



Montana Department of
ENVIRONMENTAL QUALITY

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December 9, 2008

Montana Department of Livestock
P.O. Box 202001
Helena, MT 59620-2001

Dear Mr. Zaluski:

Air Quality Permit #3293-01 is deemed final as of December 9, 2008, by the Department of Environmental Quality (Department). This permit is for the operation of Self Contained Refractory Walled Air Curtain Destructor. 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
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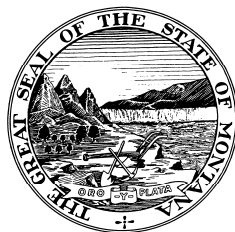
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Enclosure

Montana Department of Environmental Quality
Permitting and Compliance Division

Air Quality Permit #3293-01

Montana Department of Livestock
P.O. Box 202001
Helena, MT 59620-2001

December 9, 2008



Air Quality Permit

Issued to: Montana Department of Livestock
P.O. Box 202001
Helena, MT 59620-2001

Permit #3293-01
Administrative Amendment (AA) Request
Received: 8/29/2008
Department Decision on AA Issued: 11/21/08
Permit Final: 12/9/08
AFS #777-3293

An air quality permit, with conditions, is hereby granted to the Montana Department of Livestock (DOL), pursuant to Sections 75-2-204, 211, and 215, 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

DOL operates a portable 2003 Model S-220 Air Burners, LLC, Self Contained Refractory Walled Air Curtain Destructor (incinerator) and associated equipment. Permit #3293-01 applies while operating at any location in Montana, except within those areas that have a Department of Environmental Quality (Department)-approved permitting program, those areas within tribal lands, and those areas in or within 10 kilometers (km) of certain particulate matter with an aerodynamic diameter of 10 microns or less (PM₁₀) nonattainment areas. *A Missoula County air quality permit will be required for locations within Missoula County, Montana.* Addendum #1 applies to the DOL facility while operating at any location in or within 10 kilometers (km) of certain particulate matter with an aerodynamic diameter of 10 microns or less (PM₁₀) nonattainment areas during the summer months (April 1 – September 30) and at sites approved by the Department during the winter months (October 1 – March 31). A description of the permitted equipment is contained in the permit analysis.

B. Current Permit Action

On August 29, 2008, the Department received a request from DOL for an administrative amendment for Permit #3293-00 to allow for wintertime operations (October 1-March 31) and summertime operations (April 1 – September 30) at locations in or within 10 km of certain PM₁₀ nonattainment areas. The current permit action will include an addendum to allow for summertime operations in or within 10 km of the Butte, Columbia Falls, Kalispell, Libby, Thompson Falls, and Whitefish PM₁₀ nonattainment areas, and wintertime operations in or within 10 km of those same nonattainment areas, as may be approved by the Department.

SECTION II: Limitations and Conditions

A. Operational Requirements

1. DOL shall not incinerate/cremate any material other than animal remains and/or any corresponding container, animal waste, animal bedding, and animal byproducts, untreated wood, untreated wood slash, untreated wood waste, yard waste, plants, plant products, and paper products, unless otherwise approved by the Department. DOL shall provide written notice to the Department and obtain approval from the Department if material other than that previously described is to be incinerated (ARM 17.8.749).

2. DOL shall have a fire accelerant (i.e. diesel fuel) available for use, as necessary, to initiate incineration (ARM 17.8.749).
3. The air curtain over the firing chamber shall be in operation continuously while the unit is incinerating materials (ARM 17.8.752).
4. DOL shall operate the incinerator as specified in the application for Montana Air Quality Permit #3293-00. Further, DOL shall develop incinerator operation procedures, print those procedures in an incinerator operation procedures manual, and require all personnel who operate the incinerator to familiarize themselves with the operating procedures. A copy of this manual shall be supplied to the Department (ARM 17.8.752).
5. The incinerator shall be limited to 8700 hours of operation during any rolling 12-month time period (ARM 17.8.749 and ARM 17.8.1204).
6. DOL 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).
7. DOL shall treat all unpaved portions of the haul roads, access roads, parking lots, or the general project area with water and/or chemical dust suppressant, as necessary, to maintain compliance with the reasonable precautions limitation in Section II.A.6 (ARM 17.8.749).
8. If the permitted equipment is used in conjunction with any other equipment owned or operated by DOL, at the same site, production shall be limited to correspond with an emission level that does not exceed 250 tons during any rolling 12-month time period. Any calculations used to establish production levels shall be approved by the Department (ARM 17.8.749).
9. DOL shall comply with all applicable standards and limitations, and the reporting, recordkeeping and notification requirements contained in 40 CFR 60, Subpart CCCC, Standards of Performance for Commercial and Industrial Solid Waste Incineration Units for which Construction is Commenced After November 30, 1999, or for which Reconstruction is Commenced on or after June 1, 2001, as applicable (ARM 17.8.340 and 40 CFR 60, Subpart CCCC).

B. Emission Limitations

DOL shall not cause or authorize to be discharged into the atmosphere from the incinerator:

1. Visible emissions that exhibit an opacity of 10% or greater averaged over 6 consecutive minutes after the first half hour of operations has expired (ARM 17.8.752);
2. Visible emissions that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes during start-up and within the first 30 minutes of operation (ARM 17.8.752); and
3. Any particulate emissions in excess of 0.10 gr/dscf, corrected to 12% CO₂ (ARM

17.8.752).

C. Testing Requirements

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

D. Operational Reporting Requirement

1. If the incinerator is moved to another location, an Intent to Transfer form must be sent to the Department. In addition, a Public Notice Form for Change of Location must be published in a newspaper of general circulation in the area to which the transfer is to be made, at least 15 days prior to the move. The Intent to Transfer form and the proof of publication (affidavit) of the Public Notice Form for Change of Location must be submitted to the Department prior to the move. These forms are available from the Department (ARM 17.8.765).
2. DOL 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 covered by this permit.

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 units as required by the Department (ARM 17.8.505).

3. DOL 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*, 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 or the addition of a new emissions unit. 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).
4. The records compiled in accordance with this permit shall be maintained by DOL as a permanent business record for at least 5 years following the date of the measurement, shall be submitted to the Department upon request, and shall be available at the plant site for inspection by the Department (ARM 17.8.749).
5. DOL shall document, by month, the total hours of incinerator operations. By the 25th day of each month, DOL shall total the incinerator operating hours during the previous 12 months to verify compliance with the limitation in Section II.A.5. A written report of the compliance verification shall be submitted along with the annual emissions inventory (ARM 17.8.749).
6. DOL 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.

E. Notification

DOL shall provide the Department with written notification of the following activities within the specified time periods (ARM 17.8.749):

1. Commencement of construction of the incinerator within 30 days after initial commencement of construction.
2. Actual start-up date of the incinerator within 15 days after the actual initial start-up date.
3. Incinerator operation for the purpose of disease control and eradication efforts within 10 days before operations of this type. The DOL shall provide written notification each time incineration operations involve the destruction of diseased animal carcasses, animal waste, animal byproducts, contaminated wood products (fencing, barns, out-buildings, and feeders), animal bedding, animal waste, and other animal byproducts.

SECTION III: General Conditions

- A. Inspection – DOL 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 (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.
- B. Waiver – The permit and all the terms, conditions, and matters stated herein shall be deemed accepted if DOL fails to appeal as indicated below.
- C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving DOL of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided for 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 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 Department personnel at the location of the permitted source.
- G. Permit Fee – Pursuant to Section 75-2-220, MCA, as amended by the 1991 Legislature, failure to pay the annual operation fee by DOL may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.
- H. Construction Commencement – Construction must be begin within 3 years of permit issuance and proceed with due diligence until the project is complete or the permit shall be revoked (ARM 17.8.762).
- I. The Department may modify the conditions of this permit based on local conditions of any future site. These factors may include, but are not limited to, local terrain, meteorological conditions, proximity to residences, etc.
- J. DOL shall comply with the conditions contained in this permit while operating in any location in Montana, except within those areas that have a Department approved permitting program or areas considered tribal lands.

Permit Analysis
Montana Department of Livestock
Permit #3293-01

I. Introduction

A. Permitted Equipment

Montana Department of Livestock (DOL) operates a portable 2003 Model S-220 Air Burners, LLC, Self Contained Refractory Walled Air Curtain Destructor (incinerator). Permit #3293-00 applies while operating at any location in Montana, except within those areas that have a Department of Environmental Quality (Department) approved permitting program, those areas within tribal lands, and those areas in or within 10 kilometers (km) of certain particulate matter with an aerodynamic diameter of 10 microns or less (PM₁₀) nonattainment areas. *A Missoula County air quality permit will be required for locations within Missoula County, Montana.* Addendum #1 applies to the Department of Livestock facility while operating at any location in or within 10 kilometers (km) of certain particulate matter with an aerodynamic diameter of 10 microns or less (PM₁₀) nonattainment areas during the summer months (April 1 – September 30) and at sites approved by the Department during the winter months (October 1 – March 31).

B. Source Description

General Description – The DOL, cooperatively with other State and Federal agencies, operates a portable, self contained, refractory walled air curtain destructor (incinerator). The incinerator is used to burn wood, wood slash, and other wood waste products harvested from operating areas to support fire mitigation efforts. In addition, the DOL, on occasion, burns animal carcasses, animal waste, animal bedding, and animal byproducts as a component of disease prevention, control, and eradication efforts. Other combustible materials such as yard waste, paper, plants and plant products may also be burned in the destructor.

Combustion in the incinerator is initiated by the use of finer wood products and, when necessary, a fire accelerant, such as diesel fuel. Once combustion is initiated, the air curtain destructor introduces high velocity air into a combustion environment. As the air continuously rotates in the chamber and over the flame, a “curtain” is created over the fire trapping smoke and particulate matter. The constant airflow allows temperatures to remain high (> 1,000° C), resulting in more complete combustion of all emission products.

The S-220 model incinerator, powered by a Perkins 404C Tier 2 (51 hp) diesel engine, is capable of burning approximately 144 tons of wood per 24-hour period. The incinerator does not operate on a continuous basis because of adverse weather and wind conditions. In addition, time is required for relocation, set-up, tear down, and maintenance activities.

Wood and Wood Waste Disposal – The primary use of the incinerator is for wildfire mitigation and fuel management. The unit is expected to effectively and efficiently reduce the volume of wood, wood slash, and other wood waste products harvested from road clearing and other operating areas. Volume reductions of 95 to 98 percent are anticipated.

Animal Carcass Disposal – In addition, the incinerator may be used to incinerate animal carcasses, animal waste, and animal byproducts. The introduction or emergence of a

Foreign Animal Disease (FAD) or other dangerous animal diseases into Montana would necessitate the destruction and disposal of animal carcasses as a component of disease control and eradication efforts. The following are examples of FADs, which, if detected in Montana, would potentially be disposed of by incinerating the affected animal carcass:

- African horse sickness;
- African swine fever;
- Classical swine fever;
- Contagious bovine pleuropneumonia;
- Foot and mouth disease;
- Highly pathogenic avian influenza;
- Lumpy skin disease;
- Exotic Newcastle disease;
- Peste des petits ruminants;
- Rift Valley fever;
- Rinderpest;
- Sheep pox and goat pox;
- Swine vesicular disease;
- Transmissible spongiform encephalopathies, including, but not limited to:
 - Scrapie (sheep and goats);
 - Chronic wasting disease (deer and elk); and
 - Bovine spongiform encephalopathy (cattle)
- Anthrax (multiple species);
- Tuberculosis (multiple species);
- Equine infectious anemia (horses);
- Pullorum disease (poultry); and
- Rabbit hemorrhagic disease (rabbits)

Concurrent with the disposal of animal carcasses affected with a FAD or other dangerous diseases, the MT DOL anticipates incinerating contaminated untreated wood products (fencing, barns, out-buildings, and feeders) animal bedding, animal waste, and other animal byproducts.

Research is currently being conducted to verify that diseases such as those mentioned above are in fact destroyed or otherwise inactivated through the air curtain destruction process. However, at this time, the Department cannot definitively indicate that this is the case.

C. Permit History

On April 2, 2004, DOL was issued **Permit #3293-00** to allow operation of a portable 2003 Model S-220 Air Burners, LLC, Self Contained Refractory Walled Air Curtain Destructor.

D. Current Permit Action

On August 29, 2008, the Department received a request from DOL for an administrative amendment for Permit #3293-00 to allow for wintertime operations (October 1-March 31) and summertime operations (April 1 – September 30) at locations in or within 10 km of certain PM₁₀ nonattainment areas. The current permit action will include an addendum to allow for summertime operations in or within 10 km of the Butte, Columbia Falls, Kalispell, Libby, Thompson Falls, and Whitefish PM₁₀ nonattainment areas, and

wintertime operations in or within 10 km of those same nonattainment areas, as may be approved by the Department. **Permit #3293-01** replaces Permit #3293-00.

E. 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 Administrative Rules of Montana (ARM) and are available upon request from the Department. Upon request, the Department will provide references for locations 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).

DOL shall comply with the requirements contained in the Montana Source Test Protocol and Procedures Manual, including, but not limited, 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.
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:

1. ARM 17.8.210, Ambient Air Quality Standards for Sulfur Dioxide
2. ARM 17.8.211, Ambient Air Quality Standards for Nitrogen Dioxide
3. ARM 17.8.212, Ambient Air Quality Standards for Carbon Monoxide
4. ARM 17.8.214, Ambient Air Quality Standard for Hydrogen Sulfide
5. ARM 17.8.220, Ambient Air Quality Standard for Settled Particulate Matter
6. ARM 17.8.223, Ambient Air Quality Standard for PM₁₀

DOL must comply with all 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 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. 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.
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 17.8.316 Incinerators. This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any incinerator, particulate matter in excess of 0.10 grains per standard cubic foot of dry flue gas, adjusted to 12% carbon dioxide and calculated as if no auxiliary fuel had been used. Also, no person shall cause or authorize to be discharged into the outdoor atmosphere from any incinerator, emissions that exhibit an opacity of 10% or greater averaged over 6 consecutive minutes. This rule does not apply to the incinerator because DOL has applied for and received an air quality permit in accordance with ARM 17.8.770 and MCA 75-2-215.
6. 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.
7. ARM 17.8.340 New Source Performance Standards. This rule incorporates, by reference, 40 CFR 60, Standards of Performance for New Stationary Sources (NSPS). This facility is not an NSPS affected source because it does not meet the definition of an affected facility under any NSPS subpart defined in 40 CFR 60.

40 CFR 60, Subpart CCCC, Standards of Performance for Commercial and Industrial Solid Waste Incineration Units for Which Construction Is Commenced After November 30, 1999, or for Which Modification or Reconstruction Is Commenced on or After June 1, 2001. In order for this subpart to apply to a given source, the incineration unit must meet the following three applicability criteria contained in 40 CFR 60.2010: 1) the incineration unit must be a new incineration unit as defined in section 60.2015; 2) the incinerator must not be specifically

exempt under 40 CFR 60.2020; and 3) the incineration unit must be a Commercial and Industrial Solid Waste Incinerator (CISWI) as defined in 40 CFR 60.2265. In accordance with 40 CFR 60.2015, the DOL incinerator meets the definition of a new incinerator thereby meeting criteria 1. Further, the DOL incinerator is not specifically exempt under the provision of 40 CFR 60.2020 and thus meets criteria 2. However, under criteria 3, a CISWI is defined as “*any combustion device that combusts commercial and industrial waste, as defined in 40 CFR 60.2265...*” By definition Commercial and Industrial Waste (CIW) “*means solid waste combusted in an enclosed device using controlled flame combustion without energy recovery that is a distinct operating unit of any commercial or industrial facility or solid waste combusted in an air curtain incinerator without energy recovery that is a distinct operating unit of any commercial or industrial facility*”. The DOL incinerator does meet the definition of an air curtain incinerator as defined in 40 CFR 60.2245 and 40 CFR 60.2265, however, since the proposed DOL incinerator operation does not constitute a commercial or industrial application, the DOL incinerator does not meet criteria 3 and is therefore exempt from the requirements of 40 CFR 60, Subpart CCCC.

After issuance of the Department’s preliminary determination, the Department received comment from EPA indicating that certain operating scenarios may trigger CISWI applicability. These operating scenarios include the following:

- When a portable air curtain incinerator operates at a commercial or industrial facility and meets one of the exemptions contained in 40 CFR 60.2020, it would be exempt from the rule except to the extent that a few of the exemptions require notification of operations and recordkeeping as described in the applicable sections of 40 CFR 60.2020.
- When a portable air curtain incinerator operates at a commercial or industrial facility, and burns 100% clean wood waste as defined in 40 CFR 60, Subpart CCCC, the project may be subject to the requirements contained in 40 CFR 60.2245 through 40 CFR 60.2260.
- When a portable air curtain incinerator operates at a commercial or industrial facility and burns any other waste not specifically exempted under 40 CFR 60.2020, the project may be subject to the full extent of the rules contained in 40 CFR 60, Subpart CCCC.

If DOL intends to operate the ACD under any of these specific operating scenarios, a case-by-case NSPS applicability determination may be appropriate.

D. 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. DOL shall 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. DOL was not required to submit an application fee since the current permit action is considered an administrative permit change.
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; and the air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

The annual assessment and collection of the air quality operation fee, as 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 which pro-rate the required fee amount.

E. 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, alter, or use any air contaminant sources that have the Potential to Emit (PTE) greater than 25 tons per year of any pollutant. DOL does not have the PTE more than 25 tons per year of any pollutant; however, in accordance with MCA 75-2-215, an air quality permit must be obtained prior to incinerator construction and operation, regardless of potential incinerator emissions. Because DOL must obtain an air quality permit, all normally applicable requirements apply in this case.
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. A permit application was not required for the current permit action because the permit change is considered an administrative permit change. (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. An affidavit of publication of public notice was not required for the current permit action because the permit change is considered an administrative permit change.
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 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 DOL 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 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. (1) This rule states that an air quality permit may be transferred from one location to another if the Department receives a complete notice of Intent to Transfer location, the facility will operate in the new location for less than 1 year, the facility will comply with the FCAA and the Clean Air Act of Montana, and the facility complies with other applicable rules. (2) 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 17.8.770 Additional Requirements for Incinerators. This rule specifies the additional information that must be submitted to the Department for incineration facilities subject to 75-2-215, MCA. DOL submitted all required information applicable under this rule for the current permit action.

F. 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 not a major stationary source since this facility is not a listed source and the facility's PTE is less than 250 tons per year of any pollutant (excluding fugitive emissions).

G. 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 stationary 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 PM₁₀ in a serious PM₁₀ nonattainment area.
2. ARM 17.8.1204 Air Quality Operating Permit Program Applicability. (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 Montana Air Quality Permit #3293-01 for DOL, the following conclusions were made:
 - a. The facility's permitted PTE is less 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 of 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 any current NESHAP standards.
 - f. This source is not a Title IV affected source, nor a solid waste combustion unit.

- g. This source is not an EPA designated Title V source.
- h. As allowed by 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 potential to emit.
- 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 potential to emit, does not require the source to obtain an air quality operating permit.
- ii. Any source that obtains a federally enforceable limit on potential to emit shall annually certify that its actual emissions are less than those that would require the source to obtain an air quality operating permit.

DOL has taken federally enforceable permit limits to keep potential emissions below major source permitting thresholds. Therefore, the facility is not a major source and, thus a Title V operating permit is not required.

The Department determined that the annual reporting requirements contained in the permit are sufficient to satisfy this requirement.

- 3. ARM 17.8.1207 Certification of Truth, Accuracy, and Completeness. DOL 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 requirements of ARM 17.8.1207. The annual certification shall be submitted along with the annual emission inventory information.

Based on these facts, the Department determined that DOL will be a synthetic minor source of emissions as defined under Title V.

H. MCA 75-2-103, Definitions provides, in part, as follows:

- 1. "Incinerator" means any single or multiple-chambered combustion device that burns combustible material, alone or with a supplemental fuel or catalytic combustion assistance, primarily for the purpose of removal, destruction, disposal, or volume reduction of all or any portion of the input material.
- 2. "Solid waste" means all putrescible and nonputrescible solid, semisolid, liquid, or gaseous wastes, including, but not limited to...air pollution control facilities...

I. MCA 75-2-215, Solid or hazardous waste incineration - additional permit requirements:

- 1. MCA 75-2-215 requires air quality permits for all new solid waste incinerators; therefore, DOL must obtain an air quality permit.
- 2. MCA 75-2-215 requires the applicant to provide, to the Department's satisfaction, a characterization and estimate of emissions and ambient concentrations of air pollutants, including hazardous air pollutants from the incineration of solid waste. The Department determined that the information submitted in the permit application is sufficient to fulfill this requirement.
- 3. MCA 75-2-215 requires that the Department reach a determination that the projected emissions and ambient concentrations constitute a negligible risk to

public health, safety, and welfare. The Department completed a health risk assessment based on the emissions inventory and ambient air quality modeling for this proposal. Based on the results of the emission inventory, modeling, and the health risk assessment, the Department determined that DOL's proposal complies with this requirement.

4. MCA 75-2-215 requires the application of pollution control equipment or procedures that meet or exceed BACT. The Department determined that the proposed incinerator constitutes BACT.

III. BACT Analysis

A BACT determination is required for each new or altered source. DOL shall install on the new or altered source the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be utilized. A BACT determination was not required for the current permit action because the permit change is considered an administrative permit change.

IV. Emission Inventory

An emission inventory was completed for DOL's initial permit application. The emission inventory for criteria pollutants was based on emission factors from various technical resources as referenced in the following emission inventory. The application indicated that the fuel used to run the air curtain manifold creating the air curtain would be diesel fuel; therefore, the Department also used emission factors from AP-42, Chapter 3.3, Table 3.3-1, Uncontrolled Emission Factors for Gasoline and Diesel Internal Combustion Engines, for the purpose of estimating emissions resulting from the combustion of diesel fuel.

For the purpose of demonstrating negligible risk to human health and public welfare from emissions resulting from the incineration of animal carcasses, the Department developed a HAPs emission inventory using those emission factors contained in FIRE (the EPA emission factor repository) under SCC 5-02-005-05, pathological incineration. The Department considered only those HAPs for which an emission factor was available and that have been analyzed for other permitted similar sources. The HAPs emission inventory was then used to conduct an ambient air quality impact analysis and health risk assessment as further discussed in Sections V and VI, respectively, of this permit analysis.

Criteria Pollutant Emissions (tons/year) – Overall Operations							
Emission Source	PM	PM₁₀	NO_x	VOC	CO	SO_x	HAPs
Incinerator (Air Curtain Destructor)	52.20	39.15	52.20	99.18	36.54	2.61	9.14
Diesel Fuel Combustion	0.49	0.49	6.92	0.56	1.50	0.47	0.01
Total Potential Criteria Pollutant Emissions	52.69	39.64	59.12	99.74	38.04	3.08	9.15

Incinerator Hazardous Air Pollutant Emissions: Animal Carcass Incineration	
HAP	tons/year
Bromoform	7.62E-04
Carbon Tetrachloride	1.51E-03
Chloroform	1.43E-03
1,2-Dichloropropane	3.47E-02
Ethyl Benzene	4.23E-02
Naphthalene	3.05E-01
Tetrachloroethylene	1.06E-03

1,1,2,2-Tetrachloroethane	2.89E-03
Toluene	1.21E-02
Vinylidene Chloride	1.87E-03
Xylene	5.78E-02
Total Potential HAP Emissions	5.71E-01

CRITERIA POLLUTANT EMISSION CALCULATIONS

Incinerator

The emission factors used to develop the incinerator criteria pollutant emission inventory are referenced from various technical documents prepared specifically for air curtain type destructors and from applicable sections of AP-42 characterizing emissions based on typical materials combusted from the proposed source.

Permitted Production Capacity: 6 ton/hr (Capacity Operations)
 Operating Hours: 8700 hr/yr (Permit Limit – Permit #3293-00)

PM Emissions

Emission Factor: 2.00 lb/ton (Florida Department of Environmental Regulation Memo, 06/05/03)
 Calculations: 6 ton/hr * 2.00 lb/ton * 8700 hr/yr * 0.0005 ton/lb = 52.20 ton/yr

PM₁₀ Emissions:

Emission Factor: 1.50 lb/ton (PM10 assumed to be 75% of PM, Basis AP-42, Chapter 13.1, Table 13.1-3, Wildfires and Prescribed Burning, Short and Long Needle Conifers)
 Calculations: 6 ton/hr * 1.5 lb/ton * 8700 hr/yr * 0.0005 ton/lb = 39.15 ton/yr

NO_x Emissions:

Emission Factor: 2.00 lb/ton (AP-42, Chapter 1.6, Table 1.6-2, Wood Combustion in Boilers, Assumed Heating Value of 4500 Btu/lb, 03/02, Converted NO_x Factor from 0.22 lb/MMBtu)
 Calculations: 6 ton/hr * 2.00 lb/ton * 8700 hr/yr * 0.0005 ton/lb = 52.20 ton/yr

VOC Emissions:

Emission Factor: 3.80 lb/ton (AP-42, Chapter 13.1, Table 13.1-3, Wildfires and Prescribed Burning, Flaming Phase for Short and Long Needle Conifers Averaged)
 Calculations: 6 ton/hr * 3.80 lb/ton * 8700 hr/yr * 0.0005 ton/lb = 99.18 ton/yr

CO Emissions:

Emission Factor: 1.40 lb/ton (Fountainhead Engineering Ltd., Final Report Describing CO and PM Emissions from the Whitton S-127 Air Curtain Destructor, 12/26/03)
 Calculations: 6 ton/hr * 1.40 lb/ton * 8700 hr/yr * 0.0005 ton/lb = 36.54 ton/yr

SO_x Emissions:

Emission Factor: 0.10 lb/ton (EIP, Volume II, Chapter 14, 07/01, Appendix A, "Other Incineration – 4953", Trench Burner – Wood)
 Calculations: 6 ton/hr * 0.10 lb/ton * 8700 hr/yr * 0.0005 ton/lb = 2.61 ton/yr

HAP Emissions (Wood Waste HAP Emissions)

Emission Factor: 0.35 lb/ton (AP-42, Chapter 1.6, Table 1.6-2, Wood Combustion in Boilers, Assumed Heating Value of 4500 Btu/lb, 03/02, Converted TOC EF from 0.039 lb/MMBtu)
 Calculations: 6 ton/hr * 0.35 lb/ton * 8700 hr/yr * 0.0005 ton/lb = 9.14 ton/yr

Diesel Combustion

Power Output Capacity: 51hp-hr (Manufacturers Specifications – Perkins 404C Series)
 Hours of Operation: 8760 hr/yr (Annual Capacity)

PM Emissions

Emission Factor:	0.0022 lb/hp-hr	(AP-42, Chapter 3.3, Table 3.3-1, Uncontrolled Emission Factors for Gasoline and Diesel Internal Combustion Engines, 10/96)
Calculations:	0.0022 lb/hp-hr * 51 hp-hr * 8760 hr/yr * 0.0005 ton/lb =	0.49 ton/yr
PM₁₀ Emissions:		
Emission Factor:	0.0022 lb/hp-hr	(AP-42, Chapter 3.3, Table 3.3-1, Uncontrolled Emission Factors for Gasoline and Diesel Internal Combustion Engines, 10/96)
Calculations:	0.0022 lb/hp-hr * 51 hp-hr * 8760 hr/yr * 0.0005 ton/lb =	0.49 ton/yr
NO_x Emissions:		
Emission Factor:	0.031 lb/hp-hr	(AP-42, Chapter 3.3, Table 3.3-1, Uncontrolled Emission Factors for Gasoline and Diesel Internal Combustion Engines, 10/96)
Calculations:	0.031 lb/hp-hr * 51 hp-hr * 8760 hr/yr * 0.0005 ton/lb =	6.92 ton/yr
VOC Emissions:		
Emission Factor:	0.0025 lb/hp-hr	(AP-42, Chapter 3.3, Table 3.3-1, Uncontrolled Emission Factors for Gasoline and Diesel Internal Combustion Engines, 10/96)
Calculations:	0.0025 lb/hp-hr * 51 hp-hr * 8760 hr/yr * 0.0005 ton/lb =	0.56 ton/yr
CO Emissions:		
Emission Factor:	0.0067 lb/hp-hr	(AP-42, Chapter 3.3, Table 3.3-1, Uncontrolled Emission Factors for Gasoline and Diesel Internal Combustion Engines, 10/96)
Calculations:	0.0067 lb/hp-hr * 51 hp-hr * 8760 hr/yr * 0.0005 ton/lb =	1.50 ton/yr
SO_x Emissions:		
Emission Factor:	0.0021 lb/hp-hr	(AP-42, Chapter 3.3, Table 3.3-1, Uncontrolled Emission Factors for Gasoline and Diesel Internal Combustion Engines, 10/96)
Calculations:	0.0021 lb/hp-hr * 51 hp-hr * 8760 hr/yr * 0.0005 ton/lb =	0.47 ton/yr
HAP Emissions:		
Emission Factor:	4.60E-05 lb/hp-hr	(AP-42, Chapter 3.3, Table 3.3-1, Uncontrolled Emission Factors for Gasoline and Diesel Internal Combustion Engines, 10/96)
Calculations:	4.60E-05 lb/hp-hr * 51 hp-hr * 8760 hr/yr * 0.0005 ton/lb =	0.01 ton/yr

HAP EMISSIONS: Animal Carcass Incineration

Material Input Capacity: 6 ton/hr (S-220 Air Curtain Destructor Manufacturers Information)
Hours of Operation: The animal carcass incineration emission inventory is based on maximum annual operating hours of 8760 hr/yr to provide a conservative result in the ambient air impact analysis and human health risk assessment (SCREENVIEW Air Dispersion Model) detailed in Section V and Section VI of this permit analysis, respectively.

Bromoform

Emission Factor:	2.90E-05 lb/ton	(AFSSCC 5-02-005-05 – Pathological Incineration)
Calculations:	2.90 E-05 lb/ton * 6 ton/hr * 453.6 g/lb * 1 min/3600 sec =	2.19E-05g/sec
	2.19E-05 g/sec * 1 lb/453.6 g * 60 sec/min * 60 min/hr =	1.74E-04 lb/hr
	1.74E-04 lb/hr * 8760 hr/yr * 0.0005 ton/lb =	7.62E-04 ton/yr

Carbon Tetrachloride

Emission Factor:	5.74E-05 lb/ton	(AFSSCC 5-02-005-05 – Pathological Incineration)
Calculations:	5.74E-05 lb/ton * 6 ton/hr * 453.6 g/lb * 1 min/3600 sec =	4.34E-05 g/sec
	4.34E-05 g/sec * 1 lb/453.6 g * 60 sec/min * 60 min/hr =	3.44E-04 lb/hr
	3.44E-04 lb/hr * 8760 hr/yr * 0.0005 ton/lb =	1.51E-03 ton/yr

Chloroform

Emission Factor:	5.45E-05 lb/ton	(AFSSCC 5-02-005-05 – Pathological Incineration)
Calculations:	5.45E-05 lb/ton * 6 ton/hr * 453.6 g/lb * 1 min/3600 sec =	4.12E-05 g/sec
	4.12E-05 g/sec * 1 lb/453.6 g * 60 sec/min * 60 min/hr =	3.27E-04 lb/hr
	3.27E-04 lb/hr * 8760 hr/yr * 0.0005 ton/lb =	1.43E-03 ton/yr

1,2-Dichloropropane

Emission Factor:	1.32E-03 lb/ton	(AFSSCC 5-02-005-05 – Pathological Incineration)
Calculations:	1.32E-03 lb/ton * 6 ton/hr * 453.6 g/lb * 1 min/3600 sec =	9.98E-04 g/sec
	9.98E-04 g/sec * 1 lb/453.6 g * 60 sec/min * 60 min/hr =	7.92E-03 lb/hr

$$7.92\text{E-}03 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 3.47\text{E-}02 \text{ ton/yr}$$

Ethyl Benzene

Emission Factor: 1.61E-03 lb/ton (AFSSCC 5-02-005-05 – Pathological Incineration)
 Calculations: 1.61E-03 lb/ton * 6 ton/hr * 453.6 g/lb * 1 min/3600 sec = 1.22E-03 g/sec
 1.22E-03 g/sec * 1 lb/453.6 g * 60 sec/min * 60 min/hr = 9.66E-03 lb/hr
 9.66E-03 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 4.23E-02 ton/yr

Naphthalene

Emission Factor: 1.16E-02 lb/ton (AFSSCC 5-02-005-05 – Pathological Incineration)
 Calculations: 1.16E-02 lb/ton * 6 ton/hr * 453.6 g/lb * 1 min/3600 sec = 8.77E-03 g/sec
 8.77E-03 g/sec * 1 lb/453.6 g * 60 sec/min * 60 min/hr = 6.96E-02 lb/hr
 6.96E-02 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 3.05E-01 ton/yr

Tetrachloroethylene

Emission Factor: 4.03E-05 lb/ton (AFSSCC 5-02-005-05 – Pathological Incineration)
 Calculations: 4.03E-05 lb/ton * 6 ton/hr * 453.6 g/lb * 1 min/3600 sec = 3.05E-05 g/sec
 3.05E-05 g/sec * 1 lb/453.6 g * 60 sec/min * 60 min/hr = 2.42E-04 lb/hr
 2.42E-04 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 1.06E-03 ton/yr

1,1,2,2-Tetrachloroethane

Emission Factor: 1.10E-04 lb/ton (AFSSCC 5-02-005-05 – Pathological Incineration)
 Calculations: 1.10E-04 lb/ton * 6 ton/hr * 453.6 g/lb * 1 min/3600 sec = 8.32E-05 g/sec
 8.32E-05 g/sec * 1 lb/453.6 g * 60 sec/min * 60 min/hr = 6.60E-04 lb/hr
 6.60E-04 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 2.89E-03 ton/yr

Toluene

Emission Factor: 4.62E-03 lb/ton (AFSSCC 5-02-005-05 – Pathological Incineration)
 Calculations: 4.62E-03 lb/ton * 6 ton/hr * 453.6 g/lb * 1 min/3600 sec = 3.49E-03 g/sec
 3.49E-03 g/sec * 1 lb/453.6 g * 60 sec/min * 60 min/hr = 2.77E-02 lb/hr
 2.77E-02 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 1.21E-02 ton/yr

Vinylidene Chloride

Emission Factor: 7.10E-05 lb/ton (AFSSCC 5-02-005-05 – Pathological Incineration)
 Calculations: 7.10E-05 lb/ton * 6 ton/hr * 453.6 g/lb * 1 min/3600 sec = 5.37E-05 g/sec
 5.37E-05 g/sec * 1 lb/453.6 g * 60 sec/min * 60 min/hr = 4.26E-04 lb/hr
 4.26E-04 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 1.87E-03 ton/yr

Xylene

Emission Factor: 2.20E-03 lb/ton (AFSSCC 5-02-005-05 – Pathological Incineration)
 Calculations: 2.20E-03 lb/ton * 6 ton/hr * 453.6 g/lb * 1 min/3600 sec = 1.66E-03 g/sec
 1.66E-03 g/sec * 1 lb/453.6 g * 60 sec/min * 60 min/hr = 1.32E-02 lb/hr
 1.32E-02 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 5.78E-02 ton/yr

V. Air Quality Impacts

Animal Carcass Incineration: HAPs Analysis

The Department conducted SCREENVIEW air dispersion modeling, an EPA-approved screening model to determine the predicted HAPs emission impacts. The Department used inputs obtained from the permit application (indicated below) and an emission rate of 1.64E-02 grams per second, which is the sum of the hazardous air pollutant emissions from the proposed incinerator. The individual one-hour results for each pollutant were then calculated by multiplying the modeled maximum 1-hr total HAP concentration of 0.5279 $\mu\text{g}/\text{m}^3$ by the percentage of each individual HAP making up the total of the HAP emissions. The maximum 1-hour concentrations were then converted to an annual average and used in the risk assessment. The results are contained in Section VI, Health Risk Assessment, of the permit analysis.

SCREENVIEW Model Run: Animal Carcass Incineration (HAPs Emission Analysis)

Simple Terrain Inputs:

Source Type	=	POINT
Emission Rate (G/S)	=	0.164E-01
Stack Height (M)	=	2.1336
Stack Inside Diam (M)	=	3.8191
Stack Exit Velocity (M/S)	=	2.5847
Stack Gas Exit Temp (K)	=	444.2611
Ambient Air Temp (K)	=	293.0000
Receptor Height (M)	=	0.0000
Urban/Rural Option	=	RURAL
Building Height (M)	=	0.0000
Minimum Horizontal Building Dimension (M)	=	0.0000
Maximum Horizontal Building Dimension (M)	=	0.0000

Summary of SCREENVIEW Model Results

Calculation Procedure	Maximum 1 Hour Concentration ($\mu\text{g}/\text{m}^3$)	Maximum 24-Hour Concentration ($\mu\text{g}/\text{m}^3$)	Maximum Annual Concentration ($\mu\text{g}/\text{m}^3$)	Distance to Maximum (M)	Terrain Height (M)
Simple Terrain	0.5279	0.21116	0.05279	228	0

Biomass Incineration: PM₁₀ Analysis

After review of the above detailed SCREENVIEW HAPs analysis for animal carcass incineration, the Department conducted a highly conservative SCREENVIEW analysis to evaluate ambient PM₁₀ impacts from the proposed incinerator while burning wood-waste biomass. This analysis conservatively assumed building downwash would occur and thus utilized building downwash inputs for the model. The results obtained from this analysis demonstrated a potential exceedance of the 24-hour PM₁₀ standard within a 100-meter radius of the incinerator. Based on these results, and to further refine the modeling analysis, the Department conducted an ISC-PRIME air dispersion modeling analysis to evaluate ambient PM₁₀ impacts from the proposed incinerator while burning wood-waste biomass. Under this analysis the Department again considered building downwash inputs. This analysis predicted potential exceedances of the 24-hour PM₁₀ ambient air quality standard within a 30-meter radius of the incinerator.

Based on the actual operating conditions proposed for the incinerator, the Department determined that the above detailed initial SCREENVIEW and ISC-PRIME modeling analyses, and the assumptions used to create these models, are overly conservative. Typically, DOL will operate the incinerator in support of forest-fire mitigation projects by incinerating forest slash and accumulated forest debris or wood-waste biomass, much like a typical open burning project would dispose of wood-waste biomass. When burning wood-waste biomass, the incinerator, utilizing the air curtain and increased burn temperatures, is much cleaner than similar source open burn projects of similar magnitude. Open burning projects of similar magnitude are consistently permitted without the use of air dispersion modeling.

Because the initial SCREENVIEW and ISC-PRIME modeling analyses, using building downwash, showed a potential exceedance of the 24-hour PM₁₀ standard, the Department conducted a subsequent PM₁₀ SCREENVIEW modeling analysis without incorporating building downwash. While the SCREENVIEW model is a more conservative model, the Department believes that

removing downwash from the model provides a more representative analysis of actual incinerator operations. In making this judgment, the Department assumed that the incinerator release height and stack gas exit temperature would minimize the downwash effect. The incinerator rises to approximately 7 feet above ground level and operates at temperatures in excess of 300°F. The raised incinerator release point and emission buoyancy created by the relatively high exit gas temperature will result in emissions that rise, thus minimizing any potential downwash effect. Based on these incinerator operating characteristics, the Department determined that downwash, created by the emission plume folding over the incinerator, will not be significant and the proposed project does not warrant a building downwash modeling analysis. The Department utilized the SCREENVIEW modeling analysis detailed below to demonstrate compliance with the 24-hour and annual PM₁₀ NAAQS.

The Department used inputs obtained from the permit application (indicated below) and an emission rate of 1.34 grams per second, which is the potential PM₁₀ emission rate from the proposed incinerator. The 24-hour result was then calculated by multiplying the modeled maximum 1-hr PM₁₀ concentration of 36.50 µg/m³ by 0.4 and the maximum annual concentration was established by multiplying the maximum modeled 1-hour concentration by 0.1. The detailed results are included below.

SCREENVIEW Model Run: Wood-Waste Biomass (PM₁₀ Emission Analysis)

Simple Terrain Inputs:

Source Type	=	POINT
Emission Rate (G/S)	=	1.1340
Stack Height (M)	=	2.1336
Stack Inside Diam (M)	=	3.8191
Stack Exit Velocity (M/S)	=	2.5847
Stack Gas Exit Temp (K)	=	444.2611
Ambient Air Temp (K)	=	293.0000
Receptor Height (M)	=	0.0000
Urban/Rural Option	=	RURAL
Building Height (M)	=	0.0000
Minimum Horizontal Building Dimension (M)	=	0.0000
Maximum Horizontal Building Dimension (M)	=	0.0000

Summary of SCREENVIEW Model Results

Calculation Procedure	Maximum 1 Hour Concentration (µg/m ³)	Maximum 24-Hour Concentration (µg/m ³)	Maximum Annual Concentration (µg/m ³)	Distance to Maximum (M)	Assumed Background PM ₁₀ Concentration 24-hour/Annual (µg/m ³)	24-hour/Annual PM ₁₀ NAAQS (µg/m ³)
Simple Terrain	36.50	14.60	3.65	228	30/8	150/50

As indicated in the table above, the predicted worst-case 24-hour PM₁₀ ambient impact is 14.60 µg/m³. When the 24-hour assumed background concentration of 30 µg/m³ is included, the resulting worst-case 24-hour impact is 44.60 µg/m³. This worst-case concentration represents approximately 30% of the 24-hour PM₁₀ NAAQS of 150 µg/m³. Further, the predicted worst-case annual PM₁₀ impact is 3.65 µg/m³. When the annual assumed background concentration of 8 µg/m³ is included, the resulting worst-case annual impact is 11.65 µg/m³. This worst-case concentration represents approximately 23% of the annual PM₁₀ NAAQS of 50 µg/m³. Therefore, in the view of the

Department, the amount of controlled PM₁₀ emissions generated by the operation will not cause an exceedance of the 24-hour or annual PM₁₀ NAAQS.

VI. Health Risk Assessment

A health risk assessment was conducted to determine if the proposed DOL incinerator complies with the negligible risk requirement of ARM 17.8.770 and MCA 75-2-215. The emission inventory did not contain sufficient quantities of any pollutant on the Department's list of pollutants for which non-inhalation impacts must be considered; therefore, the Department determined that inhalation risk was the only necessary pathway to consider. Only those HAPs for which there were established emission factors were considered in the emission inventory.

Hazardous Air Pollutant	Modeled Concentration (µg/m ³)	Cancer Potency Factor	ELCR	Non-Cancer RFC Factor	Non-Cancer Hazard Quotient
Bromoform	7.05E-05	1.10E-06	7.76E-11	ND	ND
Carbon Tetrachloride	1.40E-04	1.50E-05	2.09E-09	ND	ND
Chloroform	1.33E-04	2.30E-05	3.05E-09	ND	ND
1,2-Dichloropropane	3.21E-03	ND	ND	ND	ND
Ethyl Benzene	3.91E-03	ND	ND	1.00E03	3.91E-06
Naphthalene	2.82E-02	ND	ND	ND	ND
Tetrachloroethylene	9.80E-05	5.90E-06	5.78E-10	ND	ND
1,1,2,2-Tetrachloroethane	2.67E-04	5.80E-05	1.55E-08	ND	ND
Toluene	1.12E-02	ND	ND	4.00E2	2.81E-05
Vinylidene Chloride	1.73E-04	5.00E-05	8.63E-09	ND	ND
Xylene	5.35E-03	ND	ND	ND	ND
Total	5.28E-02	-----	2.99E-08	-----	3.20E-05

ELCR = Excess Lifetime Cancer Risk

ND = Not Determined, No Available Information

- A copy of the SCREENVIEW modeling conducted for this project is on file with the Department.

As indicated above, through SCREENVIEW air dispersion modeling, the Department determined that the risks estimated in the risk assessment are in compliance with the requirement to demonstrate negligible risk to human health and the environment. As detailed in the above table, and in accordance with the negligible risk requirement, no single HAP concentration results in an excess lifetime cancer risk (ELCR) greater than 1.00E-06 and the sum of all HAPs results in an ELCR of less than 1.00E-05. Further, the sum of the non-cancer hazard quotient is less than 1.0 as required to demonstrate compliance with the negligible risk requirement.

VII. Taking or Damaging Implication Analysis

As required by 2-10-101 through 105, MCA, the Department conducted a private property taking and damaging assessment and determined there are no taking or damaging implications.

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?

YES	NO	
	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

This permitting action will not result in an increase of emissions from the facility and is considered an administrative action; therefore, an environmental assessment is not required.

Permit Analysis Prepared by: Trista Glazier
Date: September 29, 2008

Addendum 1
Montana Department of Livestock
Permit #3293-01

An addendum to Montana Air Quality Permit #3293-01 is hereby granted to Montana Department of Livestock (DOL) pursuant to Section 75-2-204 and 211 of the Montana Code Annotated (MCA), as amended, and Administrative Rules of Montana (ARM) 17.8.765, as amended, for the following:

I. Permitted Equipment:

DOL owns and operates a portable 2003 Model S-220 Air Burners, LLC, Self Contained Refractory Walled Air Curtain Destructor (incinerator). The incinerator has a maximum capacity of 6 tons per hour (TPH). DOL also operates a 51 horsepower (hp) engine/generator.

II. Seasonal and Site Restrictions – **Winter and Summer Seasons**

Addendum 1 applies to the DOL facility while operating at any location in or within 10 kilometers (km) of certain particulate matter with an aerodynamic diameter of 10 microns or less (PM₁₀) nonattainment areas. Additionally, seasonal and site restrictions apply to the facility as follows:

- A. During the winter season (October 1-March 31) - The only location in or within 10 km of a PM₁₀ nonattainment area where DOL may operate is any site that may be approved, in writing, by the Department of Environmental Quality (Department).
- B. During the summer season (April 1-September 30) – DOL may operate at any location in or within 10 km of the Butte, Columbia Falls, Kalispell, Libby, Thompson Falls, and Whitefish PM₁₀ nonattainment areas.
- C. DOL shall comply with the limitations and conditions contained in Addendum 1 to Permit #3293-01 while operating in or within 10 km of any of the previously identified PM₁₀ nonattainment areas. Addendum 1 shall be valid until revoked or modified. The Department reserves the authority to modify Addendum 1 at any time based on local conditions of any future site. These conditions may include, but are not limited to, local terrain, meteorological conditions, proximity to residences or other businesses, etc.

III. Limitations and Conditions

A. Operational Limitations and Conditions

- 1. DOL shall not incinerate/cremate any material other than animal remains and/or any corresponding container, animal waste, animal bedding, and animal byproducts, untreated wood, untreated wood slash, untreated wood waste, yard waste, plants, plant products, and paper products, unless otherwise approved by the Department of Environmental Quality (Department). DOL shall provide written notice to the Department and obtain approval from the Department if material other than that previously described is to be incinerated (ARM 17.8.749).
- 2. DOL shall have a fire accelerant (i.e. diesel fuel) available for use, as necessary, to initiate incineration (ARM 17.8.749).
- 3. The air curtain over the firing chamber shall be in operation continuously while the unit is incinerating materials (ARM 17.8.752).

4. DOL shall operate the incinerator as specified in the application for Montana Air Quality Permit #3293-00. Further, DOL shall develop incinerator operation procedures, print those procedures in an incinerator operation procedures manual, and require all personnel who operate the incinerator to familiarize themselves with the operating procedures. A copy of this manual shall be supplied to the Department (ARM 17.8.752).
5. During the winter season (October 1-March 31), the incinerator shall be limited to 8 hours of operation during any rolling 24-hour time period (ARM 17.8.749 and ARM 17.8.1204).
6. During the summer season (April 1-September 30), the incinerator shall be limited to 23.5 hours of operation during any rolling 24-hour time period (ARM 17.8.749 and ARM 17.8.1204).
7. DOL 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).
8. DOL shall treat all unpaved portions of the haul roads, access roads, parking lots, or the general project area with water and/or chemical dust suppressant, as necessary, to maintain compliance with the reasonable precautions limitation in Section II.A.7 (ARM 17.8.749).

B. Operational Reporting Requirements

1. If this incinerator is moved to another nonattainment location, an Intent to Transfer form must be sent to the Department and a Public Notice Form for Change of Location must be published in a newspaper of general circulation in the area to which the transfer is to be made, at least 15 days prior to the move. The proof of publication (affidavit) of the Public Notice Form for Change of Location must be submitted to the Department prior to the move. These forms are available from the Department (ARM 17.8.749 and ARM 17.8.765).
2. Operation information for the sites covered by this addendum must be maintained for five years and submitted to the Department upon request. The information must include (ARM 17.8.749):
 - a. Daily hours of operation at each site,
 - b. Gallons of diesel used by the generator at each site, and
 - c. Hours of operation for the generator at each site.
4. DOL shall document, by day, the hours of operation of the incinerator. DOL shall sum the total hours of operation for the previous day to verify compliance with the limitation in Section III.A.5 and III.A.6. A written report of compliance and the emissions inventory shall be submitted to the Department annually. The report for the previous calendar year shall be submitted and may be submitted along with the annual emissions inventory (ARM 17.8.752).

Addendum 1 Analysis
Montana Department of Livestock
Permit #3293-01

I. Permitted Equipment

Montana Department of Livestock (DOL) owns and operates a portable 2003 Model S-220 Air Burners, LLC, Self Contained Refractory Walled Air Curtain Destructor (incinerator). The incinerator has a maximum capacity of 6 tons per hour (TPH)). DOL also operates a 51 horsepower (hp) engine and generator.

II. Source Description

DOL, cooperatively with other State and Federal agencies, operates a portable, self contained, refractory walled air curtain destructor (incinerator). The incinerator is used to burn wood, wood slash, and other wood waste products harvested from operating areas to support fire mitigation efforts. In addition, the DOL, on occasion, burns animal carcasses, animal waste, animal bedding, and animal byproducts as a component of disease prevention, control, and eradication efforts. Other combustible materials such as yard waste, paper, plants and plant products may also be burned in the destructor.

III. Applicable Rules and Regulations

The following are partial quotations 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 locations of complete copies of all applicable rules and regulations or copies where appropriate.

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

- A. ARM 17.8.749 Conditions for Issuance 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.
- B. 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. A source may not increase its emissions beyond those found in its permit unless the source applies for and receives another permit.
- C. ARM 17.8.765 Transfer of Permit. An air quality permit may be transferred from one location to another if:
 - 1. Written notice of intent to transfer location and proof of public notice are sent to the Department;
 - 2. The source will operate in the new location for a period of less than 1 year; and

3. The source will not have any significant impact on any nonattainment area or any Class I area.

IV. Emission Inventory

Wintertime Operations:

Source	Lbs/Day					
	PM	PM ₁₀	NO _x	VOC	CO	SO _x
S-220 Air Curtain Destructor	99.60	74.70	99.60	189.24	69.72	4.98
Diesel Engine	0.93	0.93	13.12	1.06	2.84	0.89
TOTAL	100.53	75.63	112.72	190.3	72.56	5.87

Summertime Operations:

Source	Lbs/Day					
	PM	PM ₁₀	NO _x	VOC	CO	SO _x
S-220 Air Curtain Destructor	285.60	214.20	285.60	542.64	199.92	14.28
Diesel Engine	0.93	0.93	13.12	1.06	2.84	0.89
TOTAL	286.53	215.13	298.72	543.7	202.76	15.17

V. Existing Air Quality

On July 1, 1987, the Environmental Protection Agency (EPA) promulgated new National Ambient Air Quality Standards (NAAQS) for particulate matter with an aerodynamic diameter of 10 microns or less (PM₁₀). Due to exceedances of the national standards for PM₁₀, the cities of Kalispell (and the nearby Evergreen area), Columbia Falls, Butte, Whitefish, Libby, Missoula, and Thompson Falls were designated by EPA as nonattainment for PM₁₀. As a result of this designation, the EPA required the Department and the City-County Health Departments to submit PM₁₀ State Implementation Plans (SIP). The SIPs consisted of emission control plans that controlled fugitive dust emissions from roads, parking lots, construction, and demolition, since technical studies identified these sources to be the major contributors to PM₁₀ emissions.

Permit #3293-01 and Addendum 1 are for the operation of an incinerator that will locate at sites in or within 10 kilometers (km) of certain PM₁₀ nonattainment areas. The more stringent operating conditions contained in the addendum will minimize any potential impact on the nonattainment areas and will protect the national ambient air quality standards. Also, this facility is a portable source that would operate on an intermittent and temporary basis and any effects on air quality will be minor and short-lived.

VI. Air Quality Impacts

Permit #3293-01 and Addendum 1 will cover the operations of this portable incinerator while operating at any location within Montana, excluding those counties that have a Department approved permitting program and those areas that are tribal lands.

Addendum 1 will cover the operations of this portable incinerator, while operating in or within 10 km of the Butte, Columbia Falls, Kalispell, Libby, Thompson Falls, and Whitefish PM₁₀ nonattainment area (specific site during the winter months (October 1 through March 31). Additionally, the facility will also be allowed to operate in or within 10 km of PM₁₀ nonattainment areas during the summer months (April 1 through September 30).

VII. Taking or Damaging Implication Analysis

As required by 2-10-101 through 105, MCA, the Department conducted a private property taking and damaging assessment as listed in the permit analysis for this action (Permit #3293-01) and determined there are no taking or damaging implications.

VIII. Environmental Assessment

The current permit action is an administrative amendment and does not constitute a state action; therefore, an environmental assessment is not required for the proposed project.

Permit Analysis Prepared by: Trista Glazier

Date: September 29, 2008