



Montana Department of
ENVIRONMENTAL QUALITY

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February 10, 2011

Frank Trocki
Montana State University-Northern
BioEnergy Center
300 13th Street West
P.O. Box 7751
Havre, MT 59501

Dear Mr. Trocki:

Montana Air Quality Permit #4610-00 is deemed final as of February 10, 2011 by the Department of Environmental Quality (Department). This permit is for the BioEnergy Center's Testing Facility. 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,

Vickie Walsh
Air Permitting Program Supervisor
Air Resources Management Bureau
(406) 444-9741

Jenny O'Mara
Environmental Engineer
Air Resources Management Bureau
(406) 444-1452

VW:JO
Enclosure

Montana Department of Environmental Quality
Permitting and Compliance Division

Montana Air Quality Permit #4610-00

Montana State University-Northern
BioEnergy Center
300 13th Street West
P.O. Box 7751
Havre, MT 59501

February 10, 2011



MONTANA AIR QUALITY PERMIT

Issued To:	Montana State University-Northern BioEnergy Center 300 13 th Street West P.O. Box 7751 Havre, MT 59501	MAQP: #4610-00 Application Complete: 11/19/2010 Preliminary Determination Issued: 12/22/2010 Department Decision: 01/25/2011 Permit Final: 02/10/2011 AFS #: 041-0013
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A Montana Air Quality Permit (MAQP), with conditions, is hereby granted to Montana State University-Northern's BioEnergy Center (BioEnergy Center), 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. Permitted Equipment

The BioEnergy Center proposes to operate a heavy duty engine performance testing facility. The primary purpose of the facility is emission testing on fuels, new engine enhancement technology for the reduction of emissions and increased engine performance on a variety of test engines ranging from small, 5 horsepower (hp) engines, up to 515 hp engines.

The BioEnergy Center operates five laboratories in two buildings located with the College of Technical Sciences (COT) at Montana State University-Northern's Havre Campus. At the Applied Technology Center (ATC), the BioEnergy Center operates an oil analysis lab, fuel chemistry lab, wet chemistry lab and dynamometers as part of the performance lab facilities.

The ATC Building houses a small engine test dynamometer capable of testing 4 - 5 engines with each engine capacity rated at 5-15 hp and a water-brake engine test dynamometer with a loaded capacity of 1000 hp. However, the BioEnergy Center requested a federally enforceable limit on the water-break engine test dynamometer to limit the engine capacity on this dynamometer (up to 475 hp). The ATC-East building will be equipped with an alternating current (AC) dynamometer with a loaded a capacity of up to 550 hp, three boilers for heating the facility, a 50 gallon biodiesel reactor, an oil seed press lab, three 200 gallon biodiesel storage tanks, and a glycerin storage tank. The BioEnergy Center requested a federally enforceable limit on the AC dynamometer to limit the engine capacity (up to 515 hp). Additionally, the BioEnergy Center requested a federally enforceable limit on the hours of operation not to exceed 5,110 hours per year.

B. Plant Location

The BioEnergy Center is located within the Montana State University-Northern's campus in Section 8, Township 32 North, Range 16 East in Hill County, Montana.

SECTION II: Conditions and Limitations

A. Operational and Emission Limitations

1. The BioEnergy Center's water-break dynamometer shall operate one, dual fuel powered engine with a design capacity of up to 475 hp (ARM 17.8.749).

2. The BioEnergy Center's chassis dynamometer shall operate one engine with a design capacity rated up to 515 hp (ARM 17.8.749).
3. The BioEnergy Center shall not operate the water-break dynamometer and the chassis dynamometer concurrently (ARM 17.8.749).
4. The BioEnergy Center's small engine test dynamometer shall only operate up to five engines at any given time. The total combined design capacity of these engines shall not exceed 45 hp (ARM 17.8.749).
5. The BioEnergy Center's AC dynamometer shall operate one engine with a design capacity rated up to 515 hp (ARM 17.8.749).
6. The BioEnergy Center shall only combust gasoline, biodiesel or ultra-low sulfur (#2) diesel fuel oil in the engines (ARM 17.8.749).
7. Each dynamometer and associated engine would be limited to 5,110 hours of operation per rolling 12-month period (ARM 17.8.1204).
8. The ATC-East building must have a minimum stack exhaust height of at least 23-feet from the top of the building (ARM 17.8.749).
9. The ATC building must have a minimum stack exhaust height of at least 19.8-feet from the top of the building (ARM 17.8.749).
10. BioEnergy Center 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).
11. BioEnergy Center 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).
12. BioEnergy Center 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.11 (ARM 17.8.749).

B. Testing Requirements

1. The Department of Environmental Quality (Department) may require testing (ARM 17.8.105).
2. All compliance source tests shall conform to the requirements of the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

C. Operational Reporting Requirements

1. BioEnergy Center 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. Information shall include the following and be in the units required by the Department (ARM 17.8.505):

- a. Capacity of engine(s) used for each dynamometer; and
 - b. Hours of operation for each dynamometer.
2. BioEnergy Center shall document, by month, the hours of operation for each dynamometer. By the 25th day of each month, BioEnergy Center shall total the hours of operation for each unit, during the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section II.A.7. The information for each of the previous months shall be submitted along with the annual emissions inventory (ARM 17.8.749).
 3. BioEnergy Center shall document, by month, the design capacity (in hp) and hours of operation of engines tested in the dynamometers. By the 25th day of each month, BioEnergy Center shall total the hours of operation for each, during the previous month. The monthly information will be used to verify compliance with the limitations in Section II.A.1, II.A.2, II.A.4, and II.A.5. The information for each of the previous months shall be submitted along with the annual emissions inventory (ARM 17.8.749).
 4. BioEnergy Center shall notify the Department of any construction or improvement project conducted pursuant to ARM 17.8.745, that would include *the addition of new emission unit*, a 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 start up 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(1)(d) (ARM 17.8.745).
 5. BioEnergy Center shall annually certify that its actual emissions are less than those that would require the source to obtain an air quality operating permit as required by ARM 17.8.1204(3)(b). The annual certification shall comply with the certification requirements of ARM 17.8.1207. The annual certification shall be submitted along with the annual emission inventory information (ARM 17.8.749 and ARM 17.8.1204).
 6. All records compiled in accordance with this permit must be maintained by BioEnergy Center 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).

SECTION IV: General Conditions

- A. Inspection – BioEnergy Center 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 Emission Monitoring System (CEMS), Continuous Emission Rate Monitoring System (CERMS)) 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 BioEnergy Center fails to appeal as indicated below.
- C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving BioEnergy Center 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 therefore, 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. 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).
- H. Permit Fee – Pursuant to Section 75-2-220, MCA, failure to pay the annual operation fee by BioEnergy Center may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.

Montana Air Quality Permit (MAQP) Analysis
Montana State University-Northern's BioEnergy Center
MAQP #4610-00

I. Introduction/Process Description

The Montana State University-Northern's BioEnergy Center (BioEnergy Center) proposes to operate a heavy duty engine performance testing facility. The BioEnergy Center is located within the Montana State University-Northern's campus in Section 8, Township 32 North, Range 16 East in Hill County, Montana.

A. Permitted Equipment

The following is a list and description of permitted equipment at the BioEnergy Center:

1. Boilers, heaters, furnaces

Each of the individual boilers, heaters, and furnaces all have a rated capacity of less than 1 million British thermal units per hour (MMBtu/hr) heat input rating. Two boilers operate on natural gas and one operates on biodiesel fuel. All boilers are located in the Applied Technology Center (ATC) -East building and the total heat input from all units is approximately 0.407 MMBtu/hr.

2. Small Engine Dynamometer

This dynamometer is located in the ATC Building. This unit is rated to test 4-5 engines with a rated capacity up to 15 horsepower (hp). However, due to other circumstances the dynamometer is really only capable of testing four, 5 hp engines or fewer engines with greater hp. The facility is limited to test any combination of engines so long as the combined designed capacity of the engines is less than 45 hp.

3. Water-Break Engine Dynamometer

The water-brake engine test dynamometer located in the ATC Building has a loaded capacity of up to 1000 hp. However, the BioEnergy Center requested a federally enforceable limit on the water-break engine test dynamometer to limit the engine capacity on this dynamometer (up to 475 hp). Due to the mechanical system design and control system design, the water-break and the chassis dynamometer cannot be operated at the same time.

4. Alternating Current (AC) Dynamometer

This dynamometer has a loaded capacity of 550 hp. However, the BioEnergy Center requested a federally enforceable limit on this dynamometer to limit the engine capacity up to 515 hp.

5. Chassis Dynamometer

This is setup to allow a vehicle to park on the chassis dynamometer with an engine capacity of up to 515 hp. The Chassis dynamometer room has its own ventilation system that vents to a stack.

6. Oilseed press and biodiesel pilot processing plant

The purpose of the oilseed press is to research Montana grown oilseeds. The types of seed that are typically used are canola, safflower, flax, camelina, and mustard. The ATC-East building contains five cold presses and one filter press and does not use any chemicals or heat to extrude the oil. The capacity of each press is 1 ton per day (24 hours). The maximum capacity of all the presses is 3 tons of seed per week.

The biodiesel plant consists of a 50 gallon biodiesel reactor. The process produces a small amount of methanol that is vented to the outside. The methanol is generally distilled and recovered as part of the process. The reactor can handle 15 gallons of methanol, and the unit is a closed loop system with minimal emissions.

7. Miscellaneous storage tanks

The BioEnergy Center is also equipped several small storage tanks (two, 200 gallon storage tanks, three small portable tanks with vents, and a 700 gallon tank).

B. Source Description

The BioEnergy Center proposes to operate a heavy duty engine performance testing facility. The primary purpose of the facility is emission testing on fuels, new engine enhancement technology for the reduction of emission and increased engine performance on a variety of test engines ranging from small, 5 hp engines up to 515 hp engines.

C. Response to Public Comments

Person/Group Commenting	Permit Reference	Comment	Department Response
Mark Hines/Architecture and Engineering Division, State of Montana	II.A.8 and II.A.9	Requested clarification regarding the stack height for the ATC building and ATC-East Building	On December 2, 2010, the Department sent a letter to Montana State-Northern (MSU-N) regarding the results of the air dispersion modeling that was completed for this project. In summary, in order to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS), the Department determined that the ATC-Building stack height must be at least 19.8 feet (measured from the top of the building) and the ATC-East Building stack height must be at least 23 feet (measured from the top of the building). However, the preliminary determination (PD) erroneously stated that the stack height would be measured from ground level, but should have been measured from the top of the building. Both permit conditions have been corrected to reflect the letter that was sent to MSU-N and the intent of the condition.

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 Administrative Rules of Montana (ARM) and are available, upon request, from the Department of Environmental Quality (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).

BioEnergy Center 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 PM₁₀

BioEnergy Center 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. This rule requires that no person may cause or authorize emissions to be discharged into an 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 20% for all fugitive emission sources and reasonable precautions be taken to control emissions of airborne particulate. (2) Under this rule, BioEnergy Center 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 17.8.322 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.
5. 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.
6. ARM 17.8.340 Standard of Performance for New Stationary Sources. This section incorporates, by reference, 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS). The BioEnergy Center is a stationary source that tests CI ICE. Pursuant to 40 CFR Part 60.420(b), the provisions of this subpart would not be applicable to stationary CI ICE being tested at a stationary CI ICE test cell/stand. Therefore, the BioEnergy Center is not considered an affected facility under 40 CFR Part 60.
7. ARM 17.8.341 Emission Standards for Hazardous Air Pollutants. This section incorporates, by reference, 40 CFR Part 61, National Emission Standards for Hazardous Air Pollutants (NESHAP). Since the emissions of HAPs from the BioEnergy Center facility are less than 10 tons per year for any individual HAP and less than 25 tons per year for all HAPs combined, the BioEnergy Center facility is not subject to the provisions of 40 CFR Part 61.
8. ARM 17.8.342 Emission Standards for Hazardous Air Pollutants for Source Categories. This section incorporates, by reference, 40 CFR Part 63, NESHAP for Source Categories. When the emissions of HAP from a facility is less than 10 tons per year for any individual HAP and less than 25 tons per year for all HAP combined, the facility is not subject to the major source provisions of 40 CFR Part 63. If the BioEnergy Center increases its emissions or its potential to emit such that it becomes a major source of HAP, then the following could apply:
 - 40 CFR 63, Subpart A – General Provisions apply to all equipment or facilities subject to a NESHAPs Subpart as listed below.
 - 40 CFR 63, Subpart P – National Emissions Standards for Hazardous Air Pollutants (HAPs): Engine Test Cell/Stand. An owner or operator of a test cell/stand at a major of HAP emissions is subject to this rule. At this time, this facility is not a major source of HAPs and is not subject to the major source provisions of 40 CFR Part 63.

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. BioEnergy Center 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 stack will be 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. BioEnergy Center 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 to construct, modify, or use any air contaminant sources that have the Potential to Emit (PTE) greater than 25 tons per year of any pollutant. BioEnergy Center has a PTE greater than 25 tons per year of oxides of nitrogen (NO_x) 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, alteration, or use of a source. BioEnergy Center 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. BioEnergy Center submitted an affidavit of publication of public notice for the October 11, 2010, issue of the *Havre Daily News, LLC*, a newspaper of general circulation in the town of Havre, 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 Best Available Control Technology (BACT) shall be utilized. The BACT analysis is discussed 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 BioEnergy Center 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 altered source may contain a condition providing that the permit will expire unless construction has commenced (begin or contractual obligations entered into that would constitute substantial loss) 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.

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.

The facility is not a “listed facility” and the PTE is less than 250 tons per year of any pollutant (excluding fugitive emissions). Therefore, BioEnergy Center facility is not deemed a major stationary source and is not subject to review under the PSD program.

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 per year (tpy) of any pollutant;
 - b. PTE > 10 tpy of any one HAP, PTE > 25 tpy of a combination of all HAPs, or lesser quantity as the Department may establish by rule; or
 - c. PTE > 70 tpy of particulate matter with an aerodynamic diameter of 10 microns or less (PM₁₀) in a serious PM₁₀ 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 #4610-00 for BioEnergy Center, the following conclusions were made:
 - a. The facility’s PTE is < 100 tpy for any pollutant.
 - b. The facility’s PTE is < 10 tpy for any one HAP and < 25 tpy for all HAPs.
 - c. This source is not located in a serious PM₁₀ nonattainment area.
 - d. This facility is not subject to any current NSPS.
 - e. This facility is not subject to a current NESHAP standard.

- f. This source is not a Title IV affected source.
- g. This source is not an EPA designated Title V source.
- h. ARM 17.8.1204(3). The Department may exempt a source from the requirement to obtain an air quality operating permit by establishing federally enforceable limitations, which limit that source's PTE.
 - i. In applying for an exemption under this section the owner or operator of the source shall certify to the Department that the source's PTE does not require the source to obtain an air quality operating permit.
 - ii. Any source that obtains a federally enforceable limit on PTE shall annually certify that its actual emissions are less than those that would require the source to obtain an air quality operating permit.

Based on these facts, the Department determined that the BioEnergy Center will be a minor source of emissions as defined under Title V based on a requested federally enforceable permit limit.

III. BACT Determination

A BACT determination is required for each new or modified source. BioEnergy Center 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 BioEnergy Center is a research and testing facility specializing in heavy-duty technology. The research conducted is to test emissions using various fuels (gasoline, diesel and biodiesel), and to try new engine enhancement technology (for the reduction of emissions thereby increasing engine performance). The facility tests engines that vary in size ranging from 5 hp up to 515 hp. These types of facilities could be considered a test engine cells/stands under 40 CFR 63, Subpart P. However, because the BioEnergy Center is not major stationary source for HAPs, it is not subject to this subpart. However, in an effort to cover the scope of available control technology for this type of facility, the Department researched test engine cells/stands as the worse-case scenario to identify potential air pollution controls.

Through research, the Department concluded that control equipment is generally not considered for this type of testing facility because control equipment might alter the combustor in the engine or the combustion characteristics of the engine. Additionally, the joint report submitted to the U.S. Congress in October 1994 by the EPA and the Department of Transportation (DOT) entitled "Nitrogen Oxide Emissions and Their Control from Uninstalled Aircraft Engines in Enclosed Test Cell," Report No. EPA-453/R-94-068, October 1994 concludes that there are no existing technologies for control of NO_x that have been applied (full scale) to aircraft engine test cells in the United States. Although this paper mainly identifies aircraft engines, the Department believes this would also apply to other engine test cells. Overall, the differences in engines, engine tests, engine test cell sizes, and engine types complicate the application of a NO_x control system to engine test cells and might compromise the research and testing at the facility. Additionally, a search for available literature did not identify any technologies for controlling carbon monoxide (CO), volatile organic compounds (VOC), particulate matter (PM), and particulate matter with an aerodynamic diameter of 10 microns or less (PM₁₀) emissions from engine test cells of this size. RACT/BACT LAER Clearinghouse (RBLC) determinations indicate that no control methods are available for the control of CO and VOC emissions.

In general, test engine cells/stands are not subject to emission limitations unless they are located at a major stationary source and the BioEnergy Center is not considered a major stationary source. Based on the information submitted, and research conducted by the Department, BACT is considered to be no control for all pollutants which is similar to other recently permitted sources. Due to the limited amount of emissions produced by the engines and the lack of readily available, cost effective add-on controls; add-on controls would be cost prohibitive. Therefore, the Department determined proper operation and maintenance with no add-on controls would constitute BACT for the engines.

IV. Emission Inventory

Emission Source	TPY							CO ₂ e	Total HAPs
	PM	PM ₁₀	PM _{2.5}	NO _x	CO	VOC	SO ₂		
Natural gas boilers	0.0085	0.0085	0.0085	0.1049	0.0447	0.0061	0.0007	135	0.00
Biodiesel boiler	0.0152	0.0106	0.0071	0.0920	0.0230	0.0033	0.0131	103.10	
520 hp Diesel Engines in ATC Building	2.92	2.92	2.92	42.01	8.88	3.34	2.72	1528	
515 hp Diesel Engine in ATC-East Building	2.89	2.89	2.89	41.61	8.79	3.31	2.70	1513	
Total Emissions	5.84	5.84	5.83	83.81	17.73	6.66	5.43	3279	0.00
Notes:									
1. Values in table reflect "controlled" cells from subsequent worksheets									
2. All PM values include filterable and condensable fractions.									
3. The small engine dynos were included with the 475 hp engine (475 hp + 45 hp)									

Diesel Engine in ATC-East Building

Operational Capacity of Engine = 515 hp
Annual Hours of Operation = 5,110.00 hours/yr

Total PM/PM₁₀/PM_{2.5} Emissions:

Emission Factor = 0.0022 lbs/hp-hr (All PM < 1 mm, AP-42, Sec. 3.3, Table 3.3-1, 10/96)

Calculation: (5,110 hours/yr) * (495 hp) * (0.0022 lbs/hp-hr) * (ton/2000 lb) = 2.78 ton/yr

Calculation: (5,110 hours/yr) * (495 hp) * (0.0022 lbs/hp-hr) = 5,564.79 lbs/yr

NO_x Emissions:

Emission Factor = 0.03162 lbs/hp-hr (AP-42, Sec. 3.3, Table 3.3-1, 10/96, increased by 2% for biodiesel)

Calculation: (5,110 hours/yr) * (495 hp) * (0.03162 lbs/hp-hr) * (ton/2000 lb) = 39.99 ton/yr

Calculation: (5,110 hours/yr) * (495 hp) * (0.03162 lbs/hp-hr) = 79,981.21 lbs/yr

CO Emissions:

Emission Factor = 0.00668 lbs/hp-hr (AP-42, Sec. 3.3, Table 3.3-1, 10/96)

Calculation: (5,110 hours/yr) * (495 hp) * (0.00668 lbs/hp-hr) * (ton/2000 lb) = 8.45 ton/yr

Calculation: (5,110 hours/yr) * (495 hp) * (0.00668 lbs/hp-hr) = 16,896.73 lbs/yr

VOC Emissions:

Emission Factor = 0.0025141 lbs/hp-hr (AP-42, Sec. 3.3, Table 3.3-1, TOC, Exhaust & Crankcase, 10/96)

Calculation: (5,110 hours/yr) * (495 hp) * (0.0025141 lbs/hp-hr) * (ton/2000 lb) = 3.18 ton/yr

Calculation: (5,110 hours/yr) * (495 hp) * (0.0025141 lbs/hp-hr) = 6,359.29 lbs/yr

SO_x Emissions:

Emission Factor = 0.00205 lbs/hp-hr (AP-42, Sec. 3.3, Table 3.3-1, 10/96)

Calculation: (5,110 hours/yr) * (495 hp) * (0.00205 lbs/hp-hr) * (ton/2000 lb) = 2.593 ton/yr

Calculation: (5,110 hours/yr) * (495 hp) * (0.00205 lbs/hp-hr) = 5,185.37 lbs/yr

CO₂ Emissions:

Emission Factor = 1.15 lbs/hp-hr (AP-42, Sec. 3.3, Table 3.3-1, 10/96)

Calculation: (5,110 hours/yr) * (495 hp) * (1.15 lbs/hp-hr) * (ton/2000 lb) = 1,454.43 ton/yr

Calculation: (5,110 hours/yr) * (495 hp) * (1.15 lbs/hp-hr) = 2,908,867.50 lbs/yr

Diesel Engine in ATC-East Building

Operational Capacity of Engine = 520 hp

Annual Hours of Operation = 5,110.00 hours/yr

(The power output for the ATC Building includes the 475 hp engine and 45 hp for engines used on the small engine test dyno)

Total PM/PM₁₀/PM_{2.5} Emissions:

Emission Factor = 0.0022 lbs/hp-hr (All PM < 1 mm, AP-42, Sec. 3.3, Table 3.3-1, 10/96)

Calculation: (5,110 hours/yr) * (520 hp) * (0.0022 lbs/hp-hr) * (ton/2000 lb) = 2.92 ton/yr

Calculation: (5,110 hours/yr) * (520 hp) * (0.0022 lbs/hp-hr) = 5,845.84 lbs/yr

NO_x Emissions:

Emission Factor = 0.03162 lbs/hp-hr (AP-42, Sec. 3.3, Table 3.3-1, 10/96, increased by 2% for biodiesel)

Calculation: (5,110 hours/yr) * (520 hp) * (0.03162 lbs/hp-hr) * (ton/2000 lb) = 42.01 ton/yr

Calculation: (5,110 hours/yr) * (520 hp) * (0.03162 lbs/hp-hr) = 84,020.66 lbs/yr

CO Emissions:

Emission Factor = 0.00668 lbs/hp-hr (AP-42, Sec. 3.3, Table 3.3-1, 10/96)

Calculation: (5,110 hours/yr) * (520 hp) * (0.00668 lbs/hp-hr) * (ton/2000 lb) = 8.88 ton/yr

Calculation: (5,110 hours/yr) * (520 hp) * (0.00668 lbs/hp-hr) = 17,750.10 lbs/yr

VOC Emissions:

Emission Factor = 0.0025141 lbs/hp-hr (AP-42, Sec. 3.3, Table 3.3-1, TOC, Exhaust & Crankcase, 10/96)

Calculation: (5,110 hours/yr) * (520 hp) * (0.0025141 lbs/hp-hr) * (ton/2000 lb) = 3.34 ton/yr

Calculation: (5,110 hours/yr) * (520 hp) * (0.0025141 lbs/hp-hr) = 6,680.47 lbs/yr

SO_x Emissions:

Emission Factor = 0.00205 lbs/hp-hr (AP-42, Sec. 3.3, Table 3.3-1, 10/96)

Calculation: (5,110 hours/yr) * (520 hp) * (0.00205 lbs/hp-hr) * (ton/2000 lb) = 2.724 ton/yr

Calculation: (5,110 hours/yr) * (520 hp) * (0.00205 lbs/hp-hr) = 5,447.26 lbs/yr

CO₂ Emissions:

Emission Factor = 1.15 lbs/hp-hr (AP-42, Sec. 3.3, Table 3.3-1, 10/96)

Calculation: (5,110 hours/yr) * (520 hp) * (1.15 lbs/hp-hr) * (ton/2000 lb) = 1,527.89 ton/yr

Calculation: (5,110 hours/yr) * (520 hp) * (1.15 lbs/hp-hr) = 3,055,780.00 lbs/yr

Natural Gas Fired Boilers

Maximum Process Rate = 0.00025 10⁶ cf/hr (Application information, 0.26 MMBtu/hr capacity, 1020 Btu/scf)

Maximum Hours of Operation = 8,760 hrs/yr

Filterable PM Emissions:

Emission Factor = 1.9 lb/10⁶ cf (AP 42, Table 1.4-2, all PM<1um, 7/98)

Calculation: (0.00025 10⁶ cf/hr) * (8760 hrs/yr) * (1.9 lb/10⁶ cf) * (ton/2000 lb) = 0.0021 ton/yr

Calculation: (0.00025 10⁶ cf/hr) * (8760 hrs/yr) * (1.9 lb/10⁶ cf) * (ton/2000 lb) * (1 - 0/100) = 0.00212 ton/yr

Filterable PM₁₀ Emissions:

Emission Factor = 1.9 lb/10⁶ cf (AP 42, Table 1.4-2, all PM<1um, 7/98)

Calculation: (0.00025 10⁶ cf/hr) * (8760 hrs/yr) * (1.9 lb/10⁶ cf) * (ton/2000 lb) = 0.00212 ton/yr

Calculation: (0.00025 10⁶ cf/hr) * (8760 hrs/yr) * (1.9 lb/10⁶ cf) * (ton/2000 lb) * (1 - 0/100) = 0.00212 ton/yr

Filterable PM_{2.5} Emissions:Emission Factor = 1.9 lb/10⁶ cf (AP 42, Table 1.4-2, all PM<1um, 7/98)Calculation: (0.00025 10⁶ cf/hr) * (8760 hrs/yr) * (1.9 lb/10⁶ cf) * (ton/2000 lb) = 0.00212 ton/yrCalculation: (0.00025 10⁶ cf/hr) * (8760 hrs/yr) * (1.9 lb/10⁶ cf) * (ton/2000 lb) * (1 - 0/100) = 0.00212 ton/yr**Condensable PM_{2.5} Emissions:**Emission Factor = 5.7 lb/10⁶ cf (AP 42, Table 1.4-2, 7/98)Calculation: (0.00025 10⁶ cf/hr) * (8760 hrs/yr) * (5.7 lb/10⁶ cf) * (ton/2000 lb) = 0.00636 ton/yrCalculation: (0.00025 10⁶ cf/hr) * (8760 hrs/yr) * (5.7 lb/10⁶ cf) * (ton/2000 lb) * (1 - 0/100) = 0.00636 ton/yr**CO Emissions:**Emission Factor = 40 lb/10⁶ cf (AP 42, Table 1.4-2, 7/98)Calculation: (0.00025 10⁶ cf/hr) * (8760 hrs/yr) * (40 lb/10⁶ cf) * (ton/2000 lb) = 0.04466 ton/yrCalculation: (0.00025 10⁶ cf/hr) * (8760 hrs/yr) * (40 lb/10⁶ cf) * (ton/2000 lb) * (1 - 0/100) = 0.04466 ton/yr**NO_x Emissions:**Emission Factor = 94 lb/10⁶ cf (AP 42, Table 1.4-1, Residential Furnace < 0.3 MMBtu/hr, 7/98)Calculation: (0.00025 10⁶ cf/hr) * (8760 hrs/yr) * (94 lb/10⁶ cf) * (ton/2000 lb) = 0.10495 ton/yrCalculation: (0.00025 10⁶ cf/hr) * (8760 hrs/yr) * (94 lb/10⁶ cf) * (ton/2000 lb) * (1 - 0/100) = 0.10495 ton/yr**SO₂ Emissions:**Emission Factor = 0.6 lb/10⁶ cf (AP 42, Table 1.4-2, 7/98)Calculation: (0.00025 10⁶ cf/hr) * (8760 hrs/yr) * (0.6 lb/10⁶ cf) * (ton/2000 lb) = 0.00067 ton/yrCalculation: (0.00025 10⁶ cf/hr) * (8760 hrs/yr) * (0.6 lb/10⁶ cf) * (ton/2000 lb) * (1 - 0/100) = 0.00067 ton/yr**VOC Emissions:**Emission Factor = 5.5 lb/10⁶ cf (AP 42, Table 1.4-2, 7/98)Calculation: (0.00025 10⁶ cf/hr) * (8760 hrs/yr) * (5.5 lb/10⁶ cf) * (ton/2000 lb) = 0.00614 ton/yrCalculation: (0.00025 10⁶ cf/hr) * (8760 hrs/yr) * (5.5 lb/10⁶ cf) * (ton/2000 lb) * (1 - 0/100) = 0.00614 ton/yr**CH₄ Emissions:**Emission Factor = 2.3 lb/10⁶ cf (AP 42, Table 1.4-2, 7/98)Calculation: (0.00025 10⁶ cf/hr) * (8760 hrs/yr) * (2.3 lb/10⁶ cf) * (ton/2000 lb) = 0.00257 ton/yrCalculation: (0.00025 10⁶ cf/hr) * (8760 hrs/yr) * (2.3 lb/10⁶ cf) * (ton/2000 lb) * (1 - 0/100) = 0.00257 ton/yrCO₂e = 0.00257 * 21 = 0.05393 ton/yr**N₂O Emissions:**Emission Factor = 2.2 lb/10⁶ cf (AP 42, Table 1.4-2, uncontrolled, 7/98)Calculation: (0.00025 10⁶ cf/hr) * (8760 hrs/yr) * (2.2 lb/10⁶ cf) * (ton/2000 lb) = 0.00246 ton/yrCalculation: (0.00025 10⁶ cf/hr) * (8760 hrs/yr) * (2.2 lb/10⁶ cf) * (ton/2000 lb) * (1 - 0/100) = 0.00246 ton/yrCO₂e = 0.00246 * 310 = 0.76143 ton/yr**CO₂ Emissions:**Emission Factor = 120000 lb/10⁶ cf (AP 42, Table 1.4-2, 7/98)Calculation: (0.00025 10⁶ cf/hr) * (8760 hrs/yr) * (120000 lb/10⁶ cf) * (ton/2000 lb) = 133.98 ton/yrCalculation: (0.00025 10⁶ cf/hr) * (8760 hrs/yr) * (120000 lb/10⁶ cf) * (ton/2000 lb) * (1 - 0/100) = 133.98 ton/yr**Biodiesel Fired Boiler**Maximum Process Rate = 0.00105 10³ gal/hr (Application information, 0.147 MMBtu/hr capacity, 140 MMBtu/10³ gal)

Maximum Hours of Operation = 8,760 hrs/yr

Filterable PM Emissions:Emission Factor = 2 lb/10³ gal (AP 42, Table 1.3-1, Distillate oil-fired < 100 MMBtu/hr, 5/10)Calculation: (0.00105 10³ gal/hr) * (8760 hrs/yr) * (2 lb/10³ gal) * (ton/2000 lb) = 0.00920 ton/yrCalculation: (0.00105 10³ gal/hr) * (8760 hrs/yr) * (2 lb/10³ gal) * (ton/2000 lb) * (1 - 0/100) = 0.00920 ton/yr**Filterable PM₁₀ Emissions:**Emission Factor = 1 lb/10³ gal (AP 42, Table 1.3-6, 5/10)Calculation: (0.00105 10³ gal/hr) * (8760 hrs/yr) * (1 lb/10³ gal) * (ton/2000 lb) = 0.00460 ton/yrCalculation: (0.00105 10³ gal/hr) * (8760 hrs/yr) * (1 lb/10³ gal) * (ton/2000 lb) * (1 - 0/100) = 0.00460 ton/yr

Filterable PM_{2.5} Emissions:

Emission Factor = 0.25 lb/10³ gal (AP 42, Table 1.3-6, 5/10)

Calculation: (0.00105 10³ gal/hr) * (8760 hrs/yr) * (0.25 lb/10³ gal) * (ton/2000 lb) = 0.00115 ton/yr

Calculation: (0.00105 10³ gal/hr) * (8760 hrs/yr) * (0.25 lb/10³ gal) * (ton/2000 lb) * (1 - 0/100) = 0.00115 ton/yr

Condensable PM_{2.5} Emissions:

Emission Factor = 1.3 lb/10³ gal (AP 42, Table 1.3-2, No. 2 fuel oil, 5/10)

Calculation: (0.00105 10³ gal/hr) * (8760 hrs/yr) * (1.3 lb/10³ gal) * (ton/2000 lb) = 0.00598 ton/yr

Calculation: (0.00105 10³ gal/hr) * (8760 hrs/yr) * (1.3 lb/10³ gal) * (ton/2000 lb) * (1 - 0/100) = 0.00598 ton/yr

CO Emissions:

Emission Factor = 5 lb/10³ gal (AP 42, Table 1.3-2, No. 2 fuel oil, 5/10)

Calculation: (0.00105 10³ gal/hr) * (8760 hrs/yr) * (5 lb/10³ gal) * (ton/2000 lb) = 0.02300 ton/yr

Calculation: (0.00105 10³ gal/hr) * (8760 hrs/yr) * (5 lb/10³ gal) * (ton/2000 lb) * (1 - 0/100) = 0.02300 ton/yr

NO_x Emissions:

Emission Factor = 20 lb/10³ gal (AP 42, Table 1.3-1, Distillate oil-fired < 100 MMBtu/hr, 5/10)

Calculation: (0.00105 10³ gal/hr) * (8760 hrs/yr) * (20 lb/10³ gal) * (ton/2000 lb) = 0.09198 ton/yr

Calculation: (0.00105 10³ gal/hr) * (8760 hrs/yr) * (20 lb/10³ gal) * (ton/2000 lb) * (1 - 0/100) = 0.09198 ton/yr

SO₂ Emissions:

Emission Factor = 2.84 lb/10³ gal (AP 42, Table 1.3-1, Distillate oil-fired < 100 MMBtu/hr, 0.2% S, 5/10)

Calculation: (0.00105 10³ gal/hr) * (8760 hrs/yr) * (2.84 lb/10³ gal) * (ton/2000 lb) = 0.01306 ton/yr

Calculation: (0.00105 10³ gal/hr) * (8760 hrs/yr) * (2.84 lb/10³ gal) * (ton/2000 lb) * (1 - 0/100) = 0.01306 ton/yr

VOC Emissions:

Emission Factor = 0.713 lb/10³ gal (AP 42, Table 1.3-3, NMTOC, Residential Furnace, 5/10)

Calculation: (0.00105 10³ gal/hr) * (8760 hrs/yr) * (0.713 lb/10³ gal) * (ton/2000 lb) = 0.00328 ton/yr

Calculation: (0.00105 10³ gal/hr) * (8760 hrs/yr) * (0.713 lb/10³ gal) * (ton/2000 lb) * (1 - 0/100) = 0.00328 ton/yr

CH₄ Emissions:

Emission Factor = 1.78 lb/10³ gal (AP 42, Table 1.3-3, NMTOC, Residential Furnace, 5/10)

Calculation: (0.00105 10³ gal/hr) * (8760 hrs/yr) * (1.78 lb/10³ gal) * (ton/2000 lb) = 0.00819 ton/yr

Calculation: (0.00105 10³ gal/hr) * (8760 hrs/yr) * (1.78 lb/10³ gal) * (ton/2000 lb) * (1 - 0/100) = 0.00819 ton/yr

CO₂e = 0.00819 * 21 = 0.17191 ton/yr

N₂O Emissions:

Emission Factor = 0.26 lb/10³ gal (AP 42, Table 1.3-8, Distillate Oil fired, 5/10)

Calculation: (0.00105 10³ gal/hr) * (8760 hrs/yr) * (0.26 lb/10³ gal) * (ton/2000 lb) = 0.00120 ton/yr

Calculation: (0.00105 10³ gal/hr) * (8760 hrs/yr) * (0.26 lb/10³ gal) * (ton/2000 lb) * (1 - 0/100) = 0.00120 ton/yr

CO₂e = 0.00120 * 310 = 0.37068 ton/yr

CO₂ Emissions:

Emission Factor = 22300 lb/10³ gal (AP 42, Table 1.3-12, No. 2, 5/10)

Calculation: (0.00105 10³ gal/hr) * (8760 hrs/yr) * (22300 lb/10³ gal) * (ton/2000 lb) = 102.56 ton/yr

Calculation: (0.00105 10³ gal/hr) * (8760 hrs/yr) * (22300 lb/10³ gal) * (ton/2000 lb) * (1 - 0/100) = 102.56 ton/yr

V. Existing Air Quality

This facility is located in an area that is currently designated as attainment/unclassifiable for all criteria pollutants.

VI. Ambient Air Impact Analysis

The Department determined, based on the allowable emissions this facility may emit, 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.

The air quality classification of the immediate area is “Unclassifiable/Attainment” for all pollutants (40 CFR Part 81.327). The Ambient Air Impact Analysis was completed for this project although not required. For this permit action, the Department ran some preliminary modeling to demonstrate compliance with the NAAQS/MAAQS. This facility is considered minor for all pollutants and none of the pollutants exceed the modeling threshold that would require air dispersion modeling with the exception of NOx. The Department based the modeling using emission factors from EPA non-road diesel emission standards for Tier 2 and Tier 3 engines. The modeling was based on the permit application list of specific engines and design capacities that are currently used at the BioEnergy. The results of the air dispersion modeling showed that in order to demonstrate compliance with the NAAQS/MAAQS, the facility must increase the stack height on both the ATC building and the ATC-East building. The MAQP was conditioned with stack height limitations and no further analysis was required for this permit action.

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 and Waste Management Bureau
P.O. Box 200901, Helena, Montana 59620
(406) 444-3490

FINAL ENVIRONMENTAL ASSESSMENT (EA)

Issued To: BioEnergy Center
40 E. Broadway
Butte, MT 59701

Montana Air Quality Permit Number: #4610-00

Preliminary Determination Issued: 12/22/2010
Department Decision Issued: 1/25/2011
Permit Final: 02/10/2011

1. *Legal Description of Site:* The BioEnergy Center is located within the Montana State University-Northern's campus in Section 8, Township 32 North, Range 16 East in Hill County, Montana.
2. *Description of Project:* The BioEnergy Center operates five laboratories in two buildings located with the College of Technical Sciences (COT) at Montana State University-Northern's Havre Campus. At the Applied Technology Center, the BioEnergy Center would operate an oil analysis lab, fuel chemistry lab, wet chemistry lab and dynamometers as part of the performance lab facilities.
3. *Objectives of Project:* The BioEnergy Center would operate a heavy duty engine performance testing facility. The primary purpose of the BioEnergy Center would be emission testing on fuels, and new engine enhancement technology for the reduction of emission and increased engine performance on a variety of test engines ranging from 5 hp engines up to 515 hp engines.
4. *Alternatives Considered:* In addition to the proposed action, the Department also considered the "no action" alternative. The "no action" alternative would deny the issuance of the air quality preconstruction permit to the proposed facility. However, the Department does not consider the "no action" alternative to be appropriate. 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 #4610-00.
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 would be reasonably necessary to ensure compliance with applicable requirements and demonstrate compliance with those requirements and would 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.

Potential Physical and Biological Effects							
		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 Resource			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

Impacts to terrestrial and aquatic life and habitats from construction and operation of this facility would be minor because of the relatively small portion of land that would be occupied. The facility would be located within MSU-Northern an institutional facility. It would be highly unlikely that terrestrials such as livestock, deer, elk, moose, and rodents would use the general area near the facility. Additionally, there are no known wetlands listed for the project site. Any construction would result in very little impact, if any, on the terrestrial and aquatic life and habitats because there would be minimal disturbance and any disturbance would be temporary and of short duration. It would be unlikely that there would be any additional impacts as a result of this project. Therefore, the Department believes that the proposed project would cause minor impacts to the area and overall, the impacts from this project to terrestrial and aquatic life and habitats would be minor.

B. Water Quality, Quantity, and Distribution

There are no surface water bodies on the site and the nearest surface water body would be Beaver Creek, which would be located north of the proposed facility (approximately 1 mile). Wastewater from the facility and Campus would be discharged to the City of Havre's sewer system. The BioEnergy Center would also be connected to a community water system. Overall, the facility employs few people and the amount of water for consumptive and non-consumptive use would be minimal. As proposed, there would be minor additional impacts as a result of this project on the water distribution, wastewater or the quality of water. Therefore, the proposed permit would result in minor impacts to water quality, quantity, and distribution in the area.

C. Geology and Soil Quality, Stability, and Moisture

Impacts to the geology and soil quality, stability, and moisture from this facility would be minor because the permit would impact a relatively small portion of land and the amount of resulting deposition of the air emissions would be small. Approximately ¼ acre or less would be disturbed for the physical construction of the facility. The project would be located within MSU-Northern's Campus.

There are no known unique geologic or physical features at the site. The soil stability in the immediate vicinity would be impacted by construction activities, but disturbances would be temporary. The proposed permit would not discharge any material to the soil. Installing the equipment would result in minimal impact on geology and soil quality, stability and moisture because the construction would be temporary and of short duration. Overall, the Department believes there would be minor impacts to geology, soil quality, stability, and moisture.

D. Vegetation Cover, Quantity, and Quality

The proposed project would result in minor impacts on the vegetative cover, quantity, and quality in the immediate area because only a small amount of property would be disturbed and the resulting deposition from air emissions would be relatively small. Approximately 1/4 acre of land would be impacted by the construction and operation of the BioEnergy Center; however a much smaller footprint would be disturbed as a result of this permit.

The project site would be located in an institutional area with vegetation surrounding the buildings for aesthetical purposes. There are no known endangered or threatened plant species at the project site. This permit would result in minimal disturbance to the land and the disturbances would be temporary. Most of the newly disturbed areas would be restored to their previous status after installation of equipment. The corresponding deposition of the air pollutants on the surrounding vegetation would also be minor. Therefore, the proposed project would result in minor impacts on the vegetative cover, quantity, and quality.

E. Aesthetics

Impacts to the aesthetics of the area from this modification would be minor because the land use surrounding the project area is a college campus. The ATC and ATC East Buildings (BioEnergy Center) would be located on the south end of the MSU-Northern Campus. The Northern Montana Hospital, Northern Montana Care Center and the Sletten Cancer Center are located nearby. There is also a residential area located within 800 meters of the BioEnergy Center.

The ATC Building would house a small engine test dynamometer capable of testing 4 - 5 engines with each engine capacity rated at 5-15 hp, a water brake engine test dynamometer with a loaded capacity of 1000 hp. However, the BioEnergy Center requested a federally enforceable limit on the water break engine test dynamometer to limit the engine capacity on this dynamometer (up to 475 hp). The ATC-East building would be equipped with an AC dynamometer with a loaded a capacity of up to 550 hp, three boilers for heating the facility, a 50 gallon biodiesel reactor, an oil seed press lab, three 200 gallon biodiesel storage tanks, and a glycerin storage tank. Most of the equipment would be located indoors and would not change the aesthetics of the surroundings.

Visible emissions from the facility would be limited to 20% opacity. There would not be an increase in odors with the change of equipment. The proposed change could result in some additional noise during construction. The area would receive very little increase in vehicle use as a result of the proposed project. Most vehicles would use the existing roads in the area on route to the roads established as part of the campus. Obviously during construction of the facility, there might be a noticeable increase; however, it would be temporary.

Impacts to the aesthetics of the area from the project would be minor because of these other industrial and commercial structures located nearby, and the relatively low visibility and minimal noise from the facility. Odor would be negligible and visible emissions would be limited to less than 20% opacity. Therefore, the Department believes that aesthetics in the area would only experience minor impacts.

F. Air Quality

The Department determined, based on the allowable emissions this facility may emit, 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.

The air quality classification of the immediate area is “Unclassifiable/Attainment” for all pollutants (40 CFR Part 81.327). For this permit action, the Department ran some preliminary modeling to demonstrate compliance with the NAAQS/MAAQs. This facility is considered minor for all pollutants and none of the pollutants exceed the modeling threshold that would require air dispersion modeling with the exception of NO_x. The Department based modeling using emission factors from EPA non-road diesel emission standards for Tier 2 and Tier 3 engines. The modeling was based on the permit application list of specific engines and design capacities that are currently used at the BioEnergy. The results of the air dispersion modeling showed that in order to demonstrate compliance with the NAAQS/MAAQs, the facility would need to increase the stack height on both the ATC building and the ATC-East building. The MAQP would be conditioned with stack height limitations. Given this, the Department determined that there would be minor impacts to air quality.

G. Unique, Endangered, Fragile, or Limited Environmental Resources

In an effort to assess any potential impacts to any unique endangered, fragile, or limited environmental resources, the Department contacted the Montana National Heritage Program (MNHP). Search results concluded there are five known animal species of concern located within three miles of the facility. The search area, in this case, is defined by the township and range of the proposed site, with an additional one-mile buffer. The MNHP concluded that the sensitive species of concern include the Chestnut-collared Longspur, Pearl Dace and Sauger. Other species of concern include the Northern Redbelly Dace and the Iowa Darter. Of these species, only the Chestnut-collared Longspur would be expected to potentially locate near the current site location.

However, this facility would be located within a college campus so it would be unlikely that the Chestnut-collared Longspur would nest or breed near the campus. The other species of concerns are located outside of the area of concern. Therefore, the Department believes there would be minor impacts to any unique, endangered, fragile, or limited environmental resources in the area.

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

As described in Section 7.B of this EA, impacts to the water resource would be minor. The proposed permit would not directly discharge any material to the surface or ground water in the area other than a minor amount of stormwater runoff. However, the campus which would include the BioEnergy Center would be connected to City services. As described in Section 7.F of this EA, the impact on the air resource in the area of the facility would be minor.

During construction, there would be minor energy impacts however, impacts would be temporary. Given the fact that the primary purpose of the facility would be emission testing on fuels, along with new engine enhancement technology for the reduction of emission and increased engine performance on a variety of test engines ranging from 5 hp engines up to 515 hp engines the impacts associated with the facility may provide a benefit to other industrial sources in the long term.

The project would result in minor changes of air quality and dispersion would be minimal. Energy use would be minimized due to the operational limitations placed on the facility. Therefore, the Department believes the project would result in minor impacts to demands on environmental resources of water, air, and energy.

I. Historical and Archaeological Sites

The Department previously contacted the Montana Historical Society – State Historic Preservation Office (SHPO) in an effort to identify any historical, archaeological, or paleontological sites or findings near the proposed project. According to SHPO any structure over 50 years of age would be considered historic and would potentially eligible for listing on the National Register of Historic Places. For any structures over 50 years old that would be altered, SHPO generally recommends that they be contacted for a determination of eligibility; however SHPO further states, that as long as there is no disturbance or alteration to structures over 50 years of age then there is a low likelihood that cultural properties would be impacted. At this time, SHPO believes that a cultural resource inventory is unwarranted.

Therefore, the Department believes that there would be minimal impact to cultural properties. However, if buildings older than 50 years old are altered or cultural materials are inadvertently discovered during this project, MSU-Northern should contact SHPO to investigate.

J. Cumulative and Secondary Impacts

Overall, the cumulative and secondary impacts from this project on the physical and biological aspects of the human environment would be minor. The proposed equipment would locate within an established college campus and amongst other institutional buildings. Because the majority of the buildings are already constructed and most of the equipment would be located within buildings, the proposed permit would result in minimal and temporary changes. The overall impact due to the project would be minor. Therefore, the Department believes that impacts to Air Quality would be minor.

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

Potential Social and Economic Effects							
		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 SOCIAL AND ECONOMIC EFFECTS: The following comments have been prepared by the Department.

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

The proposed permit would not cause a disruption to any native or traditional lifestyles or communities (social structures or mores, or cultural uniqueness and diversity) in the area because the land use proposal would not be out of place given the institutional and commercial land use of the surrounding area. The surrounding area includes a hospital and care centers in addition to the college campus. The project would not cause additional impact to social structures or mores because these activities are consistent with the proposed permit and would be located in an area that would have similar characteristics. Therefore, the Department believes there would be minor, if any, disturbance to social structures and mores, and cultural diversity.

- C. Local and State Tax Base and Tax Revenue

The project would have a minor effect on the local and state tax base and tax revenue because there are currently three full time employees, one part-time employee and two part-time student workers. However, as a result of the project the BioEnergy Center would hire 6 additional employees. Additionally, the BioEnergy Center received grant money to fund a portion of the project. Given the minimal amount of employees and the minimal amount of taxes or tax revenue generated from the project, the Department believes this project would have minor effects to the local and state tax base and tax revenue

D. Agricultural or Industrial Production

The impacts to agricultural and industrial production in the area from this permit would occur on such a small amount of land, the impact from the air emissions on the land would be small, and the amount of electricity produced to assist other activities would be relatively small. The proposed equipment would be located on approximately ¼ of an acre within a college campus. The project would not remove any existing land from agricultural production but could add to other research and educational opportunities in the area.

The BioEnergy Center would not only test engines but would also be equipped with an oilseed pressing lab and a biodiesel plant located in the ATC-East building. This project would use Montana grown oilseed such as, canola, safflower, flax, camelina and mustard seed. These presses operating at maximum capacity would be capable of 3 tons of seed per week. Because the primary purpose of the BioEnergy Center would be research and testing, the Department believes the project would not cause negative impacts to agricultural and industrial production.

As described in Section 7.F of the EA, the air quality impacts from this facility are minor, and the resulting deposition of the pollutants from the project would consequently also be minor. Therefore, the Department has determined that the impacts to Agricultural or Industrial Production would be minor.

E. Human Health

As described in Section 7.F of the EA, the impacts from this project on human health would be minor because the impact from the air emissions would be greatly dispersed before reaching an elevation where humans were exposed. The emissions from this project are minimal. Additionally, this area would rarely have the same population frequent the area and because of this, the impacts to human health would be minimal. MAQP #4610-00 would be conditioned to ensure that the facility would be operated in compliance with all applicable rules and standards. Therefore, the Department would expect minor effects to human health.

F. Access to and Quality of Recreational and Wilderness Activities

The proposed changes would result in small or no impacts on the access to and quality of recreational wilderness activities. The air emissions from the facility would disperse before impacting any recreational areas.

No significant recreational or wilderness activities exist near or within the BioEnergy Center property boundaries and all recreational activities would remain available. Based on the information submitted (see Section 7.F of the EA) and the distance between and direction from the recreational sites and the BioEnergy Center facility, there would not be any noticeable impacts. This project would not cause denial of access and would not impact wilderness activities, therefore, the Department determined that this facility would have minor impact to recreational and wilderness activities.

G. Quantity and Distribution of Employment

There would be a minor effect on the employment of the area from this project because it would result in a few construction-related employment opportunities, and approximately 6-10 jobs. As such, any effects would be minor but positive in the area. Therefore, the Department determined that this action would not negatively impact the quantity and distribution of employment in the area and would have minor impacts, if any.

H. Distribution of Population

The project would not affect the normal population distribution in the area because the permit would result in few new jobs. The facility's operation would result in approximately 6 new positions. However, neither the 6 positions created as a result of facility, nor the numerous temporary construction-related positions would likely affect the distribution of population in the area. Therefore, the Department believes that the distribution of population would not be affected.

I. Demands of Government Services

Demands on government services from this facility would be minor because once the appropriate permits are in place, there would be little additional need for government services other than compliance assistance. There may be a minor increase in traffic on existing roads in the area during construction, but for the normal operation of the facility traffic increases would be minimal. BioEnergy Center continues to work with all affected local and state agencies to alleviate any additional demands on Government Services. Therefore, the Department believes the demands on Government Services would be minor.

J. Industrial and Commercial Activity

The area both currently and historically has been primarily used for institutional purposes. This project fits within this category. The proposed changes would have minor additional impacts to the surrounding area. The project would cause a minor increase in industrial activity in the area during construction. However, given the fact that the area is predominantly commercial or institutional, the Department believes that effects to industrial and commercial activity would be minor.

K. Locally Adopted Environmental Plans and Goals

The Department is not aware of any locally adopted environmental plans or goals that would be affected by the proposed facility. MAQP #4610-00 would be issued to protect air quality.

L. Cumulative and Secondary Impacts

Overall, the cumulative and secondary impacts from this project on the social and economic aspects of the human environment would be minor because few employment opportunities may result, state and local taxes might be generated from the facility but little change would result from the permit. Overall, the BioEnergy Center project would result in additional jobs for the area. As described in Section 8.G of this EA, the facility would employ approximately 6-10 full-time people. The emissions' increase that would result from this permit would be minimal and therefore would result in few cumulative or secondary impacts.

Recommendation: An Environmental Impact Statement (EIS) is not required.

If an EIS is not required, explain why the EA is an appropriate level of analysis: All potential effects resulting from construction and operation of the proposed facility are minor, therefore, an EIS is not required. In addition, the source would be applying the Best Available Control Technology and the analysis indicates compliance with all applicable air quality rules and regulations.

Other groups or agencies contacted or which may have overlapping jurisdiction: Department of Environmental Quality – Permitting and Compliance Division (Air Resources Management Bureau); Montana Natural Heritage Program; and State Historic Preservation Office (Montana Historical Society).

Individuals or groups contributing to this EA: Department of Environmental Quality (Air Resources Management Bureau and Water Quality Bureau) Montana Natural Heritage Program, and State Historic Preservation Office (Montana Historical Society).

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