



Montana Department of
ENVIRONMENTAL QUALITY

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May 7, 2014

Tanya Ballensky
Heights Family Funeral Home & Crematory, Inc.
609 Cairo Place
Billings, MT 59105

Dear Ms. Ballensky:

Montana Air Quality Permit #5012-00 is deemed final as of May 7, 2014, by the Department of Environmental Quality (Department). This permit is for a cremation unit and associated equipment. 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 Program Supervisor
Air Resources Management Bureau
(406) 444-3626

Doug Kuenzli
Environmental Science Specialist
Air Resources Management Bureau
(406) 444-4267

JM:DCK
Enclosure

Montana Department of Environmental Quality
Permitting and Compliance Division

Montana Air Quality Permit #5012-00

Heights Family Funeral Home & Crematory, Inc.
609 Cairo Place
Billings, MT 59105

May 7, 2014



MONTANA AIR QUALITY PERMIT

Issued To: Heights Family Funeral Home & Crematory, Inc. MAQP: #5012-00
609 Cairo Place Application Complete: 01/30/2014
Billings, MT 59105 Preliminary Determination Issued: 03/18/2014
Department's Decision Issued: 04/21/2014
Permit Final: 05/07/2014
AFS #: 111-0044

A Montana Air Quality Permit (MAQP), with conditions, is hereby granted to Heights Family Funeral Home & Crematory, Inc. (Heights Family FH&C), 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. Permitted Equipment

Heights Family FH&C proposes to install and operate a propane or natural gas-fired Power Pak II Plus Multi-chambered cremation unit rated for a maximum cremation rate of 175 pounds per hour (lb/hr), and maximum charge weight capability of 750 lb.

B. Plant Location

The physical location of the proposed facility is 733 Wicks Lane in Billings, Montana with the geographical coordinates of 45.8279° latitude, -108.505911° longitude. The legal description is the Southwest ¼ of Section 16, Township 1 North, Range 26 East, in Yellowstone County.

Section II: Conditions and Limitations

A. Operational Requirements

1. Heights Family FH&C shall not incinerate/cremate any material other than human remains and/or any corresponding container or other crematory related materials unless approved in writing by the Montana Department of Environmental Quality – Air Resources Management Bureau (Department) (ARM 17.8.749).
2. Heights Family FH&C shall utilize only pipeline quality natural gas or propane for crematory operations (ARM 17.8.749).
3. The cremation unit shall be equipped with auxiliary fuel burners designed to preheat the secondary chamber of the crematorium to the minimum required operating temperature prior to igniting the primary chamber burner. The secondary chamber operating temperature of the crematorium shall maintain an average temperature of 1,600 degrees Fahrenheit (°F) and a minimum temperature of 1,500 °F during cremation (ARM 17.8.752).
4. Heights Family FH&C shall install the cremation unit presented in the application, which includes a microprocessor temperature controller with digital log and readout, and a pollution monitoring system which monitors the stack gases to prevent visible emissions (ARM 17.8.749).

5. Heights Family FH&C shall develop operation procedures for the crematorium, print those procedures in a crematorium operation procedures manual, and require all personnel who operate the unit to familiarize themselves with the operating procedures. The operating procedures manual shall be readily available to all personnel who operate the unit. Heights Family FH&C shall keep training records and supply training records and a copy of the operations manual to the Department upon request (ARM 17.8.752).

B. Emission Limitations

1. Heights Family FH&C shall not cause or authorize to be discharged into the atmosphere from the crematorium any particulate emissions in excess of 0.10 grains per dry standard cubic foot corrected to 12% carbon dioxide (ARM 17.8.752).
2. Heights Family FH&C shall not cause or authorize to be discharged into the atmosphere from the crematorium any visible emissions that exhibit an opacity of 10% or greater averaged over 6 consecutive minutes (ARM 17.8.752).

C. Monitoring Requirements

1. Heights Family FH&C shall install, calibrate, maintain, and operate continuous monitoring and recording equipment on the crematorium to measure the secondary chamber exit gas temperature (ARM 17.8.749).
2. Heights Family FH&C shall record the daily quantity of material incinerated/cremated and the daily hours of operation of the crematorium (ARM 17.8.749).

D. 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).

E. Operational Reporting Requirements

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

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

2. Heights Family FH&C 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(1)(d) (ARM 17.8.745).

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

SECTION III: General Conditions

- A. Inspection – Heights Family FH&C shall allow the Department’s representatives access to the source at all reasonable times for the purpose of making inspections or surveys, collecting samples, obtaining data, auditing any monitoring equipment (continuous emissions monitoring system (CEMS), continuous emissions rate monitoring system (CERMS)) or 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 Heights Family FH&C fails to appeal as indicated below.
- C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving Heights Family FH&C 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 Heights Family FH&C 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
Heights Family Funeral Home and Crematory, Inc.
MAQP #5012-00

I. Introduction/Process Description

Heights Family Funeral Home and Crematory, Inc. (Heights Family FH&C) proposes to install and operate a human crematorium to be located in Billings, Montana.

A. Permitted Equipment

Proposed equipment includes a Mathews International Power Pak II Plus multi-chambered Cremation Unit [Model Number IE43-PPII Plus]. The unit is to be fired on natural gas or propane and has a designed rated maximum heat input capacity of 3 million British Thermal units per hour (mmbtu/hr) and a maximum cremation rate of 175 pounds per hour (lbs/hr) with charge weight capability of 750 lbs.

B. Source Description

The cremation unit is fired on natural gas or liquid propane and is capable of incinerating up to 175 lb/hr of human remains. The secondary chamber shall maintain a temperature of 1,600 degrees Fahrenheit (°F), with no single reading less than 1,500 °F and is managed by a process controller that automatically modulates the gas flow to the afterburner. After the secondary chamber has been heated sufficiently, the cremator burner ignites and the cremation process is initiated.

Initial and supplementary combustion is provided by two burners, one in the primary chamber and one in the secondary chamber, with a rated maximum heat input capacity of 3 million British Thermal units per hour (mmbtu/hr) and total design air flow rate of 2,000 standard cubic foot per hour (scf/hr).

The physical location of the proposed facility is 733 Wicks Lane in Billings, Montana with the geographical coordinates of 45.8279° latitude, -108.505911° longitude. The legal description is the Southwest ¼ of Section 16, Township 1 North, Range 26 East, in Yellowstone County.

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 Montana Department of Environmental Quality – Air Resources Management Bureau (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).

Heights Family FH&C 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 (SO₂)
3. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide (NO₂)
4. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide (CO)
5. ARM 17.8.213 Ambient Air Quality Standard for Ozone (O₃)
6. ARM 17.8.214 Ambient Air Quality Standard for Hydrogen Sulfide (H₂S)
7. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter (PM)
8. ARM 17.8.221 Ambient Air Quality Standard for Visibility
9. ARM 17.8.222 Ambient Air Quality Standard for Lead (Pb)
10. ARM 17.8.223 Ambient Air Quality Standard for Particulate Matter with an Aerodynamic Diameter of Ten Microns or Less (PM₁₀)

Heights Family FH&C must maintain compliance with the applicable ambient air quality standards.

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

1. ARM 17.8.304 Visible Air Contaminants. This rule requires that no person may cause or authorize emissions to be discharged into 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 are taken to control emissions of airborne particulate matter. (2) Under this rule, Heights Family FH&C shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.
3. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter caused by the combustion of fuel in excess of the amount determined by this rule.

4. ARM 17.8.310 Particulate Matter, Industrial Process. This rule requires that no person shall cause, authorize, 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. 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 Heights Family FH&C is required to comply with the emission limitations specified in Section II.A of MAQP #5012-00, this particular rule does not apply to the crematorium because Heights Family FH&C has applied for and will operate under an MAQP 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 17.8.324 Hydrocarbon Emissions--Petroleum Products. (3) No person shall load or permit the loading of gasoline into any stationary tank with a capacity of 250 gallons or more from any tank truck or trailer, except through a permanent submerged fill pipe, unless such tank is equipped with a vapor loss control device as described in (1) of this rule.
8. ARM 17.8.340 Standard of Performance for New Stationary Sources and Emission Guidelines for Existing Sources. This rule incorporates, by reference, 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS). This facility is not an NSPS affected source because it does not meet the definition of any NSPS subpart defined in 40 CFR Part 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. Heights Family FH&C submitted the appropriate permit application fee for the current permit action.
2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit (excluding an open burning permit) issued by the Department. The air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

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

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 (tpy) of any pollutant. Heights Family FH&C does not have a PTE greater than 25 tpy of any pollutant; however, in accordance with the 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 Heights Family FH&C 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. Heights Family FH&C 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. Heights Family FH&C submitted an affidavit of publication of public notice for the January 23, 2014, issue of the *Billings Times*, a newspaper of general circulation in the City of Billings in Yellowstone County, as proof of compliance with the public notice requirements.
6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by the Department must authorize the construction and operation of the facility or emitting unit subject to the conditions in the permit and the requirements of this subchapter. This rule also requires that the permit must contain any conditions necessary to assure compliance with the Federal Clean Air Act (FCAA), the Clean Air Act of Montana, and rules adopted under those acts.
7. ARM 17.8.752 Emission Control Requirements. This rule requires a source to install the maximum air pollution control capability that is technically practicable and economically feasible, except that 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 Heights Family FH&C 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 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 single hazardous air pollutant (HAP), PTE > 25 tpy of combined HAPs, or lesser quantity as the Department may establish by rule; or
 - c. PTE > 70 tpy of particulate matter with an aerodynamic diameter of 10 microns or less (PM₁₀) in a serious PM₁₀ nonattainment area.

2. ARM 17.8.1204 Air Quality Operating Permit Program. (1) Title V of the FCAA amendments of 1990 requires that all sources, as defined in ARM 17.8.1204(1), obtain a Title V Operating Permit. In reviewing and issuing MAQP #5012-00 for Heights Family FH&C, 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 single HAP and less than 25 tpy for combined 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
 - g. This source is not a solid waste combustion unit under 129(e) of the FCAA
 - h. This source is not an EPA designated Title V source

Based on these facts, the Department determined that Heights Family FH&C will be a minor source of emissions as defined under Title V.

- H. MCA 75-2-103, Definitions provided, 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, Heights Family FH&C 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 initial MAQP application was 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 an emissions inventory and ambient air quality modeling for this MAQP application. Based on the results of the emission inventory, modeling, and the health risk assessment, the Department determined that Heights Family FH&C 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 design of the incinerator and operating the incinerator according to the manufacturer-recommended operation procedures constitutes BACT.

III. BACT Determination

A BACT determination is required for each new or modified source. Heights Family FH&C 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 resulting from the crematory operations, not only criteria pollutants.

Heights Family FH&C proposes to install and operate a crematorium equipped with a secondary chamber designed specifically to reduce the amount of pollutants, including HAPs, emitted from the incinerator. Previous research conducted by the Department indicates crematoriums of this size have not been required to install additional air pollution control equipment beyond that provided by the controlled air design of the incinerator, which maintains an appropriate and stable unit temperature and retention of combustion gases within the secondary chamber to maximize pollutant destruction. With the estimated particulate matter emissions being less than 2 tpy, the incremental cost per ton of additional control would be very high and not in line with control costs of other similar sources. In addition, the incinerator is limited by its MAQP to 0.10 grains per dry standard cubic foot for particulate matter and to 10% opacity (visible emissions). Furthermore, the health risk assessment shows negligible risks from the small amount of HAP emissions from this incinerator as proposed.

In addition to proper design, BACT for products of combustion/incineration (CO, oxides of nitrogen (NO_x), volatile organic compounds (VOC), and SO₂ and HAPs) resulting from crematorium operations, includes good combustion practices, including the requirement that the secondary chamber must be maintained at an operating temperature of 1,600 °F with no single reading less than 1,500 °F. Furthermore, natural gas or propane combustion inherently results in low emissions of air pollutants due to characteristics of the fuel fired. Potential PM₁₀, PM_{2.5}, NO_x, CO, VOC, and SO₂ emissions from the combustion of natural gas or propane to operate the crematorium are less than 2 tpy. Because potential emissions of all regulated pollutants resulting from natural gas or propane combustion are low, incorporation of available pollutant-specific control technologies would result in high cost-effective (cost per ton removed) values thereby making pollutant-specific add-on controls for PM₁₀, PM_{2.5}, NO_x, CO, VOC, and SO₂ economically infeasible in this case.

Based on these conclusions, the Department determined that proper unit design, along with the combustion of natural gas or propane as fuel, and proper operation and maintenance of the crematorium with no additional control constitutes BACT. Proper operation of the unit includes the requirement that the secondary chamber must be preheated to the minimum required operating temperature prior to igniting the primary chamber burner. Heights Family FH&C shall develop operation procedures for the cremation unit, print those procedures in a crematorium operation procedures manual, and require all personnel who operate the unit to familiarize themselves with the procedures. The BACT conclusions prescribed under MAQP #5012-00 provide comparable controls and control cost to other recently permitted similar sources and are capable of achieving the appropriate emission standards.

IV. Emission Inventory

Cremation Unit - Remains Destruction [SCC 3-15-021-01]

Unit Capacity [Manufacturer Maximum Design]

Charge Capacity: 175 lbs/hr
 Heat Input Rate: 3.00 mmbtu/hr
 Operating Hours: 8760 hrs/year [Potential]

Table IV.A – Potential to Emit - Criteria Pollutants

Pollutants	Emission Factor		Emission Factor Reference	Emission Rate	
				[lbs/hr]	[tpy]
PM	4.67	lb/ton	AP-42 Table 2.3-2, 1/95	0.409	1.79
PM ₁₀	3.04	lb/ton	PM ₁₀ = 0.65 ► PM; AP-42 Table 2.3-15, 1/95	0.266	1.16
PM _{2.5}	2.02	lb/ton	PM _{2.5} = 0.433 ► PM; AP-42 Table 2.3-15, 1/95	0.177	0.77
NO _x	3.56	lb/ton	AP-42 Table 2.3-1, 1/95	0.312	1.36
CO	2.95	lb/ton	AP-42 Table 2.3-1, 1/95	0.258	1.13
SO ₂	2.17	lb/ton	AP-42 Table 2.3-1, 1/95	0.190	0.83
VOC	2.99	lb/ton	AP-42 Table 2.3-2, 1/95	0.262	1.15
CO ₂	138.87	lb/mmbtu	40 CFR 98, Subpart C - Table C-1 [propane]	416.61	1824.76
CH ₄	0.003	lb/mmbtu	40 CFR 98, Subpart C - Table C-2 [petroleum]	0.01	0.04
NO ₂	0.0006	lb/mmbtu	40 CFR 98, Subpart C - Table C-2 [petroleum]	0.002	0.01
CO ₂ e (CH ₄)	21	lb/lb CH ₄	40 CFR 98, Subpart A Table A-1	0.19	0.83
CO ₂ e (NO ₂)	310	lb/lb NO ₂	40 CFR 98, Subpart A Table A-1	0.56	2.44
CO ₂ e (total)	--	--	CO ₂ e (total) = CO ₂ + CO ₂ e (CH ₄) + CO ₂ e (NO ₂)	417.36	1828.04

Table IV.B – Potential to Emit - Hazardous & Toxic Air Pollutants

Individual HAP	CASRN	Emission Factor	Emission Factor Reference	Emission Rate		
				[lbs/hr]	[lbs/yr]	[tpy]
Acenaphthene	83-32-9	1.48E-06 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	1.30E-07	1.13E-03	5.67E-07
Acenaphthylene	208-96-8	1.63E-06 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	1.42E-07	1.25E-03	6.23E-07
Anthracene	120-12-7	4.32E-06 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	3.78E-07	3.31E-03	1.66E-06
Acetaldehyde	75-07-0	1.73E-03 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	1.52E-04	1.33E+00	6.64E-04
Antimony	7440-36-0	4.03E-04 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	3.52E-05	3.09E-01	1.54E-04
Arsenic	7440-38-2	4.00E-04 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	3.50E-05	3.07E-01	1.53E-04
Barium	7440-39-3	3.20E-04 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	2.80E-05	2.45E-01	1.23E-04
Benzo (a) anthracene	56-55-3	1.30E-07 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	1.14E-08	9.97E-05	4.99E-08
Benzo (a) pyrene	50-32-8	3.88E-07 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	3.40E-08	2.97E-04	1.49E-07
Benzo (b) fluoranthene	205-99-2	2.12E-07 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	1.86E-08	1.62E-04	8.12E-08
Benzo (g,h,i) perylene	191-24-2	3.88E-07 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	3.40E-08	2.97E-04	1.49E-07
Benzo (k) fluoranthene	207-08-9	1.89E-07 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	1.66E-08	1.45E-04	7.26E-08
Beryllium	7440-41-7	1.89E-07 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	1.66E-08	1.45E-04	7.26E-08
Cadmium	7440-43-9	1.48E-04 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	1.30E-05	1.13E-01	5.67E-05
Chromium	all compounds	3.99E-04 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	3.49E-05	3.06E-01	1.53E-04
Chromium, hexavalent	18540-29-9	1.80E-04 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	1.58E-05	1.38E-01	6.90E-05
Chrysene	218-01-9	7.20E-07 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	6.30E-08	5.52E-04	2.76E-07
Cobalt	7440-48-4	2.33E-05 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	2.04E-06	1.79E-02	8.94E-06

Copper	7440-50-8	3.65E-04 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	3.20E-05	2.80E-01	1.40E-04
Dibenzo(a,h) anthracene	53-70-3	1.69E-07 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	1.48E-08	1.30E-04	6.49E-08
Fluoranthene	206-44-0	2.73E-06 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	2.39E-07	2.10E-03	1.05E-06
Fluorene	86-73-7	5.56E-06 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	4.87E-07	4.26E-03	2.13E-06
Formaldehyde	50-00-0	4.53E-04 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	3.97E-05	3.47E-01	1.74E-04
Indeno(1,2,3-cd)pyrene	193-39-5	2.05E-07 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	1.80E-08	1.57E-04	7.87E-08
Hydrogen chloride	7647-01-0	9.60E-01 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	8.40E-02	7.36E+02	3.68E-01
Hydrogen fluoride	7664-39-3	8.73E-03 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	7.64E-04	6.69E+00	3.35E-03
Lead	7439-92-1	8.83E-04 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	7.72E-05	6.77E-01	3.38E-04
Manganese	7439-96-5	5.67E-04 lb/ton	AP-42 Table 2.3-7, 1/95	4.96E-05	4.35E-01	2.17E-04
Mercury	7439-97-6	4.39E-02 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	3.84E-03	3.36E+01	1.68E-02
Nickel	7440-02-0	5.90E-04 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	5.16E-05	4.52E-01	2.26E-04
Molybdenum	7439-98-7	2.23E-04 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	1.95E-05	1.71E-01	8.53E-05
PCB	1336-36-3	4.65E-05 lb/ton	AP-42 Table 2.3-3, 1/95	4.07E-06	3.56E-02	1.78E-05
Phenanthrene	85-01-8	3.05E-05 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	2.67E-06	2.34E-02	1.17E-05
Pyrene	129-00-0	2.16E-06 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	1.89E-07	1.66E-03	8.28E-07
Selenium	7782-49-2	5.81E-04 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	5.09E-05	4.46E-01	2.23E-04
Thallium	7440-28-0	1.10E-03 lb/ton	AP-42 Table 2.3-8, 1/95	9.63E-05	8.43E-01	4.22E-04
Zinc	7440-66-6	4.71E-03 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	4.12E-04	3.61E+00	1.80E-03
TCDD-total	--	1.77E-08 lb/ton	AP-42 Table 2.3-11, 1/95	1.55E-09	1.36E-05	6.80E-09
2,3,7,8-TCDD	1746-01-6	1.06E-09 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	9.26E-11	8.11E-07	4.06E-10
TCDF-total	--	1.47E-07 lb/ton	AP-42 Table 2.3-13, 1/95	1.28E-08	1.12E-04	5.62E-08
Vanadium	7440-62-2	7.72E-04 lb/ton	USEPA - Web FIRE [SCC 3-15-021-01]	6.76E-05	5.92E-01	2.96E-04
Hazardous & Toxic Pollutant Emission Totals ►				0.08982	786.847	0.393

V. Existing Air Quality

The proposed facility is to be located in the southwest ¼ of Section 16, Township 1 North, Range 26 East, in Yellowstone County. The immediate area in which the proposed facility is planned is designated attainment/unclassifiable for all National Ambient Air Quality Standards (NAAQS). The proposed facility is to be set just north and adjacent to the CO Limited Maintenance Area and approximately one mile from the north boundary of the SO₂ Nonattainment Area.

VI. Ambient Air Impact Analysis

Potential emissions from the proposed facility are significantly less than the Department's regulatory permitting threshold; therefore a comprehensive impact analysis is not required to ensure associated emissions do not negatively affect or impede conformance to the Nonattainment or Maintenance Area compliance plans. Heights Family FH&C applied for this MAQP in accordance with ARM 17.8.770 and MCA 75-2-215 for this unit.

The Department conducted SCREEN3 Modeling, an EPA-approved screening model, using the indicated inputs obtained from the emission inventory and a HAP emission rate of 0.01132 grams per second (g/s), which is the sum of all toxic pollutant and/or HAP emissions from the proposed crematorium. The maximum 1-hour modeled concentration was then converted to an annual average and used in the risk assessment. The individual one-hour results for each pollutant were calculated by multiplying the maximum modeled annual concentration of toxic and/or HAP's in micrograms per cubic meter (µg/m³), by the percentage of each individual pollutant identified within the emission inventory. The emission factors employed in development of the emission inventory were derived from stack test data; as such include pollutant contributions of fuel utilized in firing the crematory.

As shown by the Health Risk Assessment of the following Section VII, the Department determined that there is a negligible human health risk associated with the proposed project. With consideration of the modeling accomplished for the Health Risk Assessment, and the small potential to emit of criteria pollutants, the Department determined that the impacts from this permitting action will be minor. Further, that the proposed action will not cause or contribute to a violation of any ambient air quality standard.

VII. Human Health Risk Assessment

A health risk assessment was conducted to determine if the proposed crematorium complies with the negligible risk requirement of MCA 75-2-215. The environmental effects unrelated to human health were not considered in determining compliance with the negligible risk standard, but were evaluated as required by the Montana Environmental Policy Act, in determining compliance with all applicable rules or other requirements requiring protection of public health, safety, and welfare and the environment.

Pursuant to ARM 17.8.770(1)(c), pollutants may be excluded from the human health risk assessment if the Department determines that exposure from inhalation is the only appropriate pathway to consider in the human health risk assessment and if the ambient concentrations of the pollutants (calculated using the potential to emit; enforceable limits or controls may be considered) are less than the levels specified in Table 1 or Table 2 of ARM 17.8.770.

The proposed Heights Family FH&C incinerator has a stack height of 7.62 meters (m) with vertical discharge, a stack exit temperature of ~850 °F, and a flow rate of 2,050 actual cubic feet per minute (ACFM) with a 0.51 m diameter stack. Ambient air modeling was accomplished using SCREEN3 software; an EPA approved ambient air dispersion modeling software used for conservative analysis. Ambient air impacts were modeled for the HAPs and other toxic air pollutants identified in the PTE calculations of Section IV. 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 mercury and chromium exceeded the levels specified in Table 1 or Table 2 of ARM 17.8.770. The SCREEN3 Modeling results, extrapolation of individual pollutant concentrations, and comparison to of results Table 1 or Table 2 of ARM 17.8.770 are provide in Table VI.C.

Hazardous & Toxic Air Pollutant Dispersion Screen Model Summary

Stack Parameters

Stack Height: 7.62 M
Inside Diameter: 0.51 M
Exit Velocity: 4.7361 m/s
Gas Exit Temperature: 850 °F
Emission Rate: 0.08982 lbs/hr
0.01132 g/sec

Model Run Inputs

Source Type: Point
Ambient Air Temp: 293.0° Kelvin
Receptor Height: 0 m
Urban/Rural Option: Rural
Meteorology: Full
Mixing Height: Regulatory (Default)
Anemometer Height: 10.0 m

Screen Model Run Results

Maximum 1-hour Concentration: 1.698 µg/m³

Distance from Maximum 1-hour Concentration: 130 M

Maximum 24-hour Concentration: 0.6792 µg/m³

Maximum Annual Concentration: 0.13584 µg/m³

Table VI.C – Toxic & Hazardous Pollutant Screening Model Results

				ARM 17.8.770		
				Table 1	Table 2	
Pollutant	CASRN	Speciation Fraction	Annual Concentration	Cancer Annual	Non-Cancer Chronic Annual	Non-Cancer Acute Annual
			[µg/m ³]	[µg/m ³]	[µg/m ³]	[µg/m ³]
Acenaphthene	83-32-9	1.44E-06	1.958E-07	--	--	--
Acenaphthylene	208-96-8	1.58E-06	2.153E-07	--	--	--
Anthracene	120-12-7	4.21E-06	5.717E-07	--	--	--
Acetaldehyde	75-07-0	1.69E-03	2.294E-04	4.55E-02	9.00E-02	--
Antimony	7440-36-0	3.92E-04	5.328E-05	--	2.00E-03	--
Arsenic	7440-38-2	3.90E-04	5.293E-05	--	5.00E-03	--
Barium	7440-39-3	3.12E-04	4.234E-05	--	--	--
Benzo (a) anthracene	56-55-3	1.27E-07	1.722E-08	5.88E-05	--	--
Benzo (a) pyrene	50-32-8	3.78E-07	5.134E-08	5.88E-05	--	--
Benzo (b) fluoranthene	205-99-2	2.07E-07	2.805E-08	5.88E-05	--	--
Benzo (g,h,i) perylene	191-24-2	3.78E-07	5.134E-08	--	--	--
Benzo (k) fluoranthene	207-08-9	1.84E-07	2.505E-08	5.88E-05	--	--
Beryllium	7440-41-7	1.84E-07	2.505E-08	4.17E-05	4.80E-05	--
Cadmium	7440-43-9	1.44E-04	1.958E-05	5.56E-05	3.50E-02	--
Chromium	all compounds	3.89E-04	5.280E-05	8.33E-06	2.00E-05	--
Chromium, hexavalent	18540-29-9	1.75E-04	2.382E-05			
Chrysene	218-01-9	7.01E-07	9.528E-08	--	--	--
Cobalt	7440-48-4	2.27E-05	3.088E-06	--	--	--
Copper	7440-50-8	3.56E-04	4.834E-05	--	--	--
Dibenzo(a,h) anthracene	53-70-3	1.65E-07	2.241E-08	5.88E-05	--	--
Fluoranthene	206-44-0	2.66E-06	3.617E-07	--	--	--
Fluorene	86-73-7	5.42E-06	7.357E-07	--	--	--
Formaldehyde	50-00-0	4.42E-04	5.999E-05	7.69E-03	3.60E-02	3.70E+00
Indeno(1,2,3-cd)pyrene	193-39-5	2.00E-07	2.717E-08	5.88E-05	--	--
Hydrogen chloride	7647-01-0	9.35E-01	1.270E-01	--	2.00E-01	3.00E+01
Hydrogen fluoride	7664-39-3	8.51E-03	1.156E-03	--	5.90E-02	5.80E+00
Lead	7439-92-1	8.60E-04	1.168E-04	--	--	--
Manganese	7439-96-5	5.52E-04	7.503E-05	--	5.00E-04	--
Mercury	7439-97-6	4.27E-02	5.805E-03	--	3.00E-03	3.00E-01
Nickel	7440-02-0	5.75E-04	7.807E-05	3.85E-04	2.40E-03	1.00E-02
Molybdenum	7439-98-7	2.17E-04	2.946E-05	--	--	--
PCB	1336-36-3	4.53E-05	6.153E-06	7.14E-05	1.20E-02	--
Phenanthrene	85-01-8	2.97E-05	4.040E-06	--	--	--
Pyrene	129-00-0	2.10E-06	2.858E-07	--	--	--
Selenium	7782-49-2	5.66E-04	7.693E-05	--	5.00E-03	2.00E-02
Thallium	7440-28-0	1.07E-03	1.456E-04	--	--	--
Zinc	7440-66-6	4.58E-03	6.228E-04	--	--	--

TCDD-total	--	1.73E-08	2.348E-09	--	--	--
2,3,7,8-TCDD	51207-31-9	1.03E-09	1.401E-10	2.63E-09	3.50E-08	--
TCDF-total	--	1.43E-07	1.941E-08	--	3.50E-08	--
Vanadium	7440-62-2	7.52E-04	1.022E-04	--	--	--

Although not all pollutants exceeded the levels specified in Table 1 or Table 2 of ARM 17.8.770, the Department conducted a full risk assessment. The Department included those pollutants for which emissions factors are available for crematory operations. Although additional species of pollutants have been identified in documented emission factors for the combustion of natural gas and/or propane, prior analyses indicate those pollutants would pass the human health risk assessment. Therefore, emission factors based on stack test data specific to crematory emissions were used. For those pollutants reviewed, the calculated cancer risks demonstrate there is not more than a negligible health, safety, and welfare risk to the public and to the environment, as defined in ARM 17.8.740(16). The demonstrate health risk assessment is provided within Table VI.D.

Table VI.D – Negligible Risk Assessment ⁽¹⁾

Pollutant	CASRN	Modeled Concentration	Cancer URF ⁽²⁾	Cancer Risk ⁽³⁾	CNCREL ⁽⁴⁾	CNCREL
			[µg/m ³]		[µg/m ³]	Quotient ⁽⁵⁾
Acenaphthene	83-32-9	1.96E-07	--	--	--	--
Acenaphthylene	208-96-8	2.15E-07	--	--	--	--
Anthracene	120-12-7	5.72E-07	--	--	--	--
Acetaldehyde	75-07-0	2.29E-04	2.20E-06	5.05E-10	9.00E+00	2.55E-05
Antimony	7440-36-0	5.33E-05	--	--	--	--
Arsenic	7440-38-2	5.29E-05	4.30E-03	2.28E-07	1.50E-02	3.53E-03
Barium	7440-39-3	4.23E-05	--	--	--	--
Benzo (a) anthracene	56-55-3	1.72E-08	1.10E-04	1.89E-12	--	--
Benzo (a) pyrene	50-32-8	5.13E-08	1.10E-03	5.65E-11	--	--
Benzo (b) fluoranthene	205-99-2	2.81E-08	1.10E-04	3.09E-12	--	--
Benzo (g,h,i) perylene	191-24-2	5.13E-08	--	--	--	--
Benzo (k) fluoranthene	207-08-9	2.51E-08	1.10E-04	2.76E-12	--	--
Beryllium	7440-41-7	2.51E-08	2.40E-03	6.01E-11	2.00E-02	1.25E-06
Cadmium	7440-43-9	1.96E-05	1.80E-03	3.53E-08	1.00E-02	1.96E-03
Chromium	All compounds	5.28E-05	--	--	--	--
Chromium, hexavalent	18540-29-9	2.38E-05	1.20E-02	2.86E-07	1.00E-01	2.38E-04
Chrysene	218-01-9	9.53E-08	1.10E-05	1.05E-12	--	--
Cobalt	7440-48-4	3.09E-06	--	--	1.00E-01	3.09E-05
Copper	7440-50-8	4.83E-05	--	--	--	--
Dibenzo(a,h) anthracene	53-70-3	2.24E-08	1.20E-03	2.69E-11	--	--
Fluoranthene	206-44-0	3.62E-07	--	--	--	--
Fluorene	86-73-7	7.36E-07	--	--	--	--
Formaldehyde	50-00-0	6.00E-05	1.30E-05	7.80E-10	9.80E+00	6.12E-06
Indeno(1,2,3-cd)pyrene	193-39-5	2.72E-08	1.10E-04	2.99E-12	--	--
Hydrogen chloride	7647-01-0	1.27E-01	--	--	2.00E+01	6.35E-03
Hydrogen fluoride	7664-39-3	1.16E-03	--	--	1.40E+01	8.25E-05
Lead	7439-92-1	1.17E-04	--	--	1.50E-01	7.79E-04
Manganese	7439-96-5	7.50E-05	--	--	5.00E-02	1.50E-03
Mercury	7439-97-6	5.80E-03	--	--	3.00E-01	1.93E-02
Nickel	7440-02-0	7.81E-05	--	--	9.00E-02	8.67E-04
Molybdenum	7439-98-7	2.95E-05	--	--	--	--
PCB	1336-36-3	6.15E-06	1.00E-04	6.15E-10	--	--
Phenanthrene	85-01-8	4.04E-06	--	--	--	--

Table VI.D – Negligible Risk Assessment ⁽¹⁾

Pollutant	CASRN	Modeled Concentration	Cancer URF ⁽²⁾	Cancer Risk ⁽³⁾	CNCREL ⁽⁴⁾	CNCREL
			[µg/m ³]		[µg/m ³]	Quotient ⁽⁵⁾
Pyrene	129-00-0	2.86E-07	--	--	--	--
Selenium	7782-49-2	7.69E-05	--	--	2.00E+01	3.85E-06
Thallium	7440-28-0	1.46E-04	--	--	--	--
Zinc	7440-66-6	6.23E-04	--	--	--	--
TCDD-total	--	2.35E-09	--	--	--	--
2,3,7,8-TCDD	51207-31-9	1.40E-10	3.30E+01	4.62E-09	4.00E-05	3.50E-06
TCDF-total	--	1.94E-08	--	--	--	--
Vanadium	7440-62-2	1.02E-04	--	--	--	--
Total Risk Values ►				5.55E-07		3.47E-02

⁽¹⁾ Source of chronic dose-response values is from USEPA Table 1: Prioritized Chronic Dose-Response Values for Screening Risk Assessments (4/27/10), from www.epa.gov/ttn/atw/toxsource/table1.pdf.

⁽²⁾ Cancer Chronic Inhalation Unit Risk Factor, units 1/µg/m³

⁽³⁾ Cancer Risk is unitless and is calculated by multiplying the predicted concentration by the URF.

⁽⁴⁾ Chronic Noncancer Reference Exposure Level

⁽⁵⁾ CNCREL Quotient Value is calculated by dividing the modeled HAP concentration by the CNCREL.

As documented in the Table VI.D and in accordance with the Department’s negligible risk requirement, as defined in ARM 17.8.740(16), no individual pollutant concentration exceeds the Cancer Risk threshold of 1.00E-06 and the sum of all Cancer Risks concentrations do not exceed 1.00E-05. Further, the sum of the Chronic Non-cancer Reference Exposure Level (CNCREL) hazard quotients is less than 1.0 as required to demonstrate compliance with the negligible risk requirement.

VIII. 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	
✓		1. Does the action pertain to land or water management or environmental regulation affecting private real property or water rights?
	✓	2. Does the action result in either a permanent or indefinite physical occupation of private property?
	✓	3. Does the action deny a fundamental attribute of ownership? (ex.: right to exclude others, disposal of property)
	✓	4. Does the action deprive the owner of all economically viable uses of the property?
	✓	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?
	✓	6. Does the action have a severe impact on the value of the property? (consider economic impact, investment-backed expectations, character of government action)
	✓	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?
	✓	7a. Is the impact of government action direct, peculiar, and significant?
	✓	7b. Has government action resulted in the property becoming practically inaccessible, waterlogged

		or flooded?
	✓	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?
	✓	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.

IX. Environmental Assessment

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

DEPARTMENT OF ENVIRONMENTAL QUALITY
Permitting and Compliance Division
Air Resources Management Bureau
P.O. Box 200901, Helena, Montana 59620
(406) 444-3490

FINAL ENVIRONMENTAL ASSESSMENT (EA)

Issued To: Heights Family FH&C, Inc.

Montana Air Quality Permit Number: 5012-00

Preliminary Determination Issued: 03/18/2014

Department Decision Issued: 04/21/2014

Permit Final: 05/07/2014

1. *Legal Description of Site:* The legal description is the southwest ¼ of Section 16, Township 1 North, Range 26 East, in Yellowstone County
2. *Description of Project:* Heights Family Funeral Home and Crematory, Inc. (Heights Family FH&C) proposes to operate a human crematory. The crematory would be capable of incinerating 175 pounds per hour, with a maximum charge of 750 pounds.
3. *Objectives of Project:* Heights Family FH&C seeks to provide human cremation services to their clients.
4. *Alternatives Considered:* In addition to the proposed action, the Department also considered the “no-action” alternative. The “no-action” alternative would deny issuance of the air quality preconstruction permit to the proposed facility. However, the Department does not consider the “no-action” alternative to be appropriate because Heights Family FH&C demonstrated compliance with all applicable rules and regulations as required for permit issuance. Therefore, the “no-action” alternative was eliminated from further consideration.
5. *A Listing of Mitigation, Stipulations, and Other Controls:* A list of enforceable conditions, including a BACT analysis, would be included in MAQP #5012-00.
6. *Regulatory Effects on Private Property:* The Department considered alternatives to the conditions imposed in this permit as part of the permit development. The Department determined that the permit conditions are reasonably necessary to ensure compliance with applicable requirements and demonstrate compliance with those requirements and do not unduly restrict private property rights.

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

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

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

A. Terrestrial and Aquatic Life and Habitats

Emissions from the proposed project would potentially affect terrestrial and aquatic life and habitats in the proposed project area. However, as detailed in Section V and Section VI of the permit analysis, any emissions and resulting impacts from the project would be minor due to the low concentration of those pollutants emitted.

Further, the proposed crematorium would require only a limited amount of construction and would operate within a building located in an area zoned as commercial. Overall, any impact to the terrestrial and aquatic life and habitats of the proposed project area would be expected to be minor.

B. Water Quality, Quantity and Distribution

The project would not be expected to affect water quantity or distribution in the project area. The crematorium operates within a building and does not discharge or use water during operation.

Emissions from the project may potentially affect water quality in the project area due to air pollutant deposition. Several open watercourses are located around the project site. However, any emissions and resulting deposition impacts from the project would likely be very minor due to the low concentration of those pollutants emitted.

C. Geology and Soil Quality, Stability and Moisture

The project would not be expected to affect the geology, stability, and moisture of the project area. The proposed crematorium would require only a limited amount of construction and would operate within the confines of a building.

Proper crematorium operation would result in minor air pollution emissions to the ambient environment. These pollutants would deposit on the soils in the surrounding area. However, any impact from deposition of these pollutants would likely be very minor due to dispersion characteristics and the low concentration of those pollutants emitted.

D. Vegetation Cover, Quantity, and Quality

Air emissions from the project may potentially affect vegetation cover, quantity, and quality in the project area. However, any emissions and resulting impacts from the project would be expected to be minor due to the dispersion characteristics and the low concentration of those pollutants emitted.

Further, the crematorium operates within an existing building. Overall, any impact to the vegetation cover, quantity, and quality of the proposed project area would likely be minor.

E. Aesthetics

The project would result in a minor impact to the aesthetic nature of the project area. The crematorium would operate within a building. Further, visible emissions from the source would be limited to 10% opacity. Therefore, the project would expect to result in only a minor impact to aesthetics of the area.

F. Air Quality

The project would result in the emissions of various criteria pollutants and HAPs to the ambient air in the project area. However, it has been demonstrated by air dispersion modeling that any air quality impacts from the project would be minor and would constitute negligible risk to human health and the environment.

The Department conducted air dispersion modeling to determine the ambient air quality impacts from HAPs that would be generated by the crematorium. The SCREEN3 model was selected for the air dispersion modeling. The full meteorology option was selected to provide a conservative result. Receptors were placed from 5 to 50,000 meters in a simple terrain array.

Stack parameters and emission rates used in the SCREEN3 model are contained in Section V of the permit analysis and are on file with the Department. Stack velocity and gas temperature were taken from data provided by the manufacturer of the crematorium. Due to the dispersion characteristics and low levels of pollutants that would be emitted from the proposed project the Department determined that any impacts to air quality would be minor.

G. Unique Endangered, Fragile, or Limited Environmental Resources

The current permit action could potentially result in minor impacts to any existing unique endangered, fragile, or limited environmental resource in the proposed area of operation. However, the proposed crematorium would require only a limited amount of construction and would operate within a building located in an area zoned as commercial thereby limiting the potential for impact to any unique endangered, fragile, or limited environmental resource in the proposed location.

The Department, in an effort to assess any potential impacts to any unique endangered, fragile, or limited environmental resources in the initial proposed area of operations, contacted the Montana Natural Heritage Program (MNHP) to identify any species of concern associated with the proposed site location. Search results concluded there is nine species of special concern within the defined area; the Great Blue Heron, the Greater Sage-Grouse, the Burrowing Owl, the Pinyon Jay, the Yellowstone Cutthroat Trout, the Spotted Bat, the Greater Short-horned Lizard, the Western Hog-nosed Snake, and the Milksnake.

The identified species of concern are peripatetic in nature and not likely associated with the immediate location of the proposed project, as the site is zone commercial as is the general surrounding site area. Further, as detailed in Section VI of the permit analysis, any emissions and resulting impacts from the project would be minor due to the low concentration of those pollutants emitted. Overall, any impact to this unique endangered, fragile, or limited environmental resource of the proposed project area would expect to be minor.

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

The proposed project would result in minor demands on environmental resources of water and air as discussed in Section 7.B and 7.F, respectively, of this EA. Further, as detailed in Section V and Section VI of the permit analysis, project impacts on air resources in the proposed project area would be minor due to dispersion characteristics and the low concentration of those pollutants emitted. Finally, because the project is small by industrial standards, little energy would be required for operation and the resulting impact on energy resources would likely be minor.

I. Historical and Archaeological Sites

The Department contacted the Montana Historical Society - State Historical Preservation Office (SHPO) in an effort to identify any historical and/or archaeological sites that may be present in the proposed area of construction/operation. Search results concluded that there are no previously recorded sites within the area proposed for the project. According to correspondence from SHPO, there is a low likelihood cultural properties will be impacted. Therefore, a recommendation for a cultural resource inventory is unwarranted at this time. However, should cultural materials be inadvertently discovered during this project the SHPO office must be contacted, and the site investigated.

J. Cumulative and Secondary Impacts

Overall, the cumulative and secondary impacts from this project on the environment in the immediate area would expect to be minor. The Department believes that this facility could be expected to operate in compliance with all applicable rules and regulations as outlined in Permit #5012-00.

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

		Major	Moderate	Minor	None	Unknown	Comments Included
A	Social Structures and Mores			✓			Yes
B	Cultural Uniqueness and Diversity			✓			Yes
C	Local and State Tax Base and Tax Revenue			✓			Yes
D	Agricultural or Industrial Production				✓		Yes
E	Human Health			✓			Yes
F	Access to and Quality of Recreational and Wilderness Activities			✓			Yes
G	Quantity and Distribution of Employment			✓			Yes

		Major	Moderate	Minor	None	Unknown	Comments Included
H	Distribution of Population			✓			Yes
I	Demands for Government Services			✓			Yes
J	Industrial and Commercial Activity			✓			Yes
K	Locally Adopted Environmental Plans and Goals					✓	Yes
L	Cumulative and Secondary Impacts			✓			Yes

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

A. Social Structures and Mores

The proposed project is to install a 175 lb/hr cremation incinerator for human remains at a new place of business. The incinerator's emissions would be extremely low on an industrial scale and opacity limitations of MAQP #5012-00 would require 10% or less opacity while operating. Any change to social structures or mores would be expected to be minor.

B. Cultural Uniqueness and Diversity

The proposed project could potentially cause minor change in the cultural uniqueness and diversity of the area because the incinerator is proposed to be installed in a new location, however any such impacts would be expected to be minor.

C. Local and State Tax Base and Tax Revenue

The proposed project may provide additional revenue for Heights Family FH&C, however; no need for additional employees would be limited to less than 10 as a result of this project. Therefore, minimal, to the local and state tax base and tax revenue are anticipated from this project.

D. Agricultural or Industrial Production

Not effects to agricultural or industrial production would occur as a result of this project. The proposed project is to provide cremation services to clients in the Billings area.

E. Human Health

As described in Section VI of the Permit Analysis, modeling and analysis of hazardous air pollutants showed negligible risk to human health. Furthermore, the potential-to-emit of conventional pollutants would be extremely small. Impacts to human health would be minor.

F. Access to and Quality of Recreational and Wilderness Activities

The proposed project is to install the incinerator at a new place of business. No change to access of recreational and wilderness activities would be expected. Permit conditions would require opacity of the emissions to be 10% or less while operating. The potential-to-emit of the proposed incinerator would be very small. Therefore, minor, if any impact to the quality of recreational and wilderness activities would be expected as a result of this project.

G. Quantity and Distribution of Employment

The proposed project will employ few personnel in the operation of the crematory and those positions would likely be filled from the local area. Any impact to the quantity and distribution of employment would be expected to be minor.

H. Distribution of Population

The proposed project will employ few personnel in the operation of the crematory and those positions would likely be filled from the local area. Therefore any impact to the distribution of population would be minor.

I. Demands for Government Services

Government services would be required for acquiring the appropriate permits from government agencies. In addition, the permitted source of emissions would be subject to periodic inspections by government personnel. Overall, demands for government services would be minor.

J. Industrial and Commercial Activity

The proposed project would result in only a minor impact on local industrial and commercial activity because the crematorium would require only a limited amount of new construction, would operate within a building and would not result in additional industrial production. Overall, any impacts to industrial and commercial activity in the proposed area of operation would likely be minor.

K. Locally Adopted Environmental Plans and Goals

The Department is not aware of any locally adopted environmental plans and goals this project may impact. The state standards would be protective of the proposed project area.

L. Cumulative and Secondary Impacts

Overall, cumulative and secondary impacts from this project would expect result in minor impacts to the economic and social environment in the immediate area due to the relatively small size of the operation. The Department believes that this facility could be expected to operate in compliance with all applicable rules and regulations as would be outlined in MAQP #5012-00.

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

If an EIS is not required, explain why the EA is an appropriate level of analysis: The current permitting action is for the construction and operation of a crematorium (incinerator). MAQP #5012-00 includes conditions and limitations to ensure the facility will operate in compliance with all applicable rules and regulations. In addition, there are no significant impacts associated with this proposal.

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

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

EA prepared by: D. Kuenzli
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