0.11 \text{ lb}/1000 \text{ gal} = 0.0080 \text{ lb/hr}$$

Limited Emission Rate

Coal: Limited Fuel Usage x Heat Value x Emission Factor / 2000 lb/ton

$$1000 \text{ ton/yr} \times 542 \text{ lb}/10^{12} \times 18,800,000 \text{ Btu/ton} / 2000 \text{ lb/ton} = 0.0051 \text{ ton/yr}$$

Oil: Limited Fuel Usage x Emission Factor / 2000 lb/ton

$$25 \text{ gal/year} \times 0.11 \text{ lb}/1000 \text{ gal} / 2000 \text{ lb/ton} = 0.00000014 \text{ tpy}$$

Actual Emission Rate

Coal: Actual Fuel Usage x Heat Value x Emission Factor/ 2000 lb/ton

$$0 \text{ tons/yr} \times 18,800,000 \text{ Btu/ ton} \times 542 \text{ lb}/ 10^{12} \text{ Btu} / 2000 \text{ lb/ton} = 0 \text{ tpy}$$

Oil: Actual Fuel Usage x Emission Factor / 2000 lb/ton

$$0 \text{ gal/yr} \times 0.11 \text{ lb}/1000 \text{ gal} / 2000 \text{ lb/ton} = 0 \text{ tpy}$$

Emission Unit ID	Stack ID Number	Rated Heat Input MMBH	Fuel Type	Limited Fuel Usage (tons or gallons)	Actual Fuel Usage tons	Fuel Consumption Rating (tons/hr) or (gal/hr)								
							AS	HAPs Cd	Limited Cr	Emissions Cobalt	Lead	MN	Ni	HCOH
Heating Plant Boilers							ton per year							
EU 001	1	10	Sub-bituminous Coal	1000	0	0.532	0.0051	0.0004	0.0148		0.004766			0.0021
EU 001	1	10	Lignite Coal	300	0	0.685	0.0024	0.0001	0.0041				0.0025	
EU 001	1	10	Used Oil	25	0	72.73	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	
EU 002	1	10	Sub-bituminous Coal	1000	0	0.532	0.0051	0.0004	0.0148		0.0048			0.0021
EU 002	1	10	Lignite Coal	300	0	0.685	0.0024	0.0001	0.0041				0.0025	
EU 002	1	10	Used Oil	25	0	72.73	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	
EU 004	1	28	Sub-bituminous Coal	4000	3126	1.489	0.0204	0.0016	0.0590		0.0191			0.0083
EU 004	1	28	Lignite Coal	1200	0	1.918	0.0096	0.0004	0.0165				0.0102	
EU 004	1	28	Used Oil	200	0	203.64	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	
Total							0.0450	0.0030	0.1133	0.0000	0.0286	0.0000	0.0152	0.0125

Potential Emissions

Coal: Rated Heat Input x Emission Factor x 8760 hr/day / 2000 lb/ton

0.0901 0.0061 0.2265 0.0000 0.0572 0.0000 0.0305 0.0249

10 MMBtu/hr x 542 lb/10¹² Btu x 8760 hr/yr / 2000 lb/ton = 0.0237 tpy

Oil: Fuel Consumption Rate x Emission Factor x 8760 hr/year / 2000 lb/ton

0.4353

72.7 gal/hr x 0.11lb/1000gal x 8760 hr/year / 2000 lb/ton = 0.035 tpy

Emission Rate

Coal : Rated Heat Input x Emission Factor

10 MM BTU/hr x 542 lb/10¹² Btu = 0.0054 lb/hr

Oil: Fuel Consumption Rate x Emission Factor

72.7 gal/hr x 0.11lb/1000gal = 0.0080 lb/hr

Limited Emission Rate

Coal: Limited Fuel Usage x Heat Value x Emission Factor / 2000 lb/ton

1000 ton/yr x 542 lb/10¹² x 18,800,000 Btu/ton / 2000 lb/ton = 0.0051ton/yr

Oil: Limited Fuel Usage x Emission Factor / 2000 lb/ton

25 gal/year x 0.11 lb/1000gal / 2000 lb/yr = 0.00000014 tpy

Actual Emission Rate

Coal: Actual Fuel Usage x Heat Value x Emission Factor/ 2000 lb/ton

0 tons/yr x 18,800,000 Btu/ ton x 542 lb/ 10¹² Btu / 2000 lb/ton = 0 tpy

Oil: Actual Fuel Usage x Emission Factor / 2000 lb/ton

0 gal/yr x 0.11 lb/1000gal / 2000 lb/ton = 0 tpy

Emission Unit ID	Stack ID Number	Rated Heat Input MMBH	Fuel Type	Limited Fuel Usage (tons or gallons)	Actual Fuel Usage tons	Fuel Consumption Rating (tons/hr)or (gal/hr)								
							HAPs AS	Actual Cd	Emissions Cr	Rate Cobalt	Lead	MN	Ni	HCOH
Heating Plant Boilers							tons per year							
EU 001	1	10	Sub-bituminous Coal	1000	0	0.532	0	0	0		0			0
EU 001	1	10	Lignite Coal	300	0	0.685	0	0	0				0	
EU 001	1	10	Used Oil	25	0	72.73	0	0	0	0		0	0	
EU 002	1	10	Sub-bituminous Coal	1000	0	0.532	0	0	0		0			0
EU 002	1	10	Lignite Coal	300	0	0.685	0	0	0				0	
EU 002	1	10	Used Oil	25	0	72.73	0	0	0	0		0	0	
EU 004	1	28	Sub-bituminous Coal	4000	3126	1.489	0.0159	0.0013	0.0461		0.0149			0.0065
EU 004	1	28	Lignite Coal	1200	0	1.918	0	0	0				0	
EU 004	1	28	Used Oil	200	0	203.64	0	0	0	0		0	0	
Total							0.0159	0.0013	0.0461	0.0000	0.0149	0.0000	0.0000	0.0065

Potential Emissions

Coal: Rated Heat Input x Emission Factor x 8760 hr/day / 2000 lb/ton

$$10 \text{ MMBtu/hr} \times 542 \text{ lb/10}^{12} \text{ Btu} \times 8760 \text{ hr/yr} / 2000 \text{ lb/ton} = 0.0237 \text{ tpy}$$

Oil: Fuel Consumption Rate x Emission Factor x 8760 hr/year / 2000 lb/ton

$$72.7 \text{ gal/hr} \times 0.11 \text{ lb/1000gal} \times 8760 \text{ hr/year} / 2000 \text{ lb/ton} = 0.035 \text{ tpy}$$

Emission Rate

Coal : Rated Heat Input x Emission Factor

$$10 \text{ MM BTU/hr} \times 542 \text{ lb/10}^{12} \text{ Btu} = 0.0054 \text{ lb/hr}$$

Oil: Fuel Consumption Rate x Emission Factor

$$72.7 \text{ gal/hr} \times 0.11 \text{ lb/1000gal} = 0.0080 \text{ lb/hr}$$

Limited Emission Rate

Coal: Limited Fuel Usage x Heat Value x Emission Factor / 2000 lb/ton

$$1000 \text{ ton/yr} \times 542 \text{ lb/10}^{12} \times 18,800,000 \text{ Btu/ton} / 2000 \text{ lb/ton} = 0.0051 \text{ ton/yr}$$

Oil: Limited Fuel Usage x Emission Factor / 2000 lb/ton

$$25 \text{ gal/year} \times 0.11 \text{ lb/1000gal} / 2000 \text{ lb/ton} = 0.00000014 \text{ tpy}$$

Actual Emission Rate

Coal: Actual Fuel Usage x Heat Value x Emission Factor/ 2000 lb/ton

$$0 \text{ tons/yr} \times 18,800,000 \text{ Btu/ ton} \times 542 \text{ lb/ 10}^{12} \text{ Btu} / 2000 \text{ lb/ton} = 0 \text{ tpy}$$

Oil: Actual Fuel Usage x Emission Factor / 2000 lb/ton

$$0 \text{ gal/yr} \times 0.11 \text{ lb/1000gal} / 2000 \text{ lb/ton} = 0 \text{ tpy}$$

Inputs may be made in yellow cells

RASS version nui Screening Date:

AQ Facility ID No.:

AQ File No.:

Facility Name:

Facility Location:

User Title:

Type of emissions (e.g., PTE/Future Actual)

4/9/2004
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Crookston

CAS # or MPCA #	Chemical Name	HAP	VOC	Total Annual Emissions	Stack(s)#1		Stack(s)#2		Stack(s)#3		Stack(s)#4		Stack(s)#5
				(tpy)	Hourly Emissions (lb/hr)	Annual Emissions (tpy)	Hourly Emissions (lb/hr)	Annual Emissions (tpy)	Hourly Emissions (lb/hr)	Annual Emissions (tpy)	Hourly Emissions (lb/hr)	Annual Emissions (tpy)	Hourly Emissions (lb/hr)
SO2	SO2	NO	NO	89.965200	20.4	89.352	0.14	0.6132					
PM10	PM10	NO	NO	23.602000	3	4.23	0.41	2.29	3.9	17.082			
PM2.5	PM2.5	NO	NO										
NOx	NOx	NO	NO	54.130000		37.73		16.4					
CO	CO	NO	NO										
Pb	Pb	NO	NO										
VOCs	VOCs	NO	NO										
Total HAPs	Total HAPs	NO	NO										

coal boilers

gas boilers

grain handling

generators
not included as these are true emergency generators

ic(s)#5
Annual Emissions (tpy)

ergency