



Montana Department of  
**ENVIRONMENTAL QUALITY**

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February 20, 2013

Scott J. Orr  
81590 Gallatin Road  
Bozeman, MT  
59718

Dear Mr. Orr:

Montana Air Quality Permit #3236-02 is deemed final as of February 20, 2013, by the Department of Environmental Quality (Department). This permit is for an animal crematory. All conditions of the Department's Decision remain the same. Enclosed is a copy of your permit with the final date indicated.

For the Department,

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

Tashia Love  
Environmental Science Specialist  
Air Resources Management Bureau  
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JM:TL  
Enclosure

Montana Department of Environmental Quality  
Permitting and Compliance Division

Montana Air Quality Permit #3236-02

All Paws Great and Small Pet Crematory, Inc.  
81590 Gallatin Road  
Bozeman, MT 59718

February 20, 2013



## MONTANA AIR QUALITY PERMIT

Issued to: All Paws Great & Small Pet Crematory, Inc.      MAQP #3236-02  
81590 Gallatin Road      Administrative Amendment (AA)  
Bozeman, MT 59718      Request Received: 01/10/2013  
Department Decision Issued:  
02/04/2013  
Permit Final: 02/20/2013  
AFS #031-0018

A Montana Air Quality Permit (MAQP), with conditions, is hereby granted to All Paws Great & Small Pet Crematory, Inc. (All Paws), pursuant to Sections 75-2-204, 211, and 215, of the Montana Code Annotated (MCA), as amended, and Administrative Rules of Montana (ARM) 17.8. 740, *et seq.*, as amended, for the following:

### SECTION I: Permitted Facilities

#### A. Plant Location

All Paws owns and operates an animal crematory (crematorium) located in the Southwest ¼ of the Northwest ¼, of Section 13, Township 2 South, Range 4 East, in Gallatin County, Montana. The physical address is 81590 Gallatin Road, Bozeman, Montana 59718. A complete list of the permitted equipment can be found in the permit analysis.

#### B. Current Permit Action

On January 8, 2013, the Department received correspondence from Hilary (Tone) Haney requesting a transfer of ownership of MAQP #3236-01 to Scott J. Orr. On January 10, 2013, the Department received correspondence from Scott J. Orr requesting a transfer of ownership of MAQP #3236-01 from Hilary (Tone) Haney to Scott J. Orr. The current permit action updates the facility ownership information.

### SECTION II: Conditions and Limitations

#### A. Operational Limitations

1. All Paws shall not incinerate/cremate any material other than animal remains and/or any corresponding container unless otherwise approved by the Department (ARM 17.8.749).
2. All Paws shall provide written notice to the Department and obtain approval from the Department if material other than what would normally be termed "animal remains, or its container" is to be incinerated (ARM 17.8.749).
3. The cremation units shall be equipped with auxiliary fuel burners. The auxiliary fuel burners shall be used to preheat the secondary chambers of the cremation units to the minimum required operating temperature prior to igniting the primary chamber burners. The operating temperatures shall be maintained during operation and for one-half hour after waste feed has stopped (ARM 17.8.752).
4. The operating temperature of the secondary chamber in each cremation unit shall be maintained above 1500 degrees Fahrenheit (°F) for any one-hour averaging period with no single reading less than 1400°F (ARM 17.8.752).

5. All Paws shall operate the cremation units as specified in the applications for MAQP #3236-00 and #3236-01. Further, All Paws shall develop cremation unit operation procedures, print those procedures in a crematorium operation procedures manual and require all personnel who operate the cremation units to familiarize themselves with the operating procedures. Upon request, a copy of this manual shall be supplied to the Department (ARM 17.8.752).

B. Emission Limitations

All Paws shall not cause or authorize to be discharged into the atmosphere from the crematorium:

1. Visible emissions that exhibit an opacity of 10% or greater averaged over 6 consecutive minutes (ARM 17.8.752); and
2. Any particulate emissions in excess of 0.10 grains per dry standard cubic feet (gr/dscf) corrected to 12% carbon dioxide (CO<sub>2</sub>) (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 further testing (ARM 17.8.105).

D. Operational Reporting Requirement

1. All Paws 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 units as required by the Department. This information may be used to calculate operating fees, based on actual emissions from the facility, and/or to verify compliance with permit limitations (ARM 17.8.505).

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

E. Monitoring Requirements

1. All Paws shall install, calibrate, maintain, and operate continuous monitoring and recording equipment on each cremation unit to measure the secondary chamber exit gas temperature (ARM 17.8.749).
2. All Paws shall record the daily quantity of material incinerated/cremated and the daily hours of operation of the crematorium (ARM 17.8.749).

SECTION III: General Conditions

- A. Inspection – All Paws 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 All Paws fails to appeal as indicated below.
- C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving All Paws of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq.* (ARM 17.8.756).
- D. Enforcement – Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties, or other enforcement action as specified in Section 75-2-401, *et seq.*, MCA.
- E. Appeals – Any person or persons jointly or severally adversely affected by the Department’s decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefor, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The filing of a request for a hearing does not stay the Department’s decision unless the Board issues a stay upon receipt of a petition and a finding that a stay is appropriate under Section 75-2-211(11)(b), MCA. The issuance of a stay on a permit by the Board postpones the effective date of the Department’s decision until conclusion of the hearing and issuance of a final decision by the Board. If a stay is not issued by the Board, the Department’s decision on the application is final 16 days after the Department’s decision is made.
- F. Permit Inspection – As required by ARM 17.8.755, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by the Department at the location of the source.
- G. Permit Fee – Pursuant to Section 75-2-220, MCA, failure to pay the annual operation fee by All Paws may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.
- H. Duration of Permit – Construction or installation must begin or contractual obligations entered into that would constitute substantial loss within 3 years of permit issuance and proceed with due diligence until the project is complete or the permit shall expire (ARM 17.8.762).

Montana Air Quality Permit (MAQP) Analysis  
All Paws Great & Small Pet Crematory, Inc.  
MAQP #3236-02

I. Introduction/Process Description

All Paws Great & Small Pet Crematory, Inc. (All Paws) owns and operates a 2002 Thermtec Model S27P pathological animal cremation unit and a 2011 Thermtec Model S27 pathological animal cremation unit. The facility is located in the Southwest ¼ of the Northwest ¼, of Section 13, Township 2 South, Range 4 East, in Gallatin County, Montana. The physical address is 81590 Gallatin Road, Bozeman, Montana 59718.

A. Permitted Equipment

All Paws owns and operates a 2002 Thermtec Model S27P pathological animal cremation unit and a 2011 Thermtec Model S27 pathological animal cremation unit.

B. Source Description

The cremation units are fired on natural gas and are capable of incinerating up to 85 pounds per hour (lb/hr) each (170 lb/hr total) of animal remains and/or any associated containers.

C. Permit History

On January 21, 2003, All Paws submitted a complete application for an MAQP to install and operate a 2002 Thermtec Model S27P pathological animal cremation unit. **MAQP #3236-00** was issued on March 20, 2003, to All Paws.

On November 30, 2010, the Department of Environmental Quality – Air Resources Management Bureau (Department) received a complete application from All Paws to modify their air quality permit to include a second cremation unit. **MAQP #3236-01** replaced MAQP #3236-00.

D. Current Permit Action

On January 8, 2013, the Department received correspondence from Hilary (Tone) Haney requesting a transfer of ownership of MAQP #3236-01 from to Scott J. Orr. On January 10, 2013, the Department received correspondence from Scott J. Orr requesting a transfer of ownership of MAQP #3236-01 from Hilary (Tone) Haney to Scott J. Orr. The current permit action updates the facility ownership information. **MAQP #3236-02** replaces MAQP #3236-01.

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 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).

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

4. ARM 17.8.110 Malfunctions. (2) The Department must be notified promptly by telephone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation or to continue for a period greater than 4 hours.
5. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means that, without resulting in reduction of the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant that would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner as to create a public nuisance.

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

1. ARM 17.8.204 Ambient Air Monitoring
2. ARM 17.8.210, Ambient Air Quality Standards for Sulfur Dioxide
3. ARM 17.8.211, Ambient Air Quality Standards for Nitrogen Dioxide
4. ARM 17.8.212, Ambient Air Quality Standards for Carbon Monoxide
5. ARM 17.8.213 Ambient Air Quality Standard for Ozone
6. ARM 17.8.214, Ambient Air Quality Standard for Hydrogen Sulfide

7. ARM 17.8.220, Ambient Air Quality Standard for Settled Particulate Matter
8. ARM 17.8.221 Ambient Air Quality Standard for Visibility
9. ARM 17.8.222 Ambient Air Quality Standard for Lead
10. ARM 17.8.223, Ambient Air Quality Standard for PM<sub>10</sub>

All Paws must maintain compliance with the applicable ambient air quality standards. As part of the risk assessment required for this project, the Department conducted Screen View modeling, an Environmental Protection Agency (EPA) approved air dispersion model. The modeling analysis demonstrated that the proposed project would comply with all applicable ambient air quality standards as required for permit issuance.

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. (1)This rule requires an opacity limitation of less than 20% for all fugitive emission sources and that reasonable precautions be taken to control emissions of airborne particulate matter.
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 (dscf) of dry flue gas, adjusted to 12% carbon dioxide and calculated as if no auxiliary fuel had been used. Further, 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.

While All Paws is required to comply with the Emission Limitations specified in Section II.B of MAQP #3236-02, this particular rule does not apply to the crematorium because All Paws has applied for and will operate under an MAQP in accordance with ARM 17.8.770 and MCA 75-2-215 for these units.

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 Standard of Performance for New Stationary Sources and Emission Guidelines for Existing Sources. This rule incorporates, by reference, 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS). 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.

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. 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. A permit fee is not required for the current permit action because the 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. 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.

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, modify, or use any air contaminant sources that have the potential to emit (PTE) greater than 25 tons per year of any pollutant. All Paws does not have the PTE greater than 25 tons per year of any pollutant; however, in accordance with the Montana Code Annotated (MCA) 75-2-215, an air quality permit must be obtained prior to the construction and operation of any incinerator, regardless of potential incinerator emissions. Because All Paws 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, modification, or use of a source. All Paws 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. An affidavit 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 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 All Paws of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq.*
10. ARM 17.8.759 Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those permit applications that do not require the preparation of an environmental impact statement.
11. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or modified source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.
12. ARM 17.8.763 Revocation of Permit. An air quality permit may be revoked upon written request of the permittee, or for violations of any requirement of the Clean Air Act of Montana, rules adopted under the Clean Air Act of Montana, the FCAA, rules adopted under the FCAA, or any applicable requirement contained in the Montana State Implementation Plan (SIP).
13. ARM 17.8.764 Administrative Amendment to Permit. An air quality permit may be amended for changes in any applicable rules and standards adopted by the Board of Environmental Review (Board) or changed conditions of operation at a source or stack that do not result in an increase of emissions as a result of those changed conditions. The owner or operator of a facility may not increase the

facility's emissions beyond permit limits unless the increase meets the criteria in ARM 17.8.745 for a de minimis change not requiring a permit, or unless the owner or operator applies for and receives another permit in accordance with ARM 17.8.748, ARM 17.8.749, ARM 17.8.752, ARM 17.8.755, and ARM 17.8.756, and with all applicable requirements in ARM Title 17, Chapter 8, Subchapters 8, 9, and 10.

14. ARM 17.8.765 Transfer of Permit. This rule states that an air quality permit may be transferred from one person to another if written notice of intent to transfer, including the names of the transferor and the transferee, is sent to the Department
15. ARM 17.8.770 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, Montana Code Annotated (MCA).

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 because this facility is not a listed source and the facility's PTE is below 250 tons per year (tpy) 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 source having:
  - a. PTE > 100 tpy of any pollutant;
  - b. PTE > 10 tpy of any one hazardous air pollutant (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 (PM<sub>10</sub>) in a serious PM<sub>10</sub> 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 #3236-02 for All Paws, the following conclusions were made.
  - a. The facility's PTE is less than 100 tpy for any pollutant;
  - b. The facility's PTE is less than 10 tpy for any one HAP and less than 25 tpy for all HAPs;

- c. This source is not located in a serious PM<sub>10</sub> 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.

Based on these facts, the Department determined that All Paws will be a minor source of emissions as defined under the Title V operating permit program and will not require a Title V operating permit.

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 commercial solid waste incinerators; therefore, All Paws 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 application for MAQP #3236-01 is sufficient to fulfill this requirement for the current administrative amendment.
- 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 an 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 All Paws' proposal under MAQP #3236-01 complies with this requirement for the current administrative amendment.
- 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 Determination

A BACT determination is required for each new or modified source. All Paws 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. In addition, MCA 75-2-215 requires a BACT determination for all pollutants, not just criteria pollutants.

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 the All Paw’s proposal. This emission inventory for criteria pollutants was based on emission factors from the AIRS FACILITY SUBSYSTEM SOURCE CLASSIFICATION CODES (AFSSCC) manual dated March 1990 and AP-42 Fifth Edition Compilation of Air Pollutant Emission Factors (AP-42). The application indicated that the fuel used would be natural gas; therefore, the Department also used emission factors from AP-42, Section 1.4, Natural Gas Combustion, for the fuel combustion of natural gas.

The Department developed a HAP 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.

Criteria Pollutant Emissions (tons/year)						
Source	PM	PM <sub>10</sub>	NO <sub>x</sub>	VOC	CO	SO <sub>x</sub>
Cremation Unit 1 (existing)	1.49	1.10	0.56	0.56	0.00	1.49
Natural Gas Fuel Combustion– Cremation Unit 1 (existing)	<b>0.05</b>	<b>0.05</b>	<b>0.70</b>	<b>0.04</b>	<b>0.59</b>	<b>0.00</b>
Cremation Unit 2	1.49	1.10	0.66	0.56	0.55	1.49
Cremation Unit 2 (Natural Gas Fuel Combustion )	<b>0.05</b>	<b>0.05</b>	<b>0.70</b>	<b>0.04</b>	<b>0.59</b>	<b>0.00</b>
<b>Total Criteria Pollutant Potential Emissions</b>	<b>3.09</b>	<b>2.31</b>	<b>2.62</b>	<b>1.20</b>	<b>1.73</b>	<b>2.99</b>

**UNIT 1 – EXISTING CREMATION UNIT: Criteria Pollutant Emission Calculations**

Maximum Rated Design Capacity: 85 lb/hr  
 Operating Hours: 8760 hr/yr  
 Conversion: 85 lb/hr \* 8760 hr/yr \* 0.0005 ton/lb = 372.30 ton/yr

PM Emissions

Emission Factor: 8.00 lb/ton (AFSSCC 5-02-005-05, 03/90, Page 227)  
 Fuel Consumption: 372.30 ton/year (Maximum Rated Design)  
 Calculations: 372.30 ton/year \* 8 lb/ton \* 0.0005 ton/lb = 1.49 ton/yr

PM<sub>10</sub> Emissions:

Emission Factor: 5.92 lb/ton (AFSSCC 5-02-005-05, 03/90, Page 227)  
 Fuel Consumption: 372.30 ton/year (Maximum Rated Design)  
 Calculations: 372.30 ton/year \* 5.92 lb/ton \* 0.0005 ton/lb = 1.10 ton/yr

NO<sub>x</sub> Emissions:

Emission Factor: 3.00 lb/ton (AFSSCC 5-02-005-05, 03/90, Page 227)  
 Fuel Consumption: 372.30 ton/year (Maximum Rated Design)  
 Calculations: 372.30 ton/year \* 3 lb/ton \* 0.0005 ton/lb = 0.56 ton/yr

VOC Emissions:

Emission Factor: 3.00 lb/ton (AFSSCC 5-02-005-05, 03/90, Page 227)  
 Fuel Consumption: 372.30 ton/year (Maximum Rated Design)  
 Calculations: 372.30 ton/year \* 3 lb/ton \* 0.0005 ton/lb = 0.56 ton/yr

CO Emissions:

Emission Factor: 0.00 lb/ton (AFSSCC 5-02-005-05, 03/90, Page 227)  
 Fuel Consumption: 372.30 ton/year (Maximum Rated Design)  
 Calculations: 372.30 ton/year \* 0 lb/ton \* 0.0005 ton/lb = 0.00 ton/yr

SO<sub>x</sub> Emissions:  
 Emission Factor: 8.00 lb/ton (AFSSCC 5-02-005-05, 03/90, Page 227)  
 Fuel Consumption: 372.30 ton/year (Maximum Rated Design)  
 Calculations: 372.30 ton/year \* 8 lb/ton \* 0.0005 ton/lb = 1.49 ton/yr

**UNIT 1 – EXISTING CREMATION UNIT:**

**NATURAL GAS FUEL COMBUSTION: Criteria Pollutant Emission Calculations**

Hours of Operation: 8760 hr/yr  
 Maximum Rated Design Capacity: 0.0016 MMScf/MMBtu (Company Information)  
 PM Emissions:

All PM emissions assumed to be PM<sub>10</sub> emissions (AP-42, Table 1.4-2, 07/98)

PM<sub>10</sub> Emissions:  
 Emission Factor: 7.6 lb/MMScf (AP42, Table 1.4-2, 07/98)  
 Calculations: 7.6 lbs/MMscf \* 0.0016 MMscf/hr == 0.012lb/hr  
 0.012 lb/hr \* 8760 hr/yr \* 0.0005 ton/lb = 0.05 ton/yr

NO<sub>x</sub> Emissions:  
 Emission Factor: 100 lb/MMScf (AP42, Table 1.4-1, 07/98)  
 Calculations: 100 lbs/MMscf \* 0.0016 MMscf/hr == 0.16 lb/hr  
 0.16 lbs/hr \* 8760 hrs/yr \* 0.0005 tons/lb == 0.701 ton/yr

VOC Emissions:  
 Emission Factor: 5.5 lb/MMScf (AP42, Table 1.4-2, 07/98)  
 Calculations: 5.5 lbs/MMscf \* 0.0016 MMscf/hr = 0.009lb/hr  
 0.009 lbs/hr \* 8760 hrs/yr \* 0.0005 tons/lb = 0.0385 ton/yr

CO Emissions:  
 Emission Factor: 84 lb/MMScf (AP42, Table 1.4-1, 07/98)  
 Calculations: 84 lbs/MMscf \* 0.0016 MMscf/hr = 0.134lb/hr  
 0.134 lbs/hr \* 8760 hrs/yr \* 0.0005 tons/lb = 0.589 ton/yr

SO<sub>x</sub> Emissions:  
 Emission Factor: 0.6 lb/MMScf (AP42, Table 1.4-2, 07/98)  
 Calculations: 0.6 lbs/MMscf \* 0.0016 MMscf/hr = 0.00096 lb/hr  
 0.00096 lbs/hr \* 8760 hrs/yr \* 0.0005 tons/lb = 0.0042 ton/yr

**UNIT 2 – CREMATION UNIT: Criteria Pollutant Emission Calculations**

Maximum Rated Design Capacity: 85 lb/hr  
 Operating Hours: 8760 hr/yr  
 Conversion: 85 lb/hr \* 8760 hr/yr \* 0.0005 ton/lb = 372.30 ton/yr

PM Emissions  
 Emission Factor: 8.00 lb/ton (AFSSCC 5-02-005-05, 03/90, Page 227)  
 Fuel Consumption: 372.30 ton/year (Maximum Rated Design)  
 Calculations: 372.30 ton/year \* 8 lb/ton \* 0.0005 ton/lb = 1.49 ton/yr

PM<sub>10</sub> Emissions:  
 Emission Factor: 5.92 lb/ton (AFSSCC 5-02-005-05, 03/90, Page 227)  
 Fuel Consumption: 372.30 ton/year (Maximum Rated Design)  
 Calculations: 372.30 ton/year \* 5.92 lb/ton \* 0.0005 ton/lb = 1.10 ton/yr

NO<sub>x</sub> Emissions:  
 Emission Factor: 3.56 lb/ton (AP-42 Table 2.3-1, 07/93)  
 Fuel Consumption: 372.30 ton/year (Maximum Rated Design)  
 Calculations: 372.30 ton/year \* .563 lb/ton \* 0.0005 ton/lb = 0.66 ton/yr

VOC Emissions:  
 Emission Factor: 3.00 lb/ton (AFSSCC 5-02-005-05, 03/90, Page 227)  
 Fuel Consumption: 372.30 ton/year (Maximum Rated Design)  
 Calculations: 372.30 ton/year \* 3 lb/ton \* 0.0005 ton/lb = 0.56 ton/yr

CO Emissions:

Emission Factor: 2.95 lb/ton (AP-42 Table 2.3-1, 07/93)  
 Fuel Consumption: 372.30 ton/year (Maximum Rated Design)  
 Calculations:  $372.30 \text{ ton/year} * 2.95 \text{ lb/ton} * 0.0005 \text{ ton/lb} = \underline{0.55 \text{ ton/yr}}$

SO<sub>x</sub> Emissions:

Emission Factor: 8.00 lb/ton (AFSSCC 5-02-005-05, 03/90, Page 227)  
 Fuel Consumption: 372.30 ton/year (Maximum Rated Design)  
 Calculations:  $372.30 \text{ ton/year} * 8 \text{ lb/ton} * 0.0005 \text{ ton/lb} = \underline{1.49 \text{ ton/yr}}$

**UNIT 2 –CREMATION UNIT NATURAL GAS FUEL COMBUSTION:**

**Criteria Pollutant Emission Calculations**

Heat Input Value: 1.0 MMBtu/hr (Company Information)  
 Hours of Operation: 8760 hr/yr  
 Fuel Heating Value: 0.001 MMScf/MMBtu

PM Emissions:

All PM emissions assumed to be PM<sub>10</sub> emissions (AP-42, Table 1.4-2, 07/98)

PM<sub>10</sub> Emissions:

Emission Factor: 7.6 lb/MMScf (AP42, Table 1.4-2, 07/98)  
 Calculations:  $7.6 \text{ lb/MMScf} * 0.0016 \text{ lb/MMScf} = 0.0012 \text{ lb/hr}$   
 $0.0012 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{0.05 \text{ ton/yr}}$

NO<sub>x</sub> Emissions:

Emission Factor: 100 lb/MMScf (AP42, Table 1.4-1, 07/98)  
 Calculations:  $100 \text{ lb/MMScf} * 0.0016 \text{ lb/MMScf} = 0.16 \text{ lb/hr}$   
 $0.16 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{0.701 \text{ ton/yr}}$

VOC Emissions:

Emission Factor: 5.5 lb/MMScf (AP42, Table 1.4-2, 07/98)  
 Calculations:  $5.5 \text{ lb/MMScf} * 0.0016 \text{ lb/MMScf} = 0.009 \text{ lb/hr}$   
 $0.009 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{0.0385 \text{ ton/yr}}$

CO Emissions:

Emission Factor: 84 lb/MMScf (AP42, Table 1.4-1, 07/98)  
 Calculations:  $84 \text{ lb/MMScf} * 0.0016 \text{ lb/MMScf} = 0.134 \text{ lb/hr}$   
 $0.134 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{0.589 \text{ ton/yr}}$

SO<sub>x</sub> Emissions:

Emission Factor: 0.6 lb/MMScf (AP42, Table 1.4-2, 07/98)  
 Calculations:  $0.6 \text{ lb/MMScf} * 0.0016 \text{ lb/MMScf} = 0.00096 \text{ lb/hr}$   
 $0.00096 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{0.0042 \text{ ton/yr}}$

**HAZARDOUS AIR POLLUTANT EMISSIONS CALCULATIONS**

EXISTING CREMATION UNIT No. 1 HAP Emissions (Animal Remains)	
HAP	tons/year
Bromoform	5.39E-06
Carbon Tetrachloride	1.07E-05
Chloroform	1.01E-05
1,2-Dichloropropane	2.00E-04
Ethyl Benzene	3.00E-04
Naphthalene	2.20E-03
Tetrachloroethylene	7.50E-06
1,1,2,2-Tetrachloroethane	2.05E-05
Toluene	9.00E-04
Vinylidene Chloride	1.32E-05
Xylene	4.00E-04
<b>Total HAP Potential Emissions</b>	<b>4.10E-03</b>

## UNIT 1 – EXISTING CREMATION UNIT: Hazardous Air Pollutant Emission Calculations

### Bromoform

Emission Factor: 2.90E-05 lb/ton (AFSSCC 5-02-005-05)  
Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
Calculations:  $2.90 \text{ E-}05 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 1.55\text{E-}07 \text{ g/sec}$   
 $1.55\text{E-}07 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 1.23\text{E-}06 \text{ lb/hr}$   
 $1.23\text{E-}06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{5.39\text{E-}06 \text{ ton/yr}}$

### Carbon Tetrachloride

Emission Factor: 5.74E-05 lb/ton (AFSSCC 5-02-005-05)  
Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
Calculations:  $5.74\text{E-}05 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 3.07\text{E-}07 \text{ g/sec}$   
 $3.07\text{E-}07 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 2.44\text{E-}06 \text{ lb/hr}$   
 $2.44\text{E-}06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{1.07\text{E-}05 \text{ ton/yr}}$

### Chloroform

Emission Factor: 5.45E-05 lb/ton (AFSSCC 5-02-005-05)  
Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
Calculations:  $5.45\text{E-}05 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 2.92\text{E-}07 \text{ g/sec}$   
 $2.92\text{E-}07 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 2.32\text{E-}06 \text{ lb/hr}$   
 $2.32\text{E-}06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{1.01\text{E-}05 \text{ ton/yr}}$

### 1,2-Dichloropropane

Emission Factor: 1.32E-03 lb/ton (AFSSCC 5-02-005-05)  
Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
Calculations:  $1.32\text{E-}03 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 7.07\text{E-}06 \text{ g/sec}$   
 $7.07\text{E-}06 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 1.00\text{E-}04 \text{ lb/hr}$   
 $1.00\text{E-}04 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{2.00\text{E-}04 \text{ ton/yr}}$

### Ethyl Benzene

Emission Factor: 1.61E-03 lb/ton (AFSSCC 5-02-005-05)  
Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
Calculations:  $1.61\text{E-}03 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 8.62\text{E-}06 \text{ g/sec}$   
 $8.62\text{E-}06 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 1.00\text{E-}04 \text{ lb/hr}$   
 $1.00\text{E-}04 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{3.00\text{E-}04 \text{ ton/yr}}$

### Naphthalene

Emission Factor: 1.16E-02 lb/ton (AFSSCC 5-02-005-05)  
Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
Calculations:  $1.16\text{E-}02 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 6.21\text{E-}05 \text{ g/sec}$   
 $1.00\text{E-}04 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 5.00\text{E-}04 \text{ lb/hr}$   
 $5.00\text{E-}04 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{2.20\text{E-}03 \text{ ton/yr}}$

### Tetrachloroethylene

Emission Factor: 4.03E-05 lb/ton (AFSSCC 5-02-005-05)  
Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
Calculations:  $4.03\text{E-}05 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 2.16\text{E-}07 \text{ g/sec}$   
 $2.16\text{E-}07 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 1.71\text{E-}06 \text{ lb/hr}$   
 $1.71\text{E-}06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{7.50\text{E-}06 \text{ ton/yr}}$

### 1,1,2,2-Tetrachloroethane

Emission Factor: 1.10E-04 lb/ton (AFSSCC 5-02-005-05)  
Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
Calculations:  $1.10\text{E-}04 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 5.89\text{E-}07 \text{ g/sec}$   
 $5.89\text{E-}07 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 4.68\text{E-}06 \text{ lb/hr}$   
 $4.68\text{E-}06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{2.05\text{E-}05 \text{ ton/yr}}$

### Toluene

Emission Factor: 4.62E-03 lb/ton (AFSSCC 5-02-005-05)  
Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
Calculations:  $4.62\text{E-}03 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 2.47\text{E-}05 \text{ g/sec}$   
 $2.47\text{E-}05 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 2.00\text{E-}04 \text{ lb/hr}$   
 $2.00\text{E-}04 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{9.00\text{E-}4 \text{ ton/yr}}$

Vinylidene Chloride

Emission Factor: 7.10E-05 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $7.10E-05 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr}/3600 \text{ sec} = 3.80E-07 \text{ g/sec}$   
 $3.80E-07 \text{ g/sec} * 1 \text{ lb}/453.6 \text{ g} * 3600 \text{ sec/hr} = 3.02E-06 \text{ lb/hr}$   
 $3.02E-06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{1.32E-05 \text{ ton/yr}}$

Xylene

Emission Factor: 2.20E-03 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $2.20E-03 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr}/3600 \text{ sec} = 1.18E-05 \text{ g/sec}$   
 $1.32E-05 \text{ g/sec} * 1 \text{ lb}/453.6 \text{ g} * 3600 \text{ sec/hr} = 1.00E-04 \text{ lb/hr}$   
 $1.00E-04 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{4.00E-04 \text{ ton/yr}}$

CREMATION UNIT No. 2 HAP Emissions (Animal Remains)	
HAP	tons/year
Bromoform	5.39E-06
Carbon Tetrachloride	1.07E-05
Chloroform	1.01E-05
1,2-Dichloropropane	2.46E-04
Ethyl Benzene	3.00E-04
Naphthalene	2.16E-03
Tetrachloroethylene	7.50E-06
1,1,2,2-Tetrachloroethane	2.05E-05
Toluene	8.60E-04
Vinylidene Chloride	1.32E-05
Xylene	4.10E-04
<b>Total HAP Potential Emissions</b>	<b>4.04E-03</b>

**UNIT 2 – CREMATION UNIT: Hazardous Air Pollutant Emission Calculations**

Bromoform

Emission Factor: 2.90E-05 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $2.90 \text{ E-}05 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr}/3600 \text{ sec} = 1.55E-07 \text{ g/sec}$   
 $1.55E-07 \text{ g/sec} * 1 \text{ lb}/453.6 \text{ g} * 3600 \text{ sec/hr} = 1.23E-06 \text{ lb/hr}$   
 $1.23E-06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{5.39E-06 \text{ ton/yr}}$

Carbon Tetrachloride

Emission Factor: 5.74E-05 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $5.74E-05 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr}/3600 \text{ sec} = 3.07E-07 \text{ g/sec}$   
 $3.07E-07 \text{ g/sec} * 1 \text{ lb}/453.6 \text{ g} * 3600 \text{ sec/hr} = 2.44E-06 \text{ lb/hr}$   
 $2.44E-06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{1.07E-05 \text{ ton/yr}}$

Chloroform

Emission Factor: 5.45E-05 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $5.45E-05 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr}/3600 \text{ sec} = 2.92E-07 \text{ g/sec}$   
 $2.92E-07 \text{ g/sec} * 1 \text{ lb}/453.6 \text{ g} * 3600 \text{ sec/hr} = 2.32E-06 \text{ lb/hr}$   
 $2.32E-06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{1.01E-05 \text{ ton/yr}}$

1,2-Dichloropropane

Emission Factor: 1.32E-03 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $1.32E-03 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr}/3600 \text{ sec} = 7.07E-06 \text{ g/sec}$   
 $7.07E-06 \text{ g/sec} * 1 \text{ lb}/453.6 \text{ g} * 3600 \text{ sec/hr} = 1.00E-04 \text{ lb/hr}$   
 $1.00E-04 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{2.00E-04 \text{ ton/yr}}$

Ethyl Benzene

Emission Factor: 1.61E-03 lb/ton (AFSSCC 5-02-005-05)

Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $1.61\text{E-}03 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 8.62\text{E-}06 \text{ g/sec}$   
 $8.62\text{E-}06 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 1.00\text{E-}04 \text{ lb/hr}$   
 $1.00\text{E-}04 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{3.00\text{E-}04 \text{ ton/yr}}$

**Naphthalene**

Emission Factor: 1.16E-02 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $1.16\text{E-}02 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 6.21\text{E-}05 \text{ g/sec}$   
 $1.00\text{E-}04 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 5.00\text{E-}04 \text{ lb/hr}$   
 $5.00\text{E-}04 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{2.20\text{E-}03 \text{ ton/yr}}$

**Tetrachloroethylene**

Emission Factor: 4.03E-05 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $4.03\text{E-}05 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 2.16\text{E-}07 \text{ g/sec}$   
 $2.16\text{E-}07 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 1.71\text{E-}06 \text{ lb/hr}$   
 $1.71\text{E-}06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{7.50\text{E-}06 \text{ ton/yr}}$

**1,1,2,2-Tetrachloroethane**

Emission Factor: 1.10E-04 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $1.10\text{E-}04 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 5.89\text{E-}07 \text{ g/sec}$   
 $5.89\text{E-}07 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 4.68\text{E-}06 \text{ lb/hr}$   
 $4.68\text{E-}06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{2.05\text{E-}05 \text{ ton/yr}}$

**Toluene**

Emission Factor: 4.62E-03 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $4.62\text{E-}03 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 2.47\text{E-}05 \text{ g/sec}$   
 $2.47\text{E-}05 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 2.00\text{E-}04 \text{ lb/hr}$   
 $2.00\text{E-}04 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{9.00\text{E-}4 \text{ ton/yr}}$

**Vinylidene Chloride**

Emission Factor: 7.10E-05 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $7.10\text{E-}05 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 3.80\text{E-}07 \text{ g/sec}$   
 $3.80\text{E-}07 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 3.02\text{E-}06 \text{ lb/hr}$   
 $3.02\text{E-}06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{1.32\text{E-}05 \text{ ton/yr}}$

**Xylene**

Emission Factor: 2.20E-03 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $2.20\text{E-}03 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 1.18\text{E-}05 \text{ g/sec}$   
 $1.32\text{E-}05 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 1.00\text{E-}04 \text{ lb/hr}$   
 $1.00\text{E-}04 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{4.00\text{E-}04 \text{ ton/yr}}$

**UNIT 2 – CREMATION UNIT – NATURAL GAS FUEL COMBUSTION: Hazardous Air Pollutant Emission Calculations**

CREMATION UNIT No. 2 HAP Emissions (Natural Gas Fuel Combustion)	
HAP	tons/year
2-Methylnaphthalene	1.68E-07
3-Methylchloranthrene	1.26E-08
7,12-Dimethylbenz(a)anthracene	1.12E-07
Acenaphthene	1.26E-08
Acenaphthylene	1.26E-08
Anthracene	1.68E-08
Benzene	1.47E-05
Benz(a)anthracene	1.26E-08
Benzo(a)pyrene	8.41E-09
Benzo(b)fluoranthene	1.26E-08

HAP	tons/year
Benzo(k)fluoranthene	1.26E-08
Benzo(g,h,i)perylene	8.41E-09
Chrysene	1.26E-08
Dibenzo(a,h)anthracene	8.41E-09
1,4-Dichlorobenzene (p)	8.41E-06
Fluoranthene	2.10E-08
Fluorene	1.96E-08
Formaldehyde	5.26E-04
Hexane	1.26E-02
Indeno(1,2,3,c,d)pyrene	1.26E-08
Naphthalene	4.27E-06
Phenanthrene	1.19E-07
Pyrene	3.50E-08
Toluene	2.38E-05
Arsenic	1.40E-06
Beryllium	8.41E-08
Cadmium	7.71E-06
Chromium, total	9.81E-06
Cobalt	5.89E-07
Lead	2.66E-06
Manganese	1.82E-06
Mercury	1.47E-05
Nickel	1.68E-07
Selenium	1.32E-02
Total Risks	1.68E-07

**UNIT 2 – CREMATION UNIT – NATURAL GAS FUEL COMBUSTION: Hazardous Air Pollutant Emission Calculations**

Hours of Operation	8760	hrs/yr		
Max. Rated Design capacity	0.0016	MMscf/hr	(applicant's information)	
<b>2-Methylnaphthalene</b>				
Emission Factor	2.40E-05	lbs/MMscf	(AP42, Table 1.4-3, 7/98)	
Calculations	0.000024 lbs/MMscf * 0.0016 MMscf/hr =			3.84E-08 lbs/hr
	0.0000000384 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =			<b>1.68E-07</b> TPY
<b>3-Methylchloranthrene</b>				
Emission Factor	1.80E-06	lbs/MMscf	(AP42, Table 1.4-3, 7/98)	
Calculations	0.0000018 lbs/MMscf * 0.0016 MMscf/hr =			2.88E-09 lbs/hr
	0.0000000288 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =			<b>1.26E-08</b> TPY
<b>7,12-Dimethylbenz(a)anthracene</b>				
Emission Factor	1.60E-05	lbs/MMscf	(AP42, Table 1.4-3, 7/98)	
Calculations	0.000016 lbs/MMscf * 0.0016 MMscf/hr =			2.56E-08 lbs/hr
	0.0000000256 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =			<b>1.12E-07</b> TPY
<b>Acenaphthene</b>				
Emission Factor	1.80E-06	lbs/MMscf	(AP42, Table 1.4-3, 7/98)	
Calculations	0.0000018 lbs/MMscf * 0.0016 MMscf/hr =			2.88E-09 lbs/hr
	0.0000000288 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =			<b>1.26E-08</b> TPY
<b>Acenaphthylene</b>				
Emission Factor	1.80E-06	lbs/MMscf	(AP42, Table 1.4-3, 7/98)	
Calculations	0.0000018 lbs/MMscf * 0.0016 MMscf/hr =			2.88E-09 lbs/hr
	0.0000000288 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =			<b>1.26E-08</b> TPY
<b>Anthracene</b>				
Emission Factor	2.40E-06	lbs/MMscf	(AP42, Table 1.4-3, 7/98)	
Calculations	0.0000024 lbs/MMscf * 0.0016 MMscf/hr =			3.84E-09 lbs/hr
	0.0000000384 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =			<b>1.68E-08</b> TPY

Benzene	Emission Factor	2.10E-03 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.0021 lbs/MMscf * 0.0016 MMscf/hr =	3.36E-06 lbs/hr	
		0.00000336 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>1.47E-05</b> TPY	
Benz(a)anthracene	Emission Factor	1.80E-06 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.0000018 lbs/MMscf * 0.0016 MMscf/hr =	2.88E-09 lbs/hr	
		0.0000000288 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>1.26E-08</b> TPY	
Benzo(a)pyrene	Emission Factor	1.20E-06 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.0000012 lbs/MMscf * 0.0016 MMscf/hr =	1.92E-09 lbs/hr	
		0.0000000192 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>8.41E-09</b> TPY	
Benzo(b)fluoranthene	Emission Factor	1.80E-06 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.0000018 lbs/MMscf * 0.0016 MMscf/hr =	2.88E-09 lbs/hr	
		0.0000000288 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>1.26E-08</b> TPY	
Benzo(k)fluoranthene	Emission Factor	1.80E-06 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.0000018 lbs/MMscf * 0.0016 MMscf/hr =	2.88E-09 lbs/hr	
		0.0000000288 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>1.26E-08</b> TPY	
Benzo(g,h,i)perylene	Emission Factor	1.20E-06 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.0000012 lbs/MMscf * 0.0016 MMscf/hr =	1.92E-09 lbs/hr	
		0.0000000192 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>8.41E-09</b> TPY	
Chrysene	Emission Factor	1.80E-06 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.0000018 lbs/MMscf * 0.0016 MMscf/hr =	2.88E-09 lbs/hr	
		0.0000000288 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>1.26E-08</b> TPY	
Dibenzo(a,h)anthracene	Emission Factor	1.20E-06 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.0000012 lbs/MMscf * 0.0016 MMscf/hr =	1.92E-09 lbs/hr	
		0.0000000192 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>8.41E-09</b> TPY	
Dichlorobenzene	Emission Factor	1.20E-03 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.0012 lbs/MMscf * 0.0016 MMscf/hr =	1.92E-06 lbs/hr	
		0.00000192 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>8.41E-06</b> TPY	
Fluoranthene	Emission Factor	3.00E-06 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.000003 lbs/MMscf * 0.0016 MMscf/hr =	4.80E-09 lbs/hr	
		0.000000048 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>2.10E-08</b> TPY	
Fluorene	Emission Factor	2.80E-06 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.0000028 lbs/MMscf * 0.0016 MMscf/hr =	4.48E-09 lbs/hr	
		0.0000000448 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>1.96E-08</b> TPY	
Formaldehyde	Emission Factor	7.50E-02 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.075 lbs/MMscf * 0.0016 MMscf/hr =	1.20E-04 lbs/hr	
		0.00012 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>5.26E-04</b> TPY	
Hexane	Emission Factor	1.80E+00 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	1.8 lbs/MMscf * 0.0016 MMscf/hr =	2.88E-03 lbs/hr	
		0.00288 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>1.26E-02</b> TPY	

Indeno(1,2,3,c,d)pyrene	Emission Factor	1.80E-06 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.0000018 lbs/MMscf * 0.0016 MMscf/hr =	2.88E-09 lbs/hr	
		0.0000000288 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>1.26E-08</b>	TPY
Naphthalene	Emission Factor	6.10E-04 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.00061 lbs/MMscf * 0.0016 MMscf/hr =	9.76E-07 lbs/hr	
		0.000000976 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>4.27E-06</b>	TPY
Phenanthrene	Emission Factor	1.70E-05 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.000017 lbs/MMscf * 0.0016 MMscf/hr =	2.72E-08 lbs/hr	
		0.0000000272 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>1.19E-07</b>	TPY
Pyrene	Emission Factor	5.00E-06 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.000005 lbs/MMscf * 0.0016 MMscf/hr =	8.00E-09 lbs/hr	
		0.000000008 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>3.50E-08</b>	TPY
Toluene	Emission Factor	3.40E-03 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.0034 lbs/MMscf * 0.0016 MMscf/hr =	5.44E-06 lbs/hr	
		0.00000544 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>2.38E-05</b>	TPY
Arsenic	Emission Factor	2.00E-04 lbs/MMscf (AP42, Table 1.4-4, 7/98)		
	Calculations	0.0002 lbs/MMscf * 0.0016 MMscf/hr =	3.20E-07 lbs/hr	
		0.00000032 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>1.40E-06</b>	TPY
Beryllium	Emission Factor	1.20E-05 lbs/MMscf (AP42, Table 1.4-4, 7/98)		
	Calculations	0.000012 lbs/MMscf * 0.0016 MMscf/hr =	1.92E-08 lbs/hr	
		0.0000000192 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>8.41E-08</b>	TPY
Cadmium	Emission Factor	1.10E-03 lbs/MMscf (AP42, Table 1.4-4, 7/98)		
	Calculations	0.0011 lbs/MMscf * 0.0016 MMscf/hr =	1.76E-06 lbs/hr	
		0.00000176 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>7.71E-06</b>	TPY
Chromium, total	Emission Factor	1.40E-03 lbs/MMscf (AP42, Table 1.4-4, 7/98)		
	Calculations	0.0014 lbs/MMscf * 0.0016 MMscf/hr =	2.24E-06 lbs/hr	
		0.00000224 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>9.81E-06</b>	TPY
Cobalt	Emission Factor	8.40E-05 lbs/MMscf (AP42, Table 1.4-4, 7/98)		
	Calculations	0.000084 lbs/MMscf * 0.0016 MMscf/hr =	1.34E-07 lbs/hr	
		0.0000001344 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>5.89E-07</b>	TPY
Lead	Emission Factor	5.00E-04 lbs/MMscf (AP42, Table 1.4-2, 7/98)		
	Calculations	0.0005 lbs/MMscf * 0.0016 MMscf/hr =	8.00E-07 lbs/hr	
		0.0000008 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>3.50E-06</b>	TPY
Manganese	Emission Factor	3.80E-04 lbs/MMscf (AP42, Table 1.4-4, 7/98)		
	Calculations	0.00038 lbs/MMscf * 0.0016 MMscf/hr =	6.08E-07 lbs/hr	
		0.000000608 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>2.66E-06</b>	TPY
Mercury	Emission Factor	2.60E-04 lbs/MMscf (AP42, Table 1.4-4, 7/98)		
	Calculations	0.00026 lbs/MMscf * 0.0016 MMscf/hr =	4.16E-07 lbs/hr	
		0.000000416 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>1.82E-06</b>	TPY

Nickel

Emission Factor	2.10E-03 lbs/MMscf (AP42, Table 1.4-4, 7/98)		
Calculations	0.0021 lbs/MMscf * 0.0016 MMscf/hr =	3.36E-06	lbs/hr
	0.00000336 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>1.47E-05</b>	TPY

Selenium

Emission Factor	2.40E-05 lbs/MMscf (AP42, Table 1.4-4, 7/98)		
Calculations	0.000024 lbs/MMscf * 0.0016 MMscf/hr =	3.84E-08	lbs/hr
	0.000000384 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>1.68E-07</b>	TPY

V. Existing Air Quality

All Paws is located at 81590 Gallatin Road, Bozeman, Montana, in Gallatin County, Montana. The screening analysis performed during the MAQP process demonstrated that the facility complies with all applicable ambient air quality standards and poses a negligible risk to human health as required for permit issuance. Additionally, MAQP #3236-02 contains operating and monitoring requirements to ensure that proper operation of the facility would not result in air emissions that violate any ambient air quality standards.

VI. Ambient Air Impact Analysis

The Department determined that there will be no impacts from this permitting action because this permitting action is considered an administrative action. Therefore, the Department believes this action will not cause or contribute to a violation of any ambient air quality standard.

VII. Air Quality Impacts

Based on the information provided and the conditions established in MAQP #3236-02, the Department determined that there will be no impacts from this permitting action. The Department believes it will not cause or contribute to a violation of any ambient air quality standard.

VIII. Health Risk Assessment

A health risk assessment was not required for the current permit action. The current permit action is a for an ownership change and will not result in an increase of emissions.

IX. 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?

YES	NO	
	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.

X. Environmental Assessment

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

Analysis prepared by: Tashia Love  
Date: January 17, 2013