DEQ
Montana Department
of Environmental Quality

January 22, 2015

Abbie Krebsbach
Environmental Director
Montana-Dakota Utilities Co.
400 North Fourth Street
Bismarck, ND 58501

Dear Ms. Krebsbach:

Montana Air Quality Permit #0691-02 is deemed final as of January 22, 2015, by the Department of Environmental Quality (Department). This permit is for a tangential coal-fired boiler capable of burning coal or natural gas and associated equipment for generation of electricity. All conditions of the Department's Decision remain the same. Enclosed is a copy of your permit with the final date indicated.

For the Department,

Julie A. Merkel
Air Permitting Supervisor
Air Resources Management Bureau
(406) 444-3626

Deanne Fischer, P.E.
Environmental Engineer
Air Resources Management Bureau
(406) 444-3403

JM:DF
Enclosure

Montana Department of Environmental Quality
Permitting and Compliance Division

Montana Air Quality Permit #0691-02

Montana-Dakota Utilities Co.
Lewis & Clark Station
400 N 4th Street
Bismarck, ND 58501

January 22, 2015

MONTANA AIR QUALITY PERMIT

Issued To: Montana-Dakota Utilities Co.
Lewis & Clark Station
400 N 4th Street
Bismarck, ND 58501

MAQP: #0691-02
Application Complete: 12/05/2014
Preliminary Determination Issued: 12/16/2014
Department's Decision Issued: 01/06/2015
Permit Final: 01/22/2015
AFS #:083-0003

A Montana Air Quality Permit (MAQP), with conditions, is hereby granted to Montana-Dakota Utilities Co. (Montana-Dakota), pursuant to Sections 75-2-204 and 211 of the Montana Code Annotated (MCA), as amended, and Administrative Rules of Montana (ARM) 17.8.740, *et seq*., as amended, for the following:

SECTION I: Permitted Facilities

A. Plant Location

The Montana-Dakota facility is located in the SW 1/4 of Section 9, Township 22 N, Range 59 E in Richland County, Montana. A list of the permitted equipment is located in Section I.A of the permit analysis.

B. Current Permit Action

On November 7, 2014, the Department of Environmental Quality (Department) received an application to modify Montana-Dakota's air quality permit MAQP#0691-01 to construct, operate and maintain two 20V34SG Wärtsilä (or W20V34SG) natural gas RICE generator sets, an indirect fired fuel heater (gas line heater) and associated building heating, ventilating and air condition (HVAC) units for the purpose of generating electricity at the Lewis & Clark Station.

SECTION II: Conditions and Limitations

A. Emission Limitations

1. Montana-Dakota shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any sources installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.304).

2. Montana-Dakota shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any sources installed on or before November 23, 1968, that exhibit an opacity of 40% or greater averaged over 6 consecutive minutes (ARM 17.8.304).

3. Montana-Dakota shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter (ARM 17.8.308).

4. Montana-Dakota shall treat all unpaved portions of the haul roads, access roads, parking lots, or general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the reasonable precautions limitation in Section II.A.4 (ARM 17.8.749)

5. Montana-Dakota shall limit mercury emissions from Unit 1 to an emission rate equal to or less than 1.5 pounds mercury per trillion British thermal units (lb/TBtu), calculated as a rolling 12-month average (ARM 17.8.771).

6. Montana-Dakota shall install and operate an oxidizing agent injection (OAI) system and an activated carbon injection (ACI) system to achieve compliance with the mercury emissions limit in II.A.5. (ARM 17.8.771).

7. Montana-Dakota shall comply with all applicable standards and limitations, and the applicable operating, reporting, recordkeeping, and notification requirements contained in 40 CFR *Part 75 Continuous Emission Monitoring* (ARM 17.8.771).

8. Montana-Dakota shall not operate more than two 20V34SG Wärtsilä (Wärtsilä) natural gas RICE generator sets at any given time at the Lewis & Clark Station. Each of the engines shall be a of a lean burn four-stroke design, with a nominal gross output of approximately 9.3 megawatts (MW) (ARM 17.8.749).

9. Montana-Dakota shall limit gas consumption during normal operation of the two Wärtsilä natural gas RICE to a maximum of 530.8 MMscf per rolling 12-month period combined (ARM 17.8.752).

10. Emissions from the Wärtsilä RICE generator sets shall be controlled with a selective catalytic reduction (SCR) system using urea as the reaction agent, and an oxidation catalyst capable of maintaining the required emission limits in Sections II.A.11, II.A.12, II.A.13, and, II.A.15 during normal operation. (ARM 17.8.752).

11. Montana-Dakota shall limit Nitrogen Oxides (NOx) emissions from each of the Wärtsilä natural gas RICE generator sets to an emissions rate equal to or less than 2.6 lb/hr during normal operation (ARM 17.8.752).

12. Montana-Dakota shall limit carbon monoxide (CO) emissions from each of the Wärtsilä natural gas RICE generator sets to an emissions rate equal to or less than 2.4 lb/hr during normal operation (ARM 17.8.752).

13. Montana-Dakota shall limit volatile organic compounds (VOC) emissions from each of the Wärtsilä natural gas RICE generator sets to an emissions rate equal to or less than 7.6 lb/hr during normal operation (ARM 17.8.752).

14. Montana-Dakota shall limit sulfur dioxide (SO_2) emissions from each of the Wärtsilä natural gas RICE generator sets to an emissions rate equal to or less than 0.37 lb/hr during normal operation (ARM 17.8.752).

15. Montana-Dakota shall limit particulate matter (PM/PM10/PM2.5) emissions from each of the Wärtsilä natural gas RICE generator sets to an emissions rate equal to or less than 2.27 lb/hr during normal operation (ARM 17.8.752).

16. Montana-Dakota shall limit the total start-up operation[1] (cold, warm and hot) of the two Wärtsilä natural gas RICE to a maximum of 500 hours per rolling 12-month period combined (ARM 17.8.752).

17. Montana-Dakota shall operate a natural gas line heating unit and natural gas HVAC units with a maximum combined heat input not to exceed 4.2 MMBtu/hr (ARM 17.8.749).

18. Montana-Dakota shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements contained in 40 CFR 60, Subpart JJJJ, *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines* and 40 CFR 63, Subpart ZZZZ, *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*, for any applicable natural gas fueled engine (ARM 17.8.340, 40 CFR 60, Subpart JJJJ, ARM 17.8.342, and 40 CFR 63, Subpart ZZZZ).

B. Testing Requirements

1. Enforcement of Section II.A.5, where applicable, shall be determined by utilizing data taken from a Mercury Emission Monitoring System (MEMS). The MEMS shall be comprised of equipment as required in 40 CFR 75.81(a) and defined in 40 CFR 72.2. The above does not relieve Montana-Dakota from meeting any applicable requirements of 40 CFR Part 75. Testing requirements shall be as specified in 40 CFR Part 75, Section II.B, and II.D of MAQP #0691-02 (ARM 17.8.771).

2. The two Wärtsilä natural gas RICE generator sets shall initially be tested for NO_x, CO, and VOC concurrently, and PM within 180 days of the initial start-up date of the generator engine, and the results submitted to the Department in order to demonstrate compliance with the emission limitations contained in Sections II.A.11, II.A.12, and, II.A.13 during normal operation. (ARM 17.8.105, ARM 17.8.749, and ARM 17.8.752).

3. After the initial source test, Montana-Dakota shall test each Wärtsilä natural gas RICE generator set for NO_x, CO and VOC concurrently, every 8,760 hours of operation or 3 years, whichever comes first or according to another testing/monitoring schedule as may be approved by the Department (ARM 17.8.105, ARM 17.8.340, ARM 17.8.749, and ARM 17.8.752).

4. All compliance source tests shall conform to the requirements of the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

5. The Department may require further testing (ARM 17.8.105).

[1] See Attachment 1 for definition of the term startup operation and clarification of when the limitation and its associated recordkeeping requirements apply.

C. Operational Reporting Requirements

1. Montana-Dakota shall supply the Department with annual production information for all emission points, as required by the Department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in the emission inventory contained in the permit analysis.

   Production information shall be gathered on a calendar-year basis and submitted to the Department by the date required in the emission inventory request. Information shall be in the units required by the Department. This information may be used to calculate operating fees, based on actual emissions from the facility, and/or to verify compliance with permit limitations (ARM 17.8.505).

2. Montana-Dakota shall notify the Department of any construction or improvement project conducted, pursuant to ARM 17.8.745, that would include *the addition of a new emissions unit,* change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation. The notice must be submitted to the Department, in writing, 10 days prior to startup or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.745(l)(d) (ARM 17.8.745).

3. Montana-Dakota shall report to the Department within 30 days after the end of each calendar quarter, as described in Attachment 2 (ARM 17.8.749):

   a. The monthly average lb/TBtu mercury emission rate, for each month of the quarter;

   b. The 12-month rolling average lb/TBtu emission rate for each month of the reporting quarter; and

   c. Number of operating hours that the MEMS was unavailable or not operating within quality assurance limits (monitor downtime).

4. The first quarterly report must be received by the Department by April 30, 2010, but shall not include 12-month rolling averages. The first quarterly report to include 12-month rolling averages must be received by the Department by January 30, 2011.

5. Montana-Dakota shall document, by month, the gas consumption during normal operation of the two Wärtsilä natural gas RICE collected in the data acquisition system (DAS). By the 25th day of each month, Montana-Dakota shall total the hours of operation for the natural gas RICE for the previous month. The monthly information will be used to demonstrate compliance with the rolling 12-month limitation in Section II.A.9. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749).

6. Montana-Dakota shall document, by month the hours of start-up operations (cold, warm and hot) of the two Wärtsilä natural gas RICE collected in the DAS. By the 25th day of each month, Montana-Dakota shall total the hours of start-up operation for the natural gas RICE for the previous month. The monthly information will be used to demonstrate compliance with the rolling 12-month limitation in Section II.A.15. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749).

7. All records compiled in accordance with this permit must be maintained by Montana-Dakota as a permanent business record for at least 5 years following the date of the measurement, must be available at the plant site for inspection by the Department, and must be submitted to the Department upon request (ARM 17.8.749).

D. Mercury Emissions Monitoring Systems

A MEMS shall be installed, certified, and operating on the Unit 1 stack outlet on or before January 1, 2010. Said monitor shall comply with the applicable provisions of 40 CFR Part 75. The monitors shall also conform with requirements included in Attachment 2 (ARM 17.8.771).

E. Notification

Montana-Dakota shall provide the Department with written notification of the following dates within the specified time periods (ARM 17.8.749):

1. Beginning actual construction of the RICE and associated equipment within 30 days after actual construction has begun; and

2. Actual start-up date of each Wärtsilä natural gas RICE generator set within 15 days after the actual start-up of the generating unit

SECTION III: General Conditions

A. Inspection – Montana-Dakota shall allow the Department's representatives access to the source at all reasonable times for the purpose of making inspections or surveys, collecting samples, obtaining data, auditing any monitoring equipment (continuous emissions monitoring system (CEMS), continuous emissions rate monitoring system (CERMS), or Mercury emissions monitoring system (MEMS)) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.

B. Waiver – The permit and the terms, conditions, and matters stated herein shall be deemed accepted if Montana-Dakota fails to appeal as indicated below.

C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving Montana-Dakota of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq*. (ARM 17.8.756).

D. Enforcement – Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties, or other enforcement action as specified in Section 75-2-401, *et seq*., MCA.

E. Appeals – Any person or persons jointly or severally adversely affected by the Department's decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefor, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The filing of a request for a hearing does not stay the Department's decision, unless the Board issues a stay upon receipt of a petition and a finding that a stay is appropriate under Section 75-2-211(11)(b), MCA. The issuance of a stay on a permit by the Board postpones the effective date of the Department's decision until conclusion of the hearing and issuance of a final decision by the Board. If a stay is not issued by the Board, the Department's decision on the application is final 16 days after the Department's decision is made.

F. Permit Inspection – As required by ARM 17.8.755, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by the Department at the location of the source.

G. Permit Fee – Pursuant to Section 75-2-220, MCA, failure to pay the annual operation fee by Montana-Dakota may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.

H. Duration of Permit – Construction or installation must begin or contractual obligations entered into that would constitute substantial loss within 3 years of permit issuance and proceed with due diligence until the project is complete or the permit shall expire (ARM 17.8.762).

Attachment 1
Clarification of Start-up Operations and Conditions

For peaking units, startup emissions are a more frequent occurrence than for baseload facilities. One reason engines such as the Wärtsilä RICE are chosen as peaking units is because the RICE have a fast startup profile. The Wärtsilä RICE can achieve full load within approximately 10 minutes and emission controlled load within approximately 30 minutes from a cold start. However, the fast startup of the RICE results in varying exhaust flow, non-stable temperature, and a range of emission and oxygen levels. The emission control performance and emissions estimates during startup are based on Wärtsilä estimates and laboratory data.

Montana-Dakota anticipates a maximum of 1000 startups per year for the two engines combined (equating to 500 startup events under cold start conditions). During startup, emissions controls (SCR and catalytic oxidation) are not up to temperature, and the full-load emissions limits are not applicable. Wärtsilä characterizes three types of startup for the RICE: cold, warm, and hot startups. Cold startups are described as starting up when the temperature of the SCR catalyst material inside the reactor is close to ambient temperature. These cold catalyst starts are generally expected when the engine has not operated in the previous 2-3 days. To fit in the framework of emissions, a cold start would be defined as starting up following a downtime of greater than 10 hours. A warm start would be defined as starting up following a downtime of between 6 and 10 hours. A hot start would be defined as starting up following a downtime of less than 6 hours. Shorter downtime periods are associated with shorter startup periods and lower emissions.

For the purposes of determining when to apply the startup emission rates, "startup operation" is defined as that period of time from initial start (engine ignition) until applied load and associated equipment, including post-combustion controls, achieve normal operation. Normal operation is achieved when the following criteria have been met:

(1) Exhaust gas temperature at the exit of the SCR reaches 330 degrees Celsius (°C)\626°F; and
(2) Urea injection has commenced.

The "startup operation" definition is intended to provide a consistent basis for defining when the engine is in "startup operation" and can be generally applied to all types of startups (i.e., cold, warm, and hot). The proposed operating parameters can be directly measured and recorded using the engine's data acquisition system (DAS).

Depending on the type of start, the emission control system will reach its full abatement efficiency within 10-30 minutes from the start. Wärtsilä has developed startup emissions for each type of startup. SO_2 emissions remain the same because they are based purely on fuel sulfur content.

To determine the emissions from startup, an average rate of emissions during startup operations was calculated assuming the same number of cold, warm, and hot startups. Multiplying that lb/hr value by the 500 hours per year in startup yields the annual startup emissions in tpy. Montana-Dakota will track the hours in startup in the DAS by recording the time from engine ignition to the exit gas temperature reaching 626°F and urea injection commencing (when normal operation begins).

Attachment 2
Mercury emissions monitoring system (MEMS)

MEMS

a. Montana-Dakota shall install, calibrate, certify, maintain, and operate a MEMS to monitor and record the rate of mercury emissions discharged into the atmosphere from all mercury emitting generating units (units) as defined in the Administrative Rules of Montana 17.8.740.

(1) The MEMS shall be comprised of equipment as required in 40 CFR 75.81(a) and defined in 40 CFR 72.2.

(2) The MEMS shall conform to all applicable requirements of 40 CFR Part 75.

(3) The MEMS data will be used to demonstrate compliance with the emission limitations contained in Section II.A.4.

b. Montana-Dakota shall prepare, maintain and submit a written MEMS Monitoring Plan to the Department.

(1) The monitoring plan shall contain sufficient information on the MEMS and the use of data derived from these systems to demonstrate that all the gaseous mercury stack emissions from each unit are monitored and reported.

(2) Whenever Montana-Dakota makes a replacement, modification, or change in a MEMS or alternative monitoring system under 40 CFR 75 subpart E, including a change in the automated data acquisition and handling system (DAHS) or in the flue gas handling system, that affects information reported in the monitoring plan (e.g. a change to a serial number for a component of a monitoring system), then the owner or operator shall update the monitoring plan.

(3) If any monitoring plan information requires an update pursuant to Section b.(2), submission of the written monitoring plan update shall be completed prior to or concurrent with the submittal of the quarterly report required in c. below for the quarter in which the update is required.

(4) The initial submission of the Monitoring Plan to the Department shall include a copy of a written Quality Assurance/Quality Control (QA/QC) Plan as detailed in 40 CFR 75 Appendix B, Section 1. Subsequently, the QA/QC Plan need only be submitted to the Department when it is substantially revised. Substantial revisions can include items such as changes in QA/QC processes resulting from rule changes, modifications in the frequency or timing of QA/QC procedures, or the addition/deletion of equipment or procedures.

(5) The Monitoring Plan shall include, at a minimum, the following information:

(a) Facility summary including:

(i) A description of each mercury emitting generating unit at the facility.

(ii) Maximum and average loads (in megawatts (MW)) with fuels combusted and fuel flow rates at the maximum and average loads for each unit.

(iii) A description of each unit's air pollution control equipment and a description of the physical characteristics of each unit's stack.

(b) Mercury emission control summary including a description of control strategies, equipment, and design process rates.

(c) MEMS description, including:

(i) Identification and description of each monitoring component in the MEMS including manufacturer and model identifications; monitoring method descriptions; and normal operating scale and units descriptions. Descriptions of stack flow, diluent gas, and moisture monitors (if used) in the system must be described in addition to the mercury monitor or monitors.

(ii) A description of the normal operating process for each monitor including a description of all QA/QC checks

(iii) A description of the methods that will be employed to verify and maintain the accuracy and precision of the MEMS calibration equipment.

(iv) Identification and description of the DAHS, including major hardware and software components, conversion formulas, constants, factors, averaging processes, and missing data substitution procedures.

(v) A description of all initial certification and ongoing recertification tests and frequencies; as well as all accuracy auditing tests and frequencies.

(d) The Maximum Potential Concentration (MPC), Maximum Expected Concentration (MEC), span value, and range value as applicable and as defined in 40 CFR 75 Appendix A, 2.1.7.

(e) Examples of all data reports required in c. below.

c. Montana-Dakota shall submit written, Quarterly Mercury Monitoring Reports. The reports shall be received by the Department within 30 days following the end of each calendar quarter, and shall include, at a minimum, the following:

(1) Mercury emissions. The reports shall include:

(a) The 12-month rolling average pounds per trillion British thermal units (lb/TBtu) emission rate for each month of the reporting quarter. The rolling 12-month basis is an average of the last 12 individual calendar monthly averages, with each monthly average calculated at the end of each calendar month;

(b) The monthly average lb/TBtu mercury emission rate for each month of the quarter;

(c) The total heat input to the boiler (in TBtu) for each 12-month rolling period of the quarter; and

(2) Mercury excess emissions. The report shall describe the magnitude of excess mercury emissions experienced during the quarter, including:

(a) The date and time of commencement and completion of each period of excess emissions. Periods of excess emissions shall be defined as those emissions calculated on a rolling 12-month basis which are greater than the limitation established in II.A.4.

(b) The nature and cause of each period of excess emissions and the corrective action taken or preventative measures adopted in response.

(c) If no periods of excess mercury emissions were experienced during the quarter, the report shall state that information.

(3) MEMS performance. The report shall describe:

(a) The number of operating hours that the MEMS was unavailable or not operating within quality assurance limits (monitor downtime) during the reporting quarter, broken down by the following categories:

- Monitor equipment malfunctions;
- Non-Monitor equipment malfunctions;
- Quality assurance calibration;
- Other known causes; and
- Unknown causes.

(b) The percentage of unit operating time that the MEMS was unavailable or not operating within quality assurance limits (monitor downtime) during the reporting quarter. The percentage of monitor downtime in each calendar quarter shall be calculated according to the following formula:

$$MEMSDowntime\% = \left(\frac{MEMSDownHours}{OpHours} \right) x100$$ where

MEMSDowntime% =Percentage of unit operating hours classified as MEMS monitor downtime during the reporting quarter

MEMSDownHours =Total number of hours of MEMS monitor downtime during the reporting quarter

OpHours =Total number of hours the unit operated during the reporting quarter.

(c) For any reporting quarter in which monitor downtime exceeds 10%, a description of each time period during which the MEMS was inoperative or operating in a manner defined in 40 CFR Part 75 as "out of control." Each description must include the date, start and end times, total downtime (in hours), the reason for the system downtime, and any necessary corrective actions that were taken. In addition, the report shall describe the values used for any periods when missing data substitution was necessary as detailed in 40 CFR 75.30, *et seq*.

(4) The quarterly report shall include the results of any QA/QC audits, checks, or tests conducted to satisfy the requirements of 40 CFR Part 75 Appendices A, B or K.

(5) Compliance certification. Each quarterly report shall contain a certification statement signed by the facility's responsible official based on reasonable inquiry of those persons with primary responsibility for ensuring that all of the unit's emissions are correctly and fully monitored. The certification shall indicate:

(a) Whether the monitoring data submitted were recorded in accordance with the applicable requirements of 40 CFR Part 75 including the QA/QC procedures and specifications of that part and its appendices, and any such requirements, procedures and specifications of an applicable excepted or approved alternative monitoring method as represented in the approved Monitoring Plan.

(b) That for all hours where data are substituted in accordance with 40 CFR 75.38, the add-on mercury emission controls were operating within the range of parameters listed in the quality-assurance plan for the unit, and that the substitute values do not systematically underestimate mercury emissions.

(6) The format of each component of the quarterly report may be negotiated with the Department's representative to accommodate the capabilities and formats of the facility's DAHS.

(7) Each quarterly report must be received by the Department within 30 days following the end of each calendar reporting period (January-March, April-June, July-September, and October-December).

(8) The electronic data reporting detailed in 40 CFR Part 75 shall not be required unless Montana is able to receive and process data in an electronic format.

d. Montana-Dakota shall maintain a file of all measurements and performance testing results from the MEMS; all MEMS performance evaluations; all MEMS or monitoring device calibration checks and audits; and records of all adjustments and maintenance performed on these systems or devices recorded in a permanent form suitable for inspection. The file shall be retained on site for at least five years following the date of such measurements and reports. Montana-Dakota shall make these records available for inspection by the Department and shall supply these records to the Department upon request.

Montana Air Quality Permit Analysis
Montana Dakota Utilities Co. Lewis & Clark Station
MAQP #0691-02

I. Introduction/Process Description

Montana Dakota Utilities Co. Lewis & Clark Station (Montana-Dakota) owns and operates a tangential coal-fired boiler (Unit 1) capable of burning coal or natural gas and associated equipment for generation of electricity. The facility is located in the SW 1/4 of Section 9, Township 22 N, Range 59 E in Richland County, Montana.

A. Permitted Equipment

MAQP #0691-02 applies to the construction and operation of two 20V34SG Wärtsilä (Wärtsilä) natural gas reciprocating internal combustion engine (RICE) generating sets, an indirect fired fuel heater (gas line heater), and, associated building heating, ventilating and air condition (HVAC) units.

B. Source Description

Coal is shipped to Montana-Dakota, unloaded, stored in stockpiles, and delivered to plant storage silos by conveyor. Coal stored in storage silos at Montana-Dakota is conveyed to three coal feeders. The coal is fed to three pulverizers, from which the coal is carried to Unit 1 in a preheated stream of air. The boiler exhaust gas passes through air heaters for heat transfer and then through mechanical dust collectors (multi-cyclone) to capture the large particulate material. The flue gas is then directed to a wet scrubber for control of particulate matter (PM) and sulfur dioxide (SO_2). Solids collected from the multi-cyclone are pneumatically conveyed to an ash storage silo. The scrubber slurry is sluiced to a storage pond for settling and recycling of the sluice water.

The oxidizing agent injection system will be integrated either into Montana-Dakota's coal feeders or between the Unit 1 boiler and the wet scrubber. Delivery of the oxidizing agent will be by truck and storage will be indoors in totes or similar storage containers. The oxidizing agent will be pumped either to a dosing system at the coal feeders and applied to the coal by drip tubes, or to an injection system in the ductwork after the boiler and before the wet scrubber and sprayed into the exhaust gas stream.

The activated carbon injection system will be installed between the Unit 1 boiler and the wet scrubber. Activated carbon will be delivered by truck, pneumatically unloaded, and stored in a new activated carbon silo constructed on-site. The bin vent on the silo will be controlled by a fabric filter. The activated carbon will be injected pneumatically into lances for distribution within the exhaust gas stream.

The Montana-Dakota Lewis & Clark Station shall operate two Wärtsilä natural gas RICE generator sets as peaking units to provide Montana-Dakota with additional generating resources to help meet its customers peak load requirements as well as providing reliability support to the region as a result of the increased peak electric demand in the areas around the Bakken oilfields in Eastern Montana and Western North Dakota.

C. Permit History

On February 25, 2009, the Department of Environmental Quality (Department) issued **MAQP #0691-00**. Unit 1 and associated equipment are not required to have a MAQP as defined in ARM 17.8.743. Unit 1 was in operation before November 23, 1968, and has not undergone modification resulting in an increase of the potential to emit of more than 25 tons per year (tpy) of any regulated airborne pollutant. However, the facility is subject to mercury emission limitations under ARM 17.8.771. MAQP #0691-00 established a mercury emissions limit and associated operating requirements for the boiler in order to comply with ARM 17.8.771.

On March 27, 2009, the Department received a request from Montana-Dakota to amend Attachment 2 of MAQP #0691-00. Subsequent to the issuance of MAQP #0691-00, the Department determined that additional changes to Attachment 2 would be appropriate based on further consideration and internal discussion of Montana-Dakota's previous comments, as well as the Department's needs with respect to the mercury monitoring requirements in Attachment 2. Specifically, the permit action amended Attachment 2 to remove the requirements to report the total ounces of mercury (for both the reporting quarter and the calendar year to date) as well as the total heat input of the boiler for each month of the quarter and the calendar year to date. **MAQP #0691-01** replaced MAQP #0691-00.

D. Current Permit Action

On November 7, 2014, the Department received an application to modify MAQP #0691-01 to construct, operate and maintain two 20V34SG Wärtsilä natural gas RICE generator sets (with an engine horsepower (hp) rating of approximately 12,526 hp), an indirect fired fuel heater (1.2 MMBtu/hr natural gas line heater), and associated building heating, ventilating and air condition (HVAC) units, for the purpose of generating electricity at the Lewis & Clark Station. **MAQP #0691-02** replaces MAQP #0691-01.

E. Response to Public Comments

Person/Group Commenting	Permit Reference	Comment	Department Response
Montana-Dakota	MAQP#0691-02 Permit Section II.A.	Montana-Dakota requested the PM/PMl0/PM2.5 limit of 2.27 lb/hr be included in the permit document.	The Department inadvertently omitted the PM emissions limit. The limit of 2.27 lb/hr for PM/PMl0/PM2.5 has been added to the permit
Montana-Dakota	Through-out permit	Montana-Dakota requested the term "full load operation" be replaced with "normal operation" to better characterize the RICE operation.	The Department made the changes as requested.
Montana-Dakota	MAQP#0691-02 Permit Sections II.A.11-14	Montana-Dakota requested that language be added to the BACT limits indicating that those limits apply during normal operations.	The Department made the changes as requested.

Montana-Dakota	MAQP#0691-02 Permit Sections 11.A.9, II.A. IO, II.B.2, and II.C.5 Permit Analysis Section III and Section VI	Montana-Dakota requested references to horsepower as a part of the description of the engines be replaced or supplemented with the make/model/type of engine. Wärtsilä confirmed that no horsepower rating is included on the nameplate of the engines.	The Department made the changes as requested. The engines have been identified as 20V34SG Wärtsilä natural gas RICE generator sets.
Montana-Dakota	MAQP#0691-02 Permit Analysis Sections IV, pgs. 16 & 17	Montana-Dakota requested the description of the engines including the horsepower rating be replaced or supplemented with the make/model/type of engine.	The Department added the make/model/type of engine as requested.
Montana-Dakota	MAQP#0691-02 Permit Section II.A.8	Montana-Dakota requested that the RICE generator sets be identified as "two 20V34SG Wärtsilä (or W20V34SG) natural gas RICE generator sets" and that reference to a horsepower rating be omitted. Each of the engines shall be of a lean burn four-stroke design, with a nominal gross output of approximately 9.3 megawatts (MW).	The Department made the changes as requested.
Montana-Dakota	MAQP#0691-02 Permit Section II.A.9	Montana-Dakota requested that MT DEQ replace the limit on full load hours of operation (7,940 hr/yr) with a normal operation gas consumption limit of 530.8 MMscf per year (based on 72.6 MMBtu/hr heat input value of the engine, 1,086 Btu/scf heating value of the natural gas, 3,970 hr/yr-engine, and 2 engines). Montana-Dakota also requests the limit be expressed as "530.8 MMscf per rolling 12-month period combined" instead of "per year combined" to be consistent with the recordkeeping requirement	The Department made the change to the permit condition as requested.
Montana-Dakota	MAQP#0691-02 Permit Section II.A.10	Montana-Dakota requested that reference to Section II.A.14 (the SO_2 BACT limit) be deleted from this condition. SO_2 emissions are dependent on the sulfur content in the fuel, not the operation of any add-on pollution control.	The Department deleted the reference to the SO_2 emission limit from this condition as requested.
Montana-Dakota	MAQP#0691-02 Permit Section II.A.12-14	Montana-Dakota requested that the redundant "shall limit" language be deleted.	The Department corrected this typographical error.

Montana-Dakota	MAQP#0691-02 Permit Section II.A.15	Montana-Dakota requested the limit be expressed as "500 hours per rolling 12-month period combined" instead of "500 hours per year combined" to be consistent with the recordkeeping requirement. In addition, MontanaDakota requested that the condition describe "total startup *operation*" instead of "total startup *times*."	The Department made the changes as requested.
Montana-Dakota	MAQP#0691-02 Permit Attachment 1	Montana-Dakota requested MT DEQ include the startup criteria as described on page 9 in the application as an attachment to the permit to clarify when that limitation and its associated recordkeeping requirements apply.	The Department included an Attachment 1 that describes the meaning of the term startup and explains when the permit limit and associated recordkeeping requirements apply.
Montana-Dakota	MAQP#0691-02 Permit Sections II.A.16 and ll.A.17	Montana-Dakota requested an overall maximum combined heat input limit of 4.2 MMBtu/hr to include both the natural gas line heater and the building HV AC units. The emission factors for the natural gas line heater and the HVAC units are the same, therefore, combining the maximum heat input limit for the two types of units has no effect on overall emissions. In addition, Montana-Dakota requests that II.A.16 and II.A.17 be addressed in one single condition that reads, "Montana-Dakota shall operate a natural gas line heating unit and/or HV AC units with a maximum combined heat input not to exceed 4.2 MMBtu/hr (ARM 17.8.749)."	The Department made the changes as requested.
Montana-Dakota	MAQP#0691-02 Permit Section II.B.2	Montana-Dakota requested the term "compressor engine" be replaced with the term "generator engine." Also, with the addition of an emission limit for particulate matter (PM) in Section II.A, Montana-Dakota requested that the Section II.B.2 be changed to read: " ... shall initially be tested for NOx, CO and VOC concurrently, and PM, ... ". PM should not be required to be tested concurrently with the other pollutants due to differences between the test method requirements, such as the length of the runs that may be	The Department corrected the typographical error and modified the testing requirements to avoid requiring testing of PM concurrently with NOx, CO and VOC as requested.

		needed to complete the PM stack test and a different probe needed to sample PM.	
Montana-Dakota	MAQP#0691-02 Permit Section II.B.3	Montana-Dakota requested to have the language stating "every 8,760 hours or 3 years, whichever comes first" changed to "every 8,760 hours of *operation* or 3 years, whichever comes first."	The Department corrected the typographical error as requested.
Montana-Dakota	MAQP#0691-02 Permit Section II.C.5	Montana-Dakota requested that the language be changed from "MontanaDakota shall document, by month, the hours of full load operation of the two Wärtsilä natural gas RICE collected in the data acquisition handling system (DAS)." to "Montana-Dakota shall document, by month the *gas consumption during normal operation* of the two Wärtsilä natural gas RICE ... ".	The Department made the changes as requested.
Montana-Dakota	MAQP#0691-02 Permit Section II.C.6	Montana-Dakota requested the language be changed from "MontanaDakota shall document, by month the hours of startup *times*" to "Montana-Dakota shall document, by month the hours of startup *operation* ... "	The Department made the grammatical change as requested.
Montana-Dakota	MAQP#0691-02 Permit Section II.E.1	Montana-Dakota requested the language "construction of the facility" be replaced with "construction of the RICE and associated equipment."	The Department made the changes as requested.
Montana-Dakota	MAQP#0691-02 Permit Analysis Section I.A	Montana-Dakota requested that the last sentence of the paragraph "The facility consists of the following permitted equipment:" be deleted or a list of equipment added.	The Department omitted the last sentence of the paragraph as requested.
Montana-Dakota	MAQP#0691-02 Permit Analysis Section II.H.2	Montana-Dakota requested that the last sentence be changed to "Pursuant to ARM 17.8.1205(2)(b), Montana- Dakota has 12 months following the start of operation of the new units to apply for modification of the Title V Operating Permit"	The Department added the clarifying statement as requested.
Montana-Dakota	MAQP#0691-02 Permit Analysis Section III.B Wärtsilä RICE Startup page 11	Montana-Dakota requested that wording in the Permit Analysis be changed to "The proposed startup *emission factors* are based on an average rate of emissions ... " because it more appropriately	The Department made the changes as requested.

		describes the nature of the startup emissions information provided in the permit application	
Montana-Dakota	MAQP#0691-02 Permit Analysis Section IV. Emission Inventory Page 15	Montana-Dakota requested that the emitting unit numbers in the Project Emissions Summary be updated to reflect the table in Section 2.0 of the MAQP application form (Appendix A of the application).	The Department made the changes as requested.
Montana-Dakota	MAQP#0691-02 Permit Analysis Section IV. Emission Inventory Page 16	Montana-Dakota requested that the 72.5 MMBtu/hr rating on the engine be corrected to read 72.6 MMBtu/hr. It is more accurate for MT DEQ to reference the 72.6 MMbtu/hr heat input value in the permit analysis since this is the calculated heat input at full load and at the average ambient temperature which occurs in the Sidney area during the year (44.5 degrees F).	The Department made the changes as requested.

F. Additional Information

Additional information, such as applicable rules and regulations, Best Available Control Technology (BACT)/Reasonably Available Control Technology (RACT) determinations, air quality impacts, and environmental assessments, is included in the analysis associated with each change to the permit.

II. Applicable Rules and Regulations

The following are partial explanations of some applicable rules and regulations that apply to the facility. The complete rules are stated in the ARM and are available, upon request, from the Department. Upon request, the Department will provide references for location of complete copies of all applicable rules and regulations or copies where appropriate.

A. ARM 17.8, Subchapter 1 – General Provisions, including but not limited to:

1. ARM 17.8.101 Definitions. This rule includes a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emission of any air contaminant into the outdoor atmosphere shall, upon written request of the Department, provide the facilities and necessary equipment (including instruments and sensing devices) and shall conduct tests, emission or ambient, for such periods of time as may be necessary using methods approved by the Department.

3. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by the Department, any source or other entity as required by any rule in this chapter, or any permit or order issued pursuant to this chapter, or the provisions of the Clean Air Act of Montana, 75-2-101, *et seq*., Montana Code Annotated (MCA).

Montana-Dakota shall comply with the requirements contained in the Montana Source Test Protocol and Procedures Manual, including, but not limited to, using the proper test methods and supplying the required reports. A copy of the Montana Source Test Protocol and Procedures Manual is available from the Department upon request.

4. ARM 17.8.110 Malfunctions. (2) The Department must be notified promptly by telephone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation or to continue for a period greater than 4 hours.

5. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means that, without resulting in reduction of the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant that would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner as to create a public nuisance.

B. ARM 17.8, Subchapter 2 – Ambient Air Quality, including, but not limited to the following:

1. ARM 17.8.204 Ambient Air Monitoring
2. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide
3. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide
4. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide
5. ARM 17.8.213 Ambient Air Quality Standard for Ozone
6. ARM 17.8.214 Ambient Air Quality Standard for Hydrogen Sulfide
7. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter
8. ARM 17.8.221 Ambient Air Quality Standard for Visibility
9. ARM 17.8.222 Ambient Air Quality Standard for Lead
10. ARM 17.8.223 Ambient Air Quality Standard for PM_{10}

Montana-Dakota must maintain compliance with the applicable ambient air quality standards.

C. ARM 17.8, Subchapter 3 – Emission Standards, including, but not limited to:

1. ARM 17.8.304 Visible Air Contaminants. (1) This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any sources installed on or before November 23, 1968, that exhibit an opacity of 40% or greater averaged over 6 consecutive minutes (ARM 17.8.304). (2) This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes.

2. ARM 17.8.308 Particulate Matter, Airborne. (1) This rule requires an opacity limitation of less than 20% for all fugitive emission sources and that reasonable precautions be taken to control emissions of airborne particulate matter. (2) Under this rule, Montana-Dakota shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.

3. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter caused by the combustion of fuel in excess of the amount determined by this rule.

4. ARM 17.8.310 Particulate Matter, Industrial Process. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter in excess of the amount set forth in this rule.

5. ARM 17.8.322 Sulfur Oxide Emissions--Sulfur in Fuel. This rule requires that no person shall burn liquid, solid, or gaseous fuel in excess of the amount set forth in this rule.

6. ARM 17.8.322 Sulfur Oxide Emissions--Sulfur in Fuel. (4) Commencing July 1, 1972, no person shall burn liquid or solid fuels containing sulfur in excess of 1 pound of sulfur per million Btu fired. (5) Commencing July 1, 1971, no person shall burn any gaseous fuel containing sulfur compounds in excess of 50 grains per 100 cubic feet of gaseous fuel, calculated as hydrogen sulfide at standard conditions. Montana-Dakota will utilize pipeline quality natural gas for operating its fuel burning equipment, which will meet this limitation.

7. ARM 17.8.324 Hydrocarbon Emissions--Petroleum Products. (3) No person shall load or permit the loading of gasoline into any stationary tank with a capacity of 250 gallons or more from any tank truck or trailer, except through a permanent submerged fill pipe, unless such tank is equipped with a vapor loss control device as described in (1) of this rule.

8. ARM 17.8.340 Standard of Performance for New Stationary Sources and Emission Guidelines for Existing Sources. This rule incorporates, by reference, 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS). Montana-Dakota is considered an NSPS affected facility under 40 CFR Part 60 and is subject to the requirements of the following subparts.

    a. 40 CFR 60, Subpart A – General Provisions apply to all equipment or facilities subject to an NSPS Subpart as listed below:

    b. 40 CFR 60, Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines contains NSPS requirements that apply to owners or operators of stationary spark ignition (SI) internal combustion engines (ICE) that commence construction, modification, or reconstruction after June 12, 2006, where the stationary ICE is manufactured after July 1, 2007, for engines greater than 500 bhp, or after January 1, 2008, for engines less than 500 bhp. Because the natural gas RICE were manufactured after July 1, 2007, this NSPS does apply.

9. ARM 17.8.342 Emission Standards for Hazardous Air Pollutants for Source Categories. The source, as defined and applied in 40 CFR Part 63, shall comply with the requirements of 40 CFR Part 63, as listed below:

a. 40 CFR 63, Subpart A – General Provisions apply to all equipment or facilities subject to an a National Emission Standards for Hazardous Air Pollutants (NESHAP)Subpart as listed below:

b. Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines. This rule establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from stationary RICE located at major and area sources of HAP emissions. Affected sources include any existing, new or reconstructed stationary RICE located at a major or area source of HAP emissions. A stationary RICE is new if construction of the RICE commenced on or after June 12, 2006.

Since the two four-stroke-lean burn natural gas stationary RICE generators at the Montana-Dakota Lewis & Clark station were constructed after June 12, 2006, the engines are considered new stationary RICE located at an area source of HAP emissions, and must meet the requirements specified by 40 CFR 63.6590(b)(3)(c) by meeting the requirements of 40 CFR 60 subpart JJJJ.

c. Subpart CCCCCC—National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities. This subpart establishes national emission limitations and management practices for hazardous air pollutants (HAP) emitted from the loading of gasoline storage tanks at gasoline dispensing facilities (GDF). This subpart also establishes requirements to demonstrate compliance with the emission limitations and management practices.

A GDF is any stationary facility which dispenses gasoline into the fuel tank of a motor vehicle, motor vehicle engine, nonroad vehicle, or nonroad engine, including a nonroad vehicle or nonroad engine used solely for competition. These facilities include, but are not limited to, facilities that dispense gasoline into on- and off-road, street, or highway motor vehicles, lawn equipment, boats, test engines, landscaping equipment, generators, pumps, and other gasoline-fueled engines and equipment. The 155 gallon gasoline tank (EU06) located at the Montana-Dakota Lewis & Clark facility is subject to this subpart.

D. ARM 17.8, Subchapter 4 – Stack Height and Dispersion Techniques, including, but not limited to:

1. ARM 17.8.401 Definitions. This rule includes a list of definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.402 Requirements. Montana-Dakota must demonstrate compliance with the ambient air quality standards with a stack height that does not exceed Good Engineering Practices (GEP). The proposed height of the new or modified stack for Montana-Dakota is below the allowable 65-meter GEP stack height.

E. ARM 17.8, Subchapter 5 – Air Quality Permit Application, Operation, and Open Burning Fees, including, but not limited to:

1. ARM 17.8.504 Air Quality Permit Application Fees. This rule requires that an applicant submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the Department. Montana-Dakota submitted the appropriate permit application fee for the current permit action.

2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit (excluding an open burning permit) issued by the Department. The air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

   An air quality operation fee is separate and distinct from an air quality permit application fee. The annual assessment and collection of the air quality operation fee, described above, shall take place on a calendar-year basis. The Department may insert into any final permit issued after the effective date of these rules, such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions that prorate the required fee amount.

F. ARM 17.8, Subchapter 7 – Permit, Construction, and Operation of Air Contaminant Sources, including, but not limited to:

1. ARM 17.8.740 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.743 Montana Air Quality Permits--When Required. This rule requires a person to obtain an air quality permit or permit modification for any facility or emitting unit upon which construction commenced, or that was installed, before November 23, 1968, when that facility or emitting unit is modified after that date and the modification increases the potential to emit (PTE) by more than 25 tons per year of any airborne pollutant, other than lead, that is regulated under this chapter. Although Montana-Dakota was in operation before November 23, 1968 with a PTE less than 25 tons per year, an MAQP application was required pursuant to ARM 17.8.771 for mercury-emitting generating units. In addition, the current permit action has a PTE greater than 25 tons per year of VOCs therefore, an air quality permit is required.

3. ARM 17.8.744 Montana Air Quality Permits--General Exclusions. This rule identifies the activities that are not subject to the Montana Air Quality Permit program.

4. ARM 17.8.745 Montana Air Quality Permits--Exclusion for De Minimis Changes. This rule identifies the de minimis changes at permitted facilities that do not require a permit under the Montana Air Quality Permit Program.

5. ARM 17.8.748 New or Modified Emitting Units--Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, modification, or use of a source. Montana-Dakota submitted the required permit

application for the current permit action. (7) This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. Montana-Dakota submitted an affidavit of publication of public notice for the November 5, 2014, issue of the *Sidney Herald*, a newspaper of general circulation in the Town of Sidney in Richland County, as proof of compliance with the public notice requirements.

6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by the Department must authorize the construction and operation of the facility or emitting unit subject to the conditions in the permit and the requirements of this subchapter. This rule also requires that the permit must contain any conditions necessary to assure compliance with the Federal Clean Air Act (FCAA), the Clean Air Act of Montana, and rules adopted under those acts.

7. ARM 17.8.752 Emission Control Requirements. This rule requires a source to install the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be utilized. The required BACT analysis is included in Section III of this permit analysis.

8. ARM 17.8.755 Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by the Department at the location of the source.

9. ARM 17.8.756 Compliance with Other Requirements. This rule states that nothing in the permit shall be construed as relieving Montana-Dakota of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq*.

10. ARM 17.8.759 Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those permit applications that do not require the preparation of an environmental impact statement.

11. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or modified source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.

12. ARM 17.8.763 Revocation of Permit. An air quality permit may be revoked upon written request of the permittee, or for violations of any requirement of the Clean Air Act of Montana, rules adopted under the Clean Air Act of Montana, the FCAA, rules adopted under the FCAA, or any applicable requirement contained in the Montana State Implementation Plan (SIP).

13. ARM 17.8.764 Administrative Amendment to Permit. An air quality permit may be amended for changes in any applicable rules and standards adopted by the Board of Environmental Review (Board) or changed conditions of operation at a source or stack that do not result in an increase of emissions as a result of those changed conditions. The owner or operator of a facility may not increase the facility's emissions beyond permit limits unless the increase meets the criteria in ARM 17.8.745

for a de minimis change not requiring a permit, or unless the owner or operator applies for and receives another permit in accordance with ARM 17.8.748, ARM 17.8.749, ARM 17.8.752, ARM 17.8.755, and ARM 17.8.756, and with all applicable requirements in ARM Title 17, Chapter 8, Subchapters 8, 9, and 10.

14. ARM 17.8.765 Transfer of Permit. This rule states that an air quality permit may be transferred from one person to another if written notice of intent to transfer, including the names of the transferor and the transferee, is sent to the Department.

15. ARM 17.8.771 Mercury Emission Standards for Mercury-Emitting Generating Units. This rule identifies mercury emission limitation requirements, mercury control strategy requirements, and application requirements for mercury-emitting generating units.

G. ARM 17.8, Subchapter 8 – Prevention of Significant Deterioration of Air Quality, including, but not limited to:

1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this subchapter.

2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications--Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through ARM 17.8.827 shall apply to any major stationary source and any major modification, with respect to each pollutant subject to regulation under the FCAA that it would emit, except as this subchapter would otherwise allow.

This facility is a listed source and has the PTE 100 tpy or more of pollutants subject to regulation under the FCAA; therefore, the facility is major. However the current permit action includes federally enforceable conditions limiting emissions below the significant emissions rates as descried in ARM 17.8.801(28)(a); therefore the project would not constitute a major modification pursuant to ARM 17.8.801(20), and therefore, Prevention of Significant Deterioration regulations would not apply.

H. ARM 17.8, Subchapter 12 – Operating Permit Program Applicability, including, but not limited to:

1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any source having:

a. PTE > 100 tons/year of any pollutant;

b. PTE > 10 tons/year of any one hazardous air pollutant (HAP), PTE > 25 tons/year of a combination of all HAPs, or lesser quantity as the Department may establish by rule; or

c. PTE > 70 tons/year of particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}) in a serious PM_{10} nonattainment area.

2. ARM 17.8.1204 Air Quality Operating Permit Program. (1) Title V of the FCAA amendments of 1990 requires that all sources, as defined in ARM 17.8.1204(1), obtain a Title V Operating Permit. In reviewing and issuing MAQP #0691-02 for Montana-Dakota, the following conclusions were made:

   a. The facility's PTE is greater than 100 tons/year for any pollutant.

   b. The facility's PTE is less than 10 tons/year for any one HAP and less than 25 tons/year for all HAPs.

   c. This source is not located in a serious PM_{10} nonattainment area.

   d. This facility is subject to a current NSPS (40 CFR 60, Subpart JJJJ).

   e. This facility is subject to current NESHAP standards (40 CFR 63, Subpart ZZZZ and Subpart CCCCCC).

   f. This source is a Title IV affected source, but not a solid waste combustion unit.

   g. This source is not an EPA designated Title V source.

   Based on these facts, the Department determined that Montana-Dakota is subject to the Title V operating permit program. Montana-Dakota's Title V Operating Permit will be modified to reflect the conditions associated with this permit action. Pursuant to ARM 17.8.1205(2)(b), Montana- Dakota has 12 months following the start of operation of the new units to apply for modification of the Title V Operating Permit

III. BACT Determination

A BACT determination is required for each new or modified source. Montana-Dakota shall install on the new or modified source the maximum air pollution control capability which is technically practicable and economically feasible, except that BACT shall be utilized.

The Department reviewed Montana-Dakota's BACT analysis which addressed available methods of controlling NOx, SO_2, PM/PM_{10}, $PM_{2.5}$, CO, and VOC emissions from, as well as previous BACT determinations (via the RACT/BACT/LAER Clearinghouse and state agency decisions). The following control options have been reviewed by the Department in order to make the following BACT determination.

A. Alternative Power Generation Technologies

Montana-Dakota performed an evaluation of future power demand and existing power generating capacity and capabilities in the areas it serves. The study identified a need for additional capacity during periods of seasonal and daily peak demand, particularly in the fast-growing Bakken area. To provide that additional peaking capacity, Montana-Dakota plans to install and operate two 20V34SG Wärtsilä natural gas RICE generator sets. The Wärtsilä RICE are able to quickly respond to peak demands. Reciprocating engine technology provides a versatility and flexibility of load to address demand variations as are seen in the Bakken. For this project, Montana-Dakota has evaluated several alternative technologies and methods for satisfying the defined project objectives. RICE were selected as the optimum alternative as described in Montana-Dakota's 2013 Integrated Resource Plan. Accordingly, no alternative power generation technologies were evaluated in this BACT analysis.

B. Wärtsilä RICE

BACT during startup

For peaking units, startup emissions are a more frequent occurrence than for baseload facilities. One reason engines such as the Wärtsilä RICE are chosen as peaking units is because the RICE have a fast startup profile. The Wärtsilä RICE can achieve full load within approximately 10 minutes, and normal operation (i.e., emission controlled) within 30 minutes from a cold start. However, the fast startup of the RICE results in varying exhaust flow, non-stable temperature, and a range of emission and oxygen levels. At the same time, the proposed emission control systems, the SCR and catalytic oxidation, are not effective (and therefore not feasible for consideration) under those conditions primarily due to low engine exhaust temperature and lack of urea flow into the SCR.

Wärtsilä characterizes three types of startup for the RICE: cold, warm, and hot startups. Cold startups are described as starting up when the temperature of the SCR catalyst material inside the reactor is close to ambient temperature. These cold catalyst starts are generally expected when the engine has not operated in the last 2-3 days. To fit in the framework of emissions, a cold start would be defined as starting up following a downtime of greater than 10 hours. A warm start would be defined as starting up following a downtime of between 6 and 10 hours. A hot start would be defined as starting up following a downtime of less than 6 hours. Shorter downtime periods are associated with lower emissions. Because the units are designated as providing peaking power, the downtime periods are driven by the electricity demands of the region.

Available controls during startup are limited, and include good combustion practices and minimizing startup time. Peaking units are designed to provide power quickly and on demand, so it is also in the best interest of Montana-Dakota to minimize startup time in addition to minimizing any emissions associated with startup.

Startup operation for the Wärtsilä RICE is defined as that period of time from initial start (engine ignition) until applied load and associated equipment, including post-combustion controls, achieve normal operation. Normal operation is achieved when the following criteria have been met:

(1) Exhaust gas temperature at the exit of the SCR reaches 330°C (626°F); and
(2) Urea injection has commenced.

Montana-Dakota will track the hours in startup in the data acquisition system (DAS) by recording the time from engine ignition to the exit gas temperature reaching 626°F and urea injection commencing (when normal operation begins). Depending on the type of start, the emission control system will reach its full abatement efficiency within 10-30 minutes from the start. Wärtsilä has developed startup emissions for each type of startup. The emission control performance and emissions estimates during startup are based on Wärtsilä estimates and laboratory data. The proposed startup emission factors are based on an average rate of emissions between cold, warm and hot startups on a lb/hr basis (assuming an equal number of cold, warm, and hot startups) using good combustion practices. It should be noted that SO_2 emissions remain the same because they are based purely on fuel sulfur content. The Department has determined that good combustion practices and minimizing startup time constitutes BACT for Wärtsilä RICE during startup operation.

BACT during Normal operation

NOx Emissions

BACT for NOx emissions includes good combustion practices/proper operation of the 20V34SG Wärtsilä – also referred to as lean-burn combustion. Add-on controls for NOx emissions from RICE include Non-Selective Catalytic Reduction (NSCR) and Selective Catalytic Reduction (SCR). A summary of the analysis of these controls is shown below.

Lean-burn engines are designed to operate with excess oxygen, which means a lean fuel mixture. The proposed project includes Wärtsilä lean-burn, four-stroke engines. In the lean-burn combustion process, natural gas and air are premixed in a low fuel/air ratio before being fed into the cylinders. The lean-burn process efficiently reduces NOx emissions due to a lower combustion temperature. The Wärtsilä RICE are also equipped with turbo chargers which increase the volume of air in the combustion chamber. Lean-burn engines with no add-on controls have inherently low NOx emissions.

Add-on equipment to remove NOx from the exhaust gas stream after its formation involves the injection of urea or ammonia into the gas stream to reduce the NOx to molecular nitrogen and water. Urea/ammonia is either injected into the engine combustion chamber (in the case of NSCR) or injected with the use of a catalyst (SCR).

NSCR

NSCR is an add-on/post-combustion technology that uses the residual hydrocarbons and CO in the rich-burn engine exhaust as a reducing agent for NOx. In an NSCR, hydrocarbons and CO are oxidized by oxygen (O_2) and NOx. The excess hydrocarbons, CO and NOx, pass over a catalyst (usually a noble metal such as platinum, rhodium, or palladium) that reduces NOx to N_2. The NSCR technique is effectively limited to engines with normal exhaust oxygen levels of 4 percent or less. This includes four-stroke rich burn naturally-aspirated engines and some four-stroke rich-burn turbo-charged engines.

Lean-burn engines could not be retrofitted with NSCR control because of the reduced exhaust temperatures. In addition, lean burn engines operate with an oxygen level at approximately 10%, much higher than an NSCR can operate. Therefore, NSCR is not considered to be technically feasible for application to the lean-burn RICE and is eliminated from further consideration.

SCR

SCR is an add-on/post-combustion technology that has been shown to be effective in reducing NOx in exhaust from RICE. An SCR system consists of a urea or ammonia storage, feed, and injection system, and a catalyst and catalyst housing. SCR systems selectively reduce NOx emissions by injecting urea or ammonia into the exhaust gas stream upstream of the catalyst. NOx, NH_3, and O_2 react on the surface of the catalyst to form N_2 and H_2O. For the SCR system to operate properly, the exhaust gas must be within a particular temperature range (typically between 450°F and 850°F). The temperature range is dictated by the catalyst (typically made from noble metals, base metal oxides such as vanadium and titanium, and zeolite-based material). Exhaust gas temperatures greater than the upper limit (850°F) will pass the NOx and NH_3 unreacted through the catalyst prior to the reaction. SCR represents state-of-the-art controls for lean-burn four-stroke engine NOx removal. Because SCRs are commercially available and have been used on engines of this size and type, SCR is technically feasible for application to the RICE.

The Department determined that utilizing lean-burn combustion, the addition of SCR, and proper operation and design, constitutes BACT. The BACT emissions limits for NOx will be 2.6 lb/hr for normal operation based on vendor supplied emissions data using site-specific ambient data and an area-specific natural gas composition.

CO Emissions

CO emissions are a product of incomplete combustion. CO results when there is insufficient residence time at high temperature to complete the final step in hydrocarbon oxidation. In RICE, CO emissions may indicate early quenching of combustion gases on cylinder walls or valve surfaces. CO emissions from engines are a function of oxygen availability (excess air), flame temperature, residence time at flame temperature, combustion zone design, and turbulence. Control of CO is normally accomplished by providing adequate fuel residence time and a high temperature in the combustion zone to ensure complete combustion. Lean-burn engines typically have higher CO emissions and lower NOx emissions due to the air-to-fuel ratios at which they operate.

Methods to control CO from RICE include both intrinsic emissions control as well as add-on control. The intrinsic emissions control for CO includes good combustion practices/proper operation (i.e., controlling the combustion process to suppress CO formation and monitoring that process through the air-to-fuel ratio). Add-on control for CO emissions from RICE involves the use of catalytic oxidation.

Good Combustion Practices/Control

Good combustion practices/control include operational and engine design elements to control the amount and distribution of excess air in the flue gas to ensure that there is enough oxygen present for complete combustion (controlling the air-to-fuel ratio). Good combustion practices are technically feasible for controlling CO emissions from the RICE.

Catalytic Oxidation

Oxidation catalysts are a post-combustion technology that does not rely on the introduction of additional chemicals, such as ammonia or urea with SCR, for a reaction to occur. The oxidation of CO to CO_2 utilizes excess air present in the engine exhaust; the activation energy required for the reaction to proceed is reduced in the presence of a catalyst. Products of combustion are introduced into a catalytic bed, with the optimum temperature range for these systems being between 700°F and 1,100°F. At higher temperatures, catalyst sintering may occur, potentially causing permanent damage to the catalyst. The addition of a catalyst bed on the engine exhaust will create a pressure drop, resulting in back pressure to the engine. This has the effect of reducing the efficiency of the engine and power generating capabilities. CO removal efficiency for catalytic oxidation is approximately 87% depending on CO inlet. Catalytic oxidation is a technically feasible CO control technology for RICE.

Based on the information and analysis provided by the applicant and review of other recently permitted similar sources, the Department determined that good combustion control and the addition of an oxidation catalyst, constitutes CO BACT for the Wärtsilä RICE. The BACT emissions limits for CO will be 2.4 lb/hr for normal operation based on vendor supplied emissions data using site-specific ambient data and an area-specific natural gas composition.

VOC Emissions

VOC emissions are a product of incomplete combustion and occur when some gas remains unburned or is only partially burned during the combustion process. With natural gas, some organics are unreacted trace constituents of the gas, while others may be products of the heavier hydrocarbon constituents. Partially burned hydrocarbons result from inadequate air-to-fuel mixing before or during combustion or inefficient air-to-fuel ratios in the cylinder during combustion due to maladjustment of the engine fuel system. Lean-burn engines typically have higher VOC emissions than rich-burn engines due to the respective air-to-fuel ratios at which they operate.

VOC emissions are dependent on site-specific natural gas composition. Because the natural gas available to the site (primarily from the Bakken) is high in heavy hydrocarbon components (propane, butane; etc.), overall VOC baseline emissions are higher than other similar units with natural gas low in heavy hydrocarbon components (i.e., with a higher percentage of methane).

The technologies identified for reducing VOC emissions from the RICE being considered are the same as those identified for CO control: an oxidation catalyst and good combustion practices/control. The standard technology for reducing VOC emissions is to maintain "good combustion" through proper control and monitoring of the combustion process through the air-to-fuel ratio. An RBLC review (see Appendix E) indicates that combustion controls is the most prevalent BACT control with several oxidation catalysts listed as BACT for VOC.

Good combustion practices/control

Good combustion practices/control include operational and engine design elements to control the amount and distribution of excess air in the flue gas to ensure that there is enough oxygen present for complete combustion (controlling the air-to-fuel ratio). Good combustion practices are technically feasible for controlling VOC emissions from the RICE.

Catalytic Oxidation

The oxidation of VOC to CO_2 utilizes excess air present in the engine exhaust, and as described above, the activation energy required for the reaction to proceed is reduced in the presence of a catalyst. Catalytic oxidation is a technically feasible control technology for controlling VOC emissions from the RICE. The designed VOC removal efficiency for catalytic oxidation is approximately 50% depending on VOC inlet.

Based on the information and analysis provided by the applicant and review of other recently permitted similar sources, the Department determined that good combustion control and the addition of an oxidation catalyst, constitutes VOC BACT for the Wärtsilä RICE. The BACT emissions limit for VOC will be 7.6 lb/hr for normal operation based on vendor supplied emissions data using site-specific ambient data and an area-specific natural gas composition.

As previously mentioned, because the natural gas available to the site (primarily from the Bakken) is high in heavy hydrocarbon components (propane, butane; etc.), overall VOC baseline emissions are higher than other similar units with natural gas low in heavy hydrocarbon components (i.e., with a higher percentage of methane)

SO_2 Emissions

SO_2 emissions from natural gas combustion are directly attributed to fuel sulfur content: either sulfates from fuel sulfur or mercaptans used as odorants. No additional sulfur originates from the process. Therefore, units firing fuels with very low sulfur content (such as pipeline quality natural gas) exhibit correspondingly low SO_2 emissions. Because of the extremely low sulfur concentrations and resulting large costs per ton of SO_2 removed, post-combustion controls, such as flue gas desulfurization units (scrubbers), have not been applied to commercial natural gas-fired engines. In addition, no vendors of the RICE to be used for the Montana-Dakota peaking project identified any similar engines that have SO_2 devices. The RBLC search (made up of major source actions) includes the following: no additional control, use of pipeline quality natural gas, limiting sulfur content in fuel, and good combustion practices. Therefore, the use of add-on SO_2 controls such as scrubbers is both technically infeasible and does not represent available control technology.

Based on the information and analysis provided by the applicant and review of other recently permitted similar sources, the Department determined that the use of pipeline quality natural gas and good combustion control constitutes SO_2 BACT for the Wärtsilä RICE. The BACT emissions limit for SO_2 will be 0.37 lb/hr based on a one-hour average and based on the natural gas analysis provided by Montana-Dakota and assuming 100% conversion of the fuel sulfur to SO_2.

$PM/PM_{10}/PM_{2.5}$ Emissions

PM/PM10/PM2.5 emissions from natural gas combustion sources consist of several components:

a) inert contaminants in natural gas;
b) sulfates from fuel sulfur or mercaptans used as odorants,
c) dust drawn in from the ambient air,
d) particulate of carbon and hydrocarbons resulting from incomplete combustion. Units firing fuels with low ash content (such as pipeline quality natural gas) and high combustion efficiency exhibit correspondingly low particulate emissions, and
e) particulate matter emissions from the combustion of natural gas are assumed to be fine particulate (PM = PM10 = PM2.5).

Because of their extremely low particulate concentrations and resulting large costs per ton of particulate matter removed, post-combustion controls, such as electrostatic precipitators (ESPs) or baghouses, have not been applied to commercial gas-fired engines. In addition, no vendors of the RICE to be used for the Montana-Dakota peaking project identified any similar engines that have particulate control devices. The use of add-on particulate control such as ESPs or baghouses is both technically infeasible and does not represent available control technology.

Based on the information and analysis provided by the applicant and review of other recently permitted similar sources, the Department determined that the use of pipeline quality natural gas and good combustion control constitutes PM/PM10/PM2.5 BACT for the Wärtsilä RICE. The BACT emissions limit for PM/PM10/PM2.5 is 2.27 lb/hr based on a one-hour average, according to emissions data provided by Wärtsilä, the RICE vendor. This limitation includes both filterable and condensable PM/PM10/PM2.5 emissions.

C. Natural Gas Line Heater and HVAC Units

The BACT analysis regarding the proposed natural gas line heater and proposed HVAC units and building heaters has been combined to assess BACT for small natural gas-fired heaters. The largest of the units is 1.2 MMBtu/hr, with a maximum single unit criteria pollutant emission rate of 0.09 lb/hr of CO and 0.06 lb/hr of NOx. Based on the small size of the heaters and the minimal emissions generated, no add-on control technology would be economically feasible. Emissions of all criteria pollutants will be minimized through the combustion of natural gas and by following good combustion practices for these units. Based on the information and analysis provided by the applicant and review of other recently permitted similar sources, the Department determined that the use of pipeline quality natural gas and good combustion control constitutes BACT for all natural gas heaters associated with this project.

The control options selected have controls and control costs comparable to other recently permitted similar sources and are capable of achieving the appropriate emission standards.

IV. Emission Inventory

Boiler (Unit 1)

Maximum Capacity: 600 MMBtu/hr (company information)
Emission Rate: 1.5 lb/TBtu (permit limit)
Hours of Operation: 8760 hr/year
Mercury Emissions: 600 MMBtu/hr * 1 TBtu/10^6 MMBtu * 1.5 lb/TBtu * 8760 hr/yr = 7.88 lb/yr

MAQP #0691-02 Permit Action

Project Emissions Summary									
	Description New Emitting Units	**PM10 (tpy)**	**PM2.5 (tpy)**	**SOx (tpy)**	**NOx (tpy)**	**VOC (tpy)**	**CO (tpy)**	**CO2e (tpy)**	**HAPS (tpy)**
EU10	20V34SG Wärtsilä RICE Generators #1 & #2	9.77	9.77	1.56	13.11	34.87	11.13	34967.66	7.49
IEU15	Natural Gas Line Heater	0.04	0.04	0.03	0.24	0.03	0.41	723.57	0.01
IEU16	Building Heaters\HVAC Units	0.08	0.08	0.06	1.03	0.06	0.44	1641.18	0.02
IEU17	Fugitive Road Dust	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emissions		**9.93**	**9.90**	**1.65**	**14.38**	**34.96**	**11.97**	**37332.40**	**7.52**

20V34SG Wärtsilä Reciprocating Internal Combustion Engines

Generator Electrical Output - Gross	9341	kW
Engines	2	
Fuel	Natural Gas	
Annual Hours of Operation**	3970	hours
Natural Gas Heat Content	1086	btu/scf
Heat Rate	7761	Btu/kWh
Heat Input	72.6	MMBtu/hr

**The RICE emissions are calculated as individual units, but the permitted limit a natural gas throughput limit of 530.8 MMScf/ rolling 12-month period combined. Calculating each RICE (they are identical) at 3790 hours per year equates to the same overall emissions.
Calculation: (72.6 MMBtu/hr / 1,086 Btu/scf) * (3,970 hr/yr-engine * 2 engines) = 530.8 MMscf/yr

Startup Type	Number of annual startups	Average Daily Startups total
3Cold Start	166.7	0.5
6-hrs down	166.7	0.5
12-hrs down	166.7	0.5
Total	500	1.4

Startup Emission Data[1]			
Emission rate Per startup type (lb/30 min)			
Pollutant	**Cold Start**	**Warm Start**	**Hot Start**
NOx	7.4	5.9	3.4
CO	6.5	1.8	1.3
VOC	10.2	9.4	8.6
PM2.5/PM10/PM	1.5	1.5	1.5
SO2	0.2	0.2	0.2

1. Data supplied by manufacturer

Startup Emission Data 30 minute startup with 30 minute steady state operation			
Pollutant	Emission rate Per startup type (lb/hr)		
	Cold Start	**Warm Start**	**Hot Start**
NOx	14.80	11.80	6.80
CO	13.00	3.60	2.60
VOC	20.40	18.80	17.20
PM2.5/PM10/PM	3.00	3.00	3.00
SO2	0.37	0.37	0.37

1. NOx Startup emissions: 166.7 hr/yr x (14.8 lb/hr +11.8 lb/hr +6.8 lb/hr) = 5,567.78 lb/yr
5,567.78/2000 (lb/ton) = 2.784 tpy

Steady State Emissions							Startup Emissions Total[1]	Annual Emissions Incl Startup (2 engines)
Pollutant	**Steady State Emission Factor**	**Emission Factor Units**	**Factor Source**	**Emissions lb/hr**	**Emissions Each tpy**	**Emissions Total tpy**		
NOx	2.60	lb/hr	Manuf	2.6	5.2	10.3	2.78	13.1
CO	2.40	lb/hr	Manuf	2.4	4.8	9.5	1.6	11.1
VOC	7.6	lb/hr	Manuf	7.6	15.1	30.2	4.7	34.9
PM2.5/PM10/ PM	0.0313	lb/MMBtu	Manuf	2.27	4.5	9.0	0.75	9.8
SO2	0.0051	lb/MMBtu	Manuf	0.37	0.7	1.5	0.0925	1.6
CO2	942.00	lb/MWh-gross	Manuf	8799.22	17466.5	34932.9	0	34932.9
CH4	0.001	kg/mmBtu	40 CFR 98 Subpart C, Table C-2	0.16	0.3	0.6	-	0.6
N2O	0.0001	kg/mmBtu	40 CFR 98 Subpart C, Table C-2	0.02	0.0	0.1	-	0.1
CO2e	applying global warming potentials to mass emission rates		40 CFR 98 Subpart A, Table A-1	8808	17483.8	34967.7	-	34967.7

Hazardous Air Pollutants (HAPs) - 20V34SG Wärtsilä Reciprocating Internal Combustion Engines

Total HAPs	7.49 TPY

Natural Gas Line Heater

Max. Fuel Combustion Rate =		1.20 MMBtu/hr
Fuel Usage =		9.68 MMscf/yr
Fuel Low Heating Value=		1,086 MMBtu/MMscf
Hours of Operation =		8,760 hr/yr
Conversions:	1,086 MMBtu/MMscf	
	2000 lbs/ton	

Criteria Pollutants					
Pollutant	**Emissions Factor**	**Units**	**Emissions Factor Reference**	**Emissions (lbs/hr)**	**Emissions (tons/yr)**
PM	7.6	lb/MMscf	AP-42 Table 1.4-2 (07/98)	8.40E-03	0.037
NOx	50	lb/MMscf	AP-42 Table 1.4-1 (07/98)	5.52E-02	0.242
CO	84	lb/MMscf	AP-42 Table 1.4-1 (07/98)	9.28E-02	0.407
VOC	5.5	lb/MMscf	AP-42 Table 1.4-2 (07/98)	6.08E-03	0.027
SO2	5.71	lb/MMscf	Calculated, 2 gr/100 scf	6.31E-03	0.028
CO2	148774.0	lb/MMscf	AP-42 Table 1.4-2 (07/98)	1.64E+02	720.033
CH4	2.3	lb/MMscf	AP-42 Table 1.4-2 (07/98)	2.54E-03	0.011
N2O	2.2	lb/MMscf	AP-42 Table 1.4-2 (07/98)	2.43E-03	0.011
Total CO2e	149504.3	lb/MMscf	AP-42 Table 1.4-2 (07/98)	1.65E+02	723.568

Sample Calculation:
PM Emissions = (Emission Factor, lbs/MMscf) / (Fuel Heating Value, MMBtu/MMscf) x (Fuel Combustion Rate MMBtu/hr)
PM Emissions (lb/hr): (7.6 lb/MMscf) / (1086 MMBtu/MMscf) x (1.2 MMBtu/hr) = 0.0084 lbs/hr
PM Emissions (tons/yr): 0.0084 lbs/hr x (8760 hrs/yr) / (2000 lbs/ton) = 0.037 tons/yr

HAPs - Line Heater

Total HAPs	9.14E-03 TPY

Building Heaters\HVAC Units

Max. Fuel Combustion Rate =	3.00 MMBtu/hr*
Fuel Usage =	21.95 MMscf/yr
Hours of Operation =	8,760 hr/yr
Fuel High Heating Value=	1,197 MMBtu/MMscf
Conversions:	454 grams/lb
	2000 lbs/ton

*Maximum combined heat input rate for building heaters associated with this project

Criteria Pollutants					
Pollutant	**Emission Factor**	**Units**	**Emission Factor Reference**	**Emissions (lbs/hr)**	**Emissions Pollutant (tons/yr)**
PM	7.6	lb/MMscf	AP-42 Table 1.4-2 (07/98)	1.90E-02	0.08
NOx	94	lb/MMscf	AP-42 Table 1.4-1 (07/98)	2.36E-01	1.03
CO	40	lb/MMscf	AP-42 Table 1.4-1 (07/98)	1.00E-01	0.44
VOC	5.5	lb/MMscf	AP-42 Table 1.4-2 (07/98)	1.38E-02	0.06
SO2	5.71	lb/MMscf	Calculated, 2 gr/100 scf	1.43E-02	0.06
CO2	148774.0	lb/MMscf	AP-42 Table 1.4-2 (07/98)	3.73E+02	1633.16
CH4	2.3	lb/MMscf	AP-42 Table 1.4-2 (07/98)	5.76E-03	0.03
N2O	2.2	lb/MMscf	AP-42 Table 1.4-2 (07/98)	5.51E-03	0.02
Total CO2e	149504.3	lb/MMscf	AP-42 Table 1.4-2 (07/98)	3.75E+02	1641.18

Sample Calculation:
PM Emissions = (Emission Factor, lbs/MMscf) / (Fuel Heating Value, MMBtu/MMscf) x (Fuel Combustion Rate MMBtu/hr)
PM Emissions (lb/hr) = (7.6 lb/MMscf) / (1197 MMBtu/MMscf) x (3 MMBtu/hr) = 0.019 lbs/hr
PM Emissions (tons/yr) = (0.019 lbs/hr) x (8760 hrs/yr) / (2000 lbs/ton) = 0.083 tons/yr

HAPs - HVAC Units

Total HAPs	0.02 TPY

Fugitive Emissions: Vehicle Traffic (fugitive emissions resulting from vehicular traffic inside the plant boundaries.)

For Unpaved Roads Using: Equation (1a) of AP-42 Chapter 13.2.2 including precipitation mitigation

$$E = \left[k \left(\frac{s}{12} \right)^{a} \left(\frac{W}{3} \right)^{b} \right] \left(\frac{365 - p}{365} \right)$$

E = emission factor, (lb/vmt)
k = particle size multiplier (dimensionless) , TSP = 4.9, PM10 = 1.5, PM2.5 = 0.15
a = particle size multiplier (dimensionless), TSP = 0.7, PM10 = 0.9, PM2.5 = 0.9
b = particle size multiplier (dimensionless), TSP = 0.45, PM10 = 0.45, PM2.5 = 0.45
s = silt content of road surface material (%)
W = mean vehicle weight, (ton)
p = number of days of precipitation

Plant Road silt content averaging				
Industry	**Road Use**	**No. Samples**	**Slit Content % (Mean)**	**Weighted Sums**
Copper smelting	Plant Road	3	17	51
Iron and steel production	Plant Road	135	6	810
Sand and gravel processing	Plant Road	3	4.8	14
Stone quarrying and processing	Plant Road	10	10	100
Western surface coal mining	Plant Road	2	5.1	10
	totals:	153	---	986
	Weighted Average:			6.4

Source	**Particle Size Multiplier**			**Surface Silt Content**	**Empirical Constant**		**Mean Vehicle Weight**	**Empirical Constant**	**# of days >0.01 in. Precip**	**Emission Factors**		
	PM *k*	PM_{10} *k*	$PM_{2.5}$ *k*	% *s*	PM *a*	$PM_{2.5}$ *a*	ton *W*	(All) *b*	*p**	PM (lb/VMT)	PM10 (lb/VMT)	PM2.5 (lb/VMT)
Large Trucks	4.90	1.50	0.15	6.4	0.7	0.9	27.5	0.45	90	6.5	1.7	0.17
Personal Vehicles	4.90	1.50	0.15	6.4	0.7	0.9	2.5	0.45	90	2.2	0.6	0.06

Source	**Number Trips per Year$_b$**	**Distance per Trip$_e$**	**VMT**	**Control Efficiency$_d$**	**Emission Rates**					
					PM (lb/hr)	**PM_{10}** (lb/hr)	**$PM_{2.5}$** (lb/hr)	**PM** (tpy)	**PM_{10}** (tpy)	**$PM_{2.5}$** (tpy)
Large Trucks	12	0.5	6	50%	0.0	0.0	0.0	0.01	0.00	0.000
Personal Vehicles	520	0.5	260	50%	0.0	0.0	0.0	0.14	0.04	0.004
					Totals	0.15	0.04	0.004		

a. Mean Precipitation days >0.01in from AP-42 Figure 13.2.2-1
b. Average number of trips estimated by Montana-Dakota
c. Data from AP-42 Table 13.2.2-1. No Industry listed represents the Lewis and Clark Statio determined from all plant roads listed in the table.
d. Watering control efficiency assumed to be 50%
e. Round Trip distance traveled per trip measured via Google Earth aerial imagery

Sample Calculation:

Emission Factor Determination

$$4.90 * \frac{(6.4418)}{12}^{0.7} * \frac{(27.5)}{3}^{0.45} * \frac{(365 - 90)}{365} = 6.5 \text{ lb/VMT}$$

Emission Rate Calculation

6.47 lb/VMT * 6 VMT/yr * 0.005 ton/lb * (1 - 50%) = 0.01 tpy

TOTAL HAPs - Lewis & Clark Plant with Proposed Project

Hazardous Air Pollutant	Current Uncontrolled Facility PTE	Current Controlled Facility PTE	Natural Gas RICE Generators #1 & #2	Natural Gas Line Heater	Building Heaters \HVAC Units	Total Proposed Facility PTE
TOTAL	**27.16**	**7.55**	**7.49**	**9.12E-03**	**2.07E-02**	**15.07**

CO_2 Emission Factors (for natural gas line heater and HVAC units only)

Gas Constituent	Methane	Ethane	Propane	Iso-Butane	N-Butane	Iso-Pentan	N-Pentane	Nitrogen	CO2
Mol. Weight	16.04	30.07	44.10	58.12	58.12	72.15	72.15	28.01	44.01
# of Carbon Atoms	1	2	3	4	4	5	5	0	2
% Carbon	74.80%	79.82%	81.64%	82.58%	82.58%	83.16%	83.16%	0.00%	54.53%
Btu/scf	911.00	1631.00	2353.00	3094.00	3101.00	3698.00	3709.00	0.00	0.00
Mol%	68.94%	22.32%	3.83%	0.10%	0.19%	0.02%	0.01%	3.66%	0.95%
	11.06	6.71	1.69	0.06	0.11	0.01	0.01	1.02	0.42
wt%	52.44%	31.82%	8.01%	0.29%	0.51%	0.06%	0.03%	4.86%	1.98%

Calculated Net BTU 1092.06
Average Mol Wt 21.09
gas wt% Carbon 72.98%
CO2 Emission Factor, lb/MMScf 148,774 (for natural gas line heater and HVAC units only)

V. Existing Air Quality

The facility is located in the SW 1/4 of Section 9, Township 22 N, Range 59 E in Richland County, Montana. The air quality of this area is classified as either Better than National Standards or unclassifiable/attainment for the National Ambient Air Quality Standards (NAAQS) for criteria pollutants. The existing emitting units at the Lewis & Clark Station site are not being modified and were considered as part of the background for the analysis of the current permitting action. Background ambient data was provided by the Department's Sidney air monitoring site (site identification number 30-083-0001). The Sidney monitoring site is approximately 16 miles northwest of the town of Sidney, roughly 18 miles to the northwest of the Montana-Dakota Lewis & Clark Station site. The Sidney regional monitoring site was established by the Department to describe background concentrations in the area of NO_2, ozone, SO_2, PM_{10} and $PM_{2.5}$ with respect to oil field development.

VI. Ambient Air Impact Analysis

The qualitative analysis conducted by the applicant indicates there is adequate information available (the emissions estimates, the ambient monitoring data at the Sidney site and relevant guidance documents from the Department and EPA) to demonstrate compliance with the ambient standards for the proposed modifications at the Montana-Dakota Lewis & Clark Station.

The analysis provided in the permit application focuses on the project as a whole for the annual emissions and the short-term emissions of the Wärtsilä RICE as they are the largest contributors. The Wärtsilä RICE emission rates include BACT level of control from selective

catalytic reduction (SCR) and catalytic oxidation application. The tables below display the Wärtsilä RICE short-term emission rates for both full-load and startup operations for each engine and the annual emission rates. The annual emissions rates are based on annual operational limits (7940 hours normal operation and a total of 500 hours of startup per year combined for the two engines) to keep the facility below the major modification thresholds.

Pollutant	Full-Load Operation (lb/hr)	Average Startup Operation(lb/hr)
PM_{10}	2.27	30
$PM_{2.5}$	2.27	3
NO_X	2.6	11.1
CO	2.4	6.4
VOC	7.6	18.8
SO_2	0.37	0.37

	NOx (tpy)	**CO (tpy)**	**SO_2 (tpy)**	**PM (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**	**VOC (tpy)**	**CO_2e (tpy)**
RICE 1 & 2	13.11	11.13	1.56	9.77	9.77	9.77	34.91	34968
Line Heater	0.24	0.41	0.03	0.04	0.04	0.04	0.03	724
HVAC Units	1.03	0.44	0.06	0.08	0.08	0.08	0.06	1,641
Fugitives	---	---	---	0.15	0.04	0.00	---	---
Totals	14.38	11.97	1.65	10.04	9.93	9.90	34.96	37,332
PSD Significant Emissions Rate	40	100	40	25	15	10	40	75,000
Significant?	No	No	No	No	No	No	No	No

For 24-hour $PM_{2.5,}$ the 2013 monitored design value at the Sidney site (as provided by Department with flagged exceptional events removed) is 15 micrograms per cubic meter ($\mu g/m^3$) compared to the standard of 35 µg/m3. For annual $PM_{2.5}$ the 2013 design value at the Sidney site is 7.2 $\mu g/m^3$ compared to a standard of 12 $\mu g/m^3$. Both are well within compliance. The Sidney site 2013 design value (as provided by MDEQ with flagged exceptional events removed) for the 1-hour NO_2 standard is 10 parts per billion, compared to a standard of 100 parts per billion. VOC emissions are one indicator of ozone formation in an airshed. The Sidney monitoring site provides background concentrations for ozone in the area. The 2013 design value (as provided by MDEQ with flagged exceptional events removed) for the 2008 8-hour ozone standard is 0.056 parts per million, compared to a standard of 0.075 parts per million, well in compliance with that standard. That value includes regional oil and gas activity, for which VOC is a common pollutant. And finally, the Sidney monitoring site provides background concentrations for SO_2 in the area. The 2013 design value (as provided by MDEQ with flagged exceptional events removed) at the Sidney monitor for the 1-hour SO_2 standard is 4 parts per billion, compared to a standard of 75 parts per billion, well in compliance with that standard.

These factors combine to demonstrate compliance with the 1-hour NO_2 standard, 2008 8-hour ozone NAAQS, and 1-hour SO_2 NAAQS.

The units being proposed for the Montana-Dakota Lewis & Clark Station site would be well controlled and operated intermittently during peak times for power usage. Considering the projected low level of emissions for these peaking units, the low levels of existing ambient pollutant concentrations at the Sidney site, and relevant guidance documents from the Department and EPA, no modeling analyses are needed to demonstrate compliance with the ambient standards. The qualitative analysis provides sufficient evidence of compliance with the NAAQS.

The Department concurs with Montana-Dakota's determination that the impacts from this permitting action will be minor. The Department believes it will not cause or contribute to a violation of any ambient air quality standard.

VII. Taking or Damaging Implication Analysis

As required by 2-10-105, MCA, the Department conducted the following private property taking and damaging assessment.

YES	NO	
X		1. Does the action pertain to land or water management or environmental regulation affecting private real property or water rights?
	X	2. Does the action result in either a permanent or indefinite physical occupation of private property?
	X	3. Does the action deny a fundamental attribute of ownership? (ex.: right to exclude others, disposal of property)
	X	4. Does the action deprive the owner of all economically viable uses of the property?
	X	5. Does the action require a property owner to dedicate a portion of property or to grant an easement? [If no, go to (6)].
		5a. Is there a reasonable, specific connection between the government requirement and legitimate state interests?
		5b. Is the government requirement roughly proportional to the impact of the proposed use of the property?
	X	6. Does the action have a severe impact on the value of the property? (consider economic impact, investment-backed expectations, character of government action)
	X	7. Does the action damage the property by causing some physical disturbance with respect to the property in excess of that sustained by the public generally?
	X	7a. Is the impact of government action direct, peculiar, and significant?
	X	7b. Has government action resulted in the property becoming practically inaccessible, waterlogged or flooded?
	X	7c. Has government action lowered property values by more than 30% and necessitated the physical taking of adjacent property or property across a public way from the property in question?
	X	Takings or damaging implications? (Taking or damaging implications exist if YES is checked in response to question 1 and also to any one or more of the following questions: 2, 3, 4, 6, 7a, 7b, 7c; or if NO is checked in response to questions 5a or 5b; the shaded areas)

Based on this analysis, the Department determined there are no taking or damaging implications associated with this permit action.

VIII. Environmental Assessment

An environmental assessment, required by the Montana Environmental Policy Act, was completed for this project. A copy is attached.

DEPARTMENT OF ENVIRONMENTAL QUALITY
Permitting and Compliance Division
Air Resources Management Bureau
P.O. Box 200901, Helena, Montana 59620
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FINAL ENVIRONMENTAL ASSESSMENT (EA)

Issued To: **Montana Dakota Utilities Co. Lewis and Clark Station**

Air Quality Permit Number: **0691-02**

Preliminary Determination Issued: **12/16/2014**
Department Decision Issued: **01/06/15**
Permit Final: **01/22/2015**

1. *Legal Description of Site*: The Montana-Dakota Utilities Co. (Montana-Dakota) facility is located in the SW 1/4 of Section 9, Township 22 N, Range 59 E in Richland County, Montana.

2. *Description of Project*: Montana-Dakota is proposing to install and operate two natural gas reciprocating internal combustion engine (RICE) generators, an indirect fired fuel heater (gas line heater), and, associated building heating, ventilating and air condition (HVAC) units for the purpose of generating electricity at the Lewis & Clark Station.

3. *Objectives of Project*: This project would provide Montana-Dakota with additional generating resources to help meet its customers peak load requirements, as well as providing reliability support to the region as a result of the increased peak electric demand in the areas around the Bakken oilfields in Eastern Montana and Western North Dakota.

4. *Alternatives Considered*: In addition to the proposed action, the Department of Environmental Quality (Department) also considered the "no-action" alternative. The "no-action" alternative would deny issuance of the air quality preconstruction permit to the proposed facility. However, the Department does not consider the "no-action" alternative to be appropriate because Montana-Dakota demonstrated compliance with all applicable rules and regulations as required for permit issuance. Therefore, the "no-action" alternative was eliminated from further consideration.

5. *A Listing of Mitigation, Stipulations, and Other Controls*: A list of enforceable conditions, including a BACT analysis, would be included in MAQP #0691-02.

6. *Regulatory Effects on Private Property*: The Department considered alternatives to the conditions imposed in this permit as part of the permit development. The Department determined that the permit conditions are reasonably necessary to ensure compliance with applicable requirements and demonstrate compliance with those requirements and do not unduly restrict private property rights.

7. *The following table summarizes the potential physical and biological effects of the proposed project on the human environment. The "no-action" alternative was discussed previously.*

		Major	Moderate	Minor	None	Unknown	Comments Included
A	Terrestrial and Aquatic Life and Habitats			X			Yes
B	Water Quality, Quantity, and Distribution			X			Yes
C	Geology and Soil Quality, Stability and Moisture			X			Yes
D	Vegetation Cover, Quantity, and Quality			X			Yes
E	Aesthetics			X			Yes
F	Air Quality			X			Yes
G	Unique Endangered, Fragile, or Limited Environmental Resources			X			Yes
H	Demands on Environmental Resource of Water, Air and Energy			X			Yes
I	Historical and Archaeological Sites			X			Yes
J	Cumulative and Secondary Impacts			X			Yes

SUMMARY OF COMMENTS ON POTENTIAL PHYSICAL AND BIOLOGICAL EFFECTS: The following comments have been prepared by the Department.

A. Terrestrial and Aquatic Life and Habitats

Any impacts resulting from the proposed project to terrestrial and aquatic life and habitats would be minor because all proposed activities would take place within the defined Montana-Dakota property boundary, an existing industrial site. Further, minor impacts to the surrounding area from the air emissions (see Section VI of the permit analysis) would be realized due to dispersion of pollutants.

Terrestrials (such as deer, antelope, rodents, and insects) would use the general area of the facility. The area around the facility would be fenced to limit access to the facility. The fencing would likely not restrict access from all animals that frequent the area, but it may discourage some animals from entering the facility property. Therefore, any impacts to terrestrial and aquatic life and habits would have minor and typical impacts.

B. Water Quality, Quantity and Distribution

Any impacts resulting from the proposed project to water quality, quantity, and distribution would be minor because all proposed activities would take place within the defined Montana-Dakota property boundary, an existing industrial site. Further, minor impact to the surrounding area from the air emissions (see Section VI of the permit analysis) would be realized due to dispersion of pollutants.

Overall, any impacts to water quality, quantity, and distribution from Montana-Dakotas proposed permit action would be minor.

C. Geology and Soil Quality, Stability and Moisture

Any impacts resulting from the proposed project to geology and soil quality, stability, and moisture would be minor because all proposed activities with respect to limits and practices associated with installation of new generators would take place within the defined Montana-Dakota property boundary, an existing industrial site. Further, minor impact to the surrounding area from the air emissions (see Section VI of the permit analysis) would be realized due to dispersion of pollutants.

D. Vegetation Cover, Quantity, and Quality

Any impacts resulting from the proposed project to vegetation cover, quantity, and quality would be minor because all proposed activities with respect to limits and practices associated with the proposed permit action would take place within the defined Montana-Dakota property boundary, an existing industrial site. Further, minor impact to the surrounding area from the air emissions (see Section VI of the permit analysis) would be realized due to dispersion of pollutants.

E. Aesthetics

Minor impacts to the aesthetic nature of the area would result from the proposed Montana-Dakota permit action because all proposed activities would take place within the defined Montana-Dakota property boundary, an existing industrial site. The station is located immediately adjacent to the Yellowstone River; however, the site has been well established and the proposed project would not disturb current recreational access. Montana-Dakota Utilities is not aware of any unique cultures near the site. The operating noise levels are projected to be 56 dB(A) at a distance of 40 meters. However, the Montana-Dakota site is a previously disturbed industrial location and the units being proposed would be well controlled and operated intermittently during peak times for power usage. Any aesthetic impacts would be minor and consistent with current industrial land use of the area.

Overall, any impacts to the aesthetic nature of the project area from Montana-Dakota's proposed permit action, including construction activities and normal operations resulting in air emissions and deposition of air emissions would be minor.

F. Air Quality

The air quality impacts from the current permit action would be minor because MAQP #0691-02 would include conditions limiting emissions of air pollution from the two natural gas RICE, the gas line heater, and the associated building heating, ventilating and air conditioning (HVAC) units. Overall, any impacts to the air quality of the project area from Montana-Dakota's proposed permit action, including construction activities, normal operations resulting in air emissions, and deposition of air emissions would be minor and in compliance with all applicable MAAQS and NAAQS.

G. Unique Endangered, Fragile, or Limited Environmental Resources

The Department previously contacted the Montana Natural Heritage Program (MNHP) in an effort to identify any species of special concern associated with the proposed site location. Search results concluded there are 13 such environmental resources in the area. Area in this case is defined by the township and range of the proposed site, with an additional one-mile buffer. The species of special concern identified by MNHP include the *Sterna antillarum* (Least Tern), *Melanerpes erythrocephalus* (Red-headed Woodpecker), *Tyrannus vociferans* (Cassin's Kingbird), *Scaphirhyncus albus* (Pallid Sturgeon), *Polyodon spathula* (Paddlefish), *Macrhybopsis gelida* (Sturgeon Chub), *Machybopsis meeki* (Sicklefin Chub), *Cycleptus elongates* (Blue Sucker), *Sander Canadensis* (Sauger), *Corynorhinus townsendii* (Townsend's Big-eared Bat), *Zapus hudsonius* (Meadow Jumping Mouse), *Apalone spinifera* (Spiny Softshell), and Lobelia spicata (Pale-spiked Lobelia).

The Montana-Dakota site has historically been used for industrial purposes. Any changes in operation associated with the addition of the new generators would take place within the Montana-Dakota site. Because industrial operations have been ongoing within the existing Montana-Dakota property boundary for an extended period of time (exceeding 50 years) and potential permitted emissions from Montana-Dakota show compliance with all applicable air quality standards, it is unlikely that any of these species of special concern would be affected by the proposed project. Overall, any impacts to any unique endangered, fragile, or limited environmental resources would be minor.

H. Demands on Environmental Resource of Water, Air and Energy

Demands on environmental resources of water, air, and energy would be minor. As previously discussed, the proposed permit action would add two new generators a gas line heater, and associated building HVAC units to help meet its customers peak load requirements, as well as providing reliability support to the region.

Any impacts to air resources in the area would be minor and would be in compliance with applicable standards. Any impacts to the local air resource would be minor as demonstrated through the ambient air quality impact analysis conducted for the proposed permit modification.

Regarding impacts to the environmental resource of water, this permit action does not include any increase in the demand for water. Therefore, any impacts to the demand for water resources in the affected area associated with Montana-Dakota operations has been determined to be minor.

With respect to energy, the permit action would change, the overall amount of power used and produced by adding increased peaking capacity and reliability. However, overall, any impacts to the demands on the environmental resources of water, air, and energy from Montana-Dakota's proposed permit action would be minor.

I. Historical and Archaeological Sites

In an effort to identify any historical and archaeological sites near the proposed project area, the Department previously contacted the Montana Historical Society, State Historic Preservation Office (SHPO). According to SHPO, the absence of recorded

cultural/historical properties in the search locale may be due to a lack of previous inventory. SHPO indicated there was a low likelihood cultural properties would be impacted and did not feel a recommendation for a cultural resource inventory was warranted. The Department determined that due to the previous industrial disturbance in the area (the area is an active industrial site) and the small amount of land disturbance that may be required for the proposed permit action, it is unlikely that any undisturbed existing historical or cultural resource exists in the area and if these resources did exist, any impacts would be minor due to previous industrial disturbance in the area.

J. Cumulative and Secondary Impacts

Overall, any cumulative and secondary impacts from the proposed permit modification on the physical and biological resources of the human environment in the immediate area would be minor due to the fact that the predominant use of the surrounding area would not change as a result of the proposed project. The Department believes that this facility could be expected to operate in compliance with all applicable rules and regulations as would be outlined in MAQP #0691-02.

8. *The following table summarizes the potential economic and social effects of the proposed project on the human environment. The "no-action" alternative was discussed previously.*

		Major	Moderate	Minor	None	Unknown	Comments Included
A	Social Structures and Mores				X		Yes
B	Cultural Uniqueness and Diversity				X		Yes
C	Local and State Tax Base and Tax Revenue			X			Yes
D	Agricultural or Industrial Production				X		Yes
E	Human Health			X			Yes
F	Access to and Quality of Recreational and Wilderness Activities				X		Yes
G	Quantity and Distribution of Employment			X			Yes
H	Distribution of Population			X			Yes
I	Demands for Government Services			X			Yes
J	Industrial and Commercial Activity			X			Yes
K	Locally Adopted Environmental Plans and Goals				X		Yes
L	Cumulative and Secondary Impacts			X			Yes

SUMMARY OF COMMENTS ON POTENTIAL ECONOMIC AND SOCIAL EFFECTS: The following comments have been prepared by the Department.

A. Social Structures and Mores
B. Cultural Uniqueness and Diversity

The proposed permit modification would not cause a disruption to any native or traditional lifestyles or communities (social structures or mores) or impact the cultural uniqueness and diversity of the area because the current permit action would not change the current industrial nature of the Montana-Dakota operation or the overall industrial nature of the area of operation. The predominant use of the surrounding area would not change as a result of the current permit action. In addition, the overall industrial nature of the surrounding area, as a whole, would not be altered by the proposed Montana-Dakota permit action.

C. Local and State Tax Base and Tax Revenue

Any impacts to the local and state tax base and tax revenue would be minor because Montana-Dakota would remain responsible for all appropriate state and county taxes imposed upon the business operation. In addition, Montana-Dakota employees would continue to add to the overall income base of the area.

D. Agricultural or Industrial Production

The current permit action would not displace or otherwise affect any agricultural land or practices since Montana-Dakota operates on an existing industrial site.

E. Human Health

There would be minor potential effects on human health due to installation of new generators within the defined Montana-Dakota property boundary, an existing industrial site. In addition, MAQP #0691-02 would include conditions to ensure that the facility would be operated in compliance with all applicable rules and standards. These rules and standards are designed to be protective of human health.

As detailed in Section 7.F of this EA, Montana-Dakota would comply with all applicable ambient air quality standards thereby protecting human health. Overall, the Department determined, based on the ambient air impact analysis that any impact to public health would be minor.

F. Access to and Quality of Recreational and Wilderness Activities

The proposed permit action and overall Montana-Dakota operations would not affect access to any recreational or wilderness activities in the area. Montana-Dakota would continue to be located at the existing site located immediately adjacent to the Yellowstone River; however, the site has been well established and the proposed project would not disturb current recreational access. The area is comprised of private property with no public access and would continue in this state after issuance of the permit.

G. Quantity and Distribution of Employment
H. Distribution of Population

The current permit action would result in the addition of one to two employees. The estimated peak number of construction employees on site would be about 80. With respect to contract employees, the proposed project would add minor incremental new business with existing contractors and suppliers. The area would experience minor impacts to the quantity and distribution of employment and/or the distribution of population because of the minor increase in facility employees.

I. Demands for Government Services

Demands on government services from the proposed permit modification would be minor because Montana-Dakota would be required to procure the appropriate permits (including a state air quality permit) and any permits for the associated activities of the project (including an MPDES Construction General Permit). Further, compliance verification with those permits would also require minor services from the government.

As the Montana-Dakota site is within an existing industrial location, employee water and sewage disposal facilities would continue to be connected to existing water and sewer sources. Further, all process water needs for the facility operations would remain unchanged as a result of the current permit action. All spent water (waste-water) would continue to be discharged to an evaporation pond to be located on site and would therefore not require the use of any county or state services, including permitting. Overall, any demands on government services resulting from the proposed permit modification would be minor.

J. Industrial and Commercial Activity

The current permit action would provide additional generating resources to help meet its customers peak load requirements, as well as providing reliability support to the region, but would not result in an overall change in facility purpose; therefore, impact any industrial or commercial activity in the area due to the proposed permit modification would be minor.

K. Locally Adopted Environmental Plans and Goals

The current permit action would not contribute to the nonattainment status of any surrounding area. No known state, county, city, USFS, BLM, or tribal zoning or management plans and goals are known to potentially affect the site. The Department is unaware of any other locally adopted Environmental plans or goals. The state air quality standards would protect air quality at the proposed site and the environment surrounding the site; therefore, the proposed permit modification would not impact any locally adopted environmental plans and goals.

L. Cumulative and Secondary Impacts

Overall, cumulative and secondary impacts from the proposed permit modification on the economic and social resources of the human environment in the immediate area would be minor due to the fact that the predominant use of the surrounding area would not change

as a result of the proposed project. The Department believes that this facility could be expected to operate in compliance with all applicable rules and regulations as would be outlined in MAQP #0691-02.

Recommendation: No Environmental Impact Statement (EIS) is required.

If an EIS is not required, explain why the EA is an appropriate level of analysis: The current permitting action would add two peaking RICE at the Lewis & Clark Station to help meet its customers peak load requirements, as well as providing reliability support to the region. MAQP #0691-02 includes conditions and limitations to ensure the facility will operate in compliance with all applicable rules and regulations. In addition, there are no significant impacts associated with this proposal.

Other groups or agencies contacted or which may have overlapping jurisdiction: Montana Historical Society – State Historic Preservation Office, Natural Resource Information System – Montana Natural Heritage Program

Individuals or groups contributing to this EA: Department of Environmental Quality – Air Resources Management Bureau,

EA prepared by: Deanne Fischer
Date: December 9, 2014