DEQ
Montana Department
of Environmental Quality

November 27, 2015

Kevin Handelin
City of Bozeman Sanitary Landfill
2143 Story Mill Road
PO Box 1230
Bozeman, MT 59971

Dear Mr. Handelin:

Montana Air Quality Permit #2951-05 is deemed final as of November 26, 2015, by the Department of Environmental Quality (Department). This permit is for the City of Bozeman's Landfill Flare. All conditions of the Department's Decision remain the same. Enclosed is a copy of your permit with the final date indicated.

For the Department,

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

Shawn Juers
Environmental Engineer
Air Quality Bureau
(406) 444-2049

JM:SJ
Enclosure

Montana Department of Environmental Quality
Permitting and Compliance Division

Montana Air Quality Permit #2951-05

City of Bozeman Sanitary Landfill
2143 Story Mill Road
PO Box 1230
Bozeman, MT 59971

November 26, 2015

MONTANA AIR QUALITY PERMIT

Issued To: City of Bozeman Sanitary Landfill
2143 Story Mill Road
P.O. Box 1230
Bozeman, MT 59771

Permit #2951-05
Application Complete: 9/21/2015
Preliminary Determination Issued: 9/28/2015
Department's Decision Issued: 11/10/2015
Permit Final: 11/26/2015
AFS #031-0013

An air quality permit, with conditions, is granted to the City of Bozeman Sanitary Landfill (Bozeman Landfill) pursuant to Sections 75-2-204, 211, and 215, Montana Code Annotated (MCA), as amended, and Administrative Rules of Montana (ARM) 17.8.740, *et seq.,* as amended, for the following:

Section I: Permitted Facilities

A. Permitted Facility

The City of Bozeman operates a sanitary landfill facility. The landfill is located approximately 2 miles north of Bozeman. The legal description is the SE¼ and SW¼ of Section 30, Township 1 South, Range 6 East, in Gallatin County, Montana. A complete listing of the emission sources at the landfill is contained in the permit analysis.

B. Current Permit Action

On August 13, 2015, the Department of Environmental Quality – Air Quality Bureau (Department) received from the Bozeman Landfill an application to replace the existing landfill flare with a new flare. On September 3, 2015, the Department received the required affidavit of publication of public notice. On September 21, 2015, the Department received additional information necessary to determine applicable rules and complete the required human health risk assessment.

Section II: Limitations and Conditions

A. Design, Operation, and Emissions Requirements

1. Until startup of the New Landfill Flare (the enclosed flare permitted in MAQP #2951-05), the Bozeman Landfill shall comply with the requirements of Montana Air Quality Permit #2951-04.

2. Within 180 days of the initial startup of the New Landfill Flare, the Old Landfill Flare (the flare existing as permitted prior to MAQP #2951-05) shall be made inoperable by (ARM 17.8.749):

a. Closing and lockout of the valve(s), such that no landfill gasses (gasses collected at the landfill including soil vapor extraction gasses) may enter the flare, if followed by physical disconnection within 180 days of closing and locking the valve(s); or

b. Physical disconnection from any landfill gas.

At no time may the Bozeman Landfill combust landfill gas in both the Old Landfill Flare and the New Landfill Flare, except for any such short duration as may occur when fully switching gas from one flare to another (ARM 17.8.749).

3. The New Landfill Flare shall be designed for and operated to reduce Non-Methane Organic Compounds by 98 percent by weight or more, or alternatively, after initial demonstration of the reduction efficiency as required by Section II.B.1, reduce the outlet Non-Methane Organic Compounds concentration to less than 20 parts per million by volume. (ARM 17.8.752, ARM 17.8.749)

4. The New Landfill Flare shall be of an enclosed design, with greater than or equal to a 0.6 second retention time and auto combustion control to achieve a combustion temperature greater than or equal to 1400°F. (ARM 17.8.752, ARM 17.8.749)

5. The New Landfill Flare shall be designed for and operated with no visible emissions except for periods not to exceed a total of 5 minutes during any 2 consecutive hours. (ARM 17.8.752, ARM 17.8.749)

6. The Bozeman Landfill shall install and continuously operate a temperature monitoring device with high and low set points interlocked with the blower, to shut down the blower if thermocouple temperature falls outside the manufacturer recommended set points. The temperature monitoring device shall be equipped with a continuous recorder having a minimum accuracy of +/- 14 degrees Celsius (1% of the operating temperature). (ARM 17 8749)

7. The City of Bozeman shall operate all equipment to provide the maximum air pollution control for which it was designed. The City of Bozeman shall ensure the enclosed flare is started up and shutdown in accordance with the manufacturer's design specifications. (ARM 17.8.752, ARM 17.8.749)

8. The Bozeman Landfill shall install, calibrate, and continuously operate a flowmeter and hour-meter, or any other equivalent device, on the flare system to determine the total flow of landfill gas to the flare. The flow rate measuring device shall record the flow at least every 15 minutes. (ARM 17.8.749)

9. Particulate emissions from the flare shall be limited to 0.10 grains per dry standard cubic foot (gr/dscf) corrected to 12% carbon dioxide (CO_2). (ARM 17.8.749)

10. The Bozeman Landfill shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter. (ARM 17.8.308)

11. The Bozeman Landfill shall treat all unpaved portions of the haul roads, access roads, and the general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the reasonable precautions limitation in Section II.A.10. (ARM 17.8.749)

12. The Bozeman Landfill shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements of 40 CFR 60, Subpart Cc, for the landfill. (ARM 17.8.340)

13. The Bozeman Landfill shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements of 40 CFR 60, Subpart WWW, for the landfill. (ARM 17.8.340)

B. Emission Testing

1. Within 180 days after initial startup of the New Landfill Flare, the Bozeman Landfill shall conduct an initial performance test of the New Landfill Flare to demonstrate control efficiency. The Bozeman Landfill shall conduct an Environmental Protection Agency (EPA) Reference Method 25, Method 25A, or another source testing method as may be approved in writing by the Department, to test the gas entering the New Landfill Flare, and the post combustion exhaust of the New Landfill Flare. The control efficiency shall be determined by the following equation (ARM 17.8.105 and ARM 17.8.749):

   Control Efficiency = $(NMOC_{in} - NMOC_{out})/(NMOC_{in}) \times 100\%$

2. Beginning after the completion of the initial control efficiency performance test required by Section II.B.1, once per calendar week, while the New Landfill Flare is operating, the Bozeman Landfill shall conduct a visual observation of the New Landfill Flare to determine any visual emissions. If no visual emissions are observed, the observer shall record the date, time, and observer's name in a log, noting no visual emissions observed. If any visual emissions are observed, the Bozeman Landfill shall immediately conduct an EPA Reference Method 22 test with a 2 hour observation time.

   The observation log shall include the date, timeframe of the Method 22 test, results of the Method 22 test (pass or fail), observer(s) name, and reference to the relevant Method 22 record. All Method 22 records shall be named by date or other identifier for reference purposes. The results of any Method 22 test performed as required by this section shall be submitted (postmarked or emailed) to the Department within 7 days of the test. (ARM 17.8.749, ARM 17.8.105)

3. Beginning after the completion of the initial control efficiency performance test required by Section II.B.1, The Bozeman Landfill shall test the New Landfill Flare every 5 years, or more frequently if requested in writing by the Department. The Test shall be either in accord with Section II.B.1, or, if the Bozeman Landfill elects to comply with the alternative 20 ppmv NMOC outlet concentration, the Bozeman Landfill shall test utilizing Method 25A or another test method as approved by the Department, to demonstrate compliance with the 20 ppmv NMOC outlet concentration. (ARM 17.8.105 and ARM 17.8.749)

4. All source tests must be conducted in accordance with the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106). Prior notification to the Department of a Method 22 Test triggered as part of the requirements of Section II.B.2 is not required; however, the results of the test shall be submitted to the

Department as described in Section II.B.2. (ARM 17.8.749, ARM 17.8.106)

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

C. Operational Reporting Requirements

1. The Bozeman Landfill shall maintain either on site or in an office proximal to the landfill (e.g. City of Bozeman) records identifying the total volume in standard cubic feet (SCF) of landfill gas sent to the flare. All records shall be maintained for a minimum of 5 years. (ARM 17.8.749)

2. The Bozeman Landfill shall supply the Department with annual emissions inventory related 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 permit analysis.

   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.

   In addition, the Bozeman Landfill shall submit the following information annually to the Department by March 1 of each year. This information is required for the annual emission inventory. (ARM 17.8.505)

   a. Total volume (SCF) of landfill gas sent to the flare; and

   b. Total hours of flare operation.

3. The Bozeman Landfill shall notify the Department of any construction or improvement project conducted pursuant to ARM 17.8.745 that would include a change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation or the addition of a new emission unit. The notice must be submitted to the Department, in writing, 10 days prior to start-up or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.745(1)(d). (ARM 17.8.745) This rule does not apply to emission units subject to the incinerator rule, as such units require a Montana Air Quality Permit.

4. The records compiled in accordance with this permit must be maintained by Bozeman Landfill as a permanent business record for at least 5 years following the date of the measurement, must be available at the flare site or at an office proximal to the landfill (e.g. City of Bozeman) for inspection by the Department, and must be submitted to the Department upon request. (ARM 17.8.749)

D. Notification

1. The Bozeman Landfill shall provide the Department with written notification of the following dates within the specified time periods (ARM 17.8.749):

a. Commencement of operation of the New Landfill Flare within 15 days after commencement of operation

b. Date of disconnection of the Old Landfill Flare within 15 days of disconnection

2. The Bozeman Landfill shall provide the Department with written notification of the following dates within the specified time periods (ARM 17.8.749):

a. Commencement of construction of any future gas extraction wells within 30 days after commencement of construction;

b. Anticipated connection date of future gas extraction wells to the flare system between 30 and 60 days prior to the actual connection date;

c. Actual connection date of future gas extraction wells to the flare system within 15 days after the actual connection date;

3. 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. (ARM 17.8.110)

Section III: General Conditions

A. Inspection - The Bozeman Landfill 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 or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.

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

C. Compliance with Statutes and Regulations - Nothing in this permit shall be construed as relieving the Bozeman Landfill 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 as specified in Section 75-2-401 *et seq*., MCA.

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

Department's decision until conclusion of the hearing and issuance of a final decision by the Board. If a stay is not issued by the Board, the Department's decision on the application is final 16 days after the Department's decision is made.

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

G. Construction Commencement - Construction must begin within 3 years of permit issuance and proceed with due diligence until the project is complete or the permit shall be revoked.

H. Permit Fees - Pursuant to Section 75-2-220, MCA, as amended by the 1991 Legislature, failure to pay the annual operation fee by the Bozeman Landfill may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.

I. The Department may modify the conditions of this permit based on local conditions of any future site. These factors may include, but are not limited to, local terrain, meteorological conditions, proximity to residences, etc.

Montana Air Quality Permit (MAQP) Analysis
City of Bozeman Sanitary Landfill
MAQP #2951-05

I. Introduction/Process Description

A. Introduction

The City of Bozeman Sanitary Landfill (Bozeman Landfill) currently operates a utility candlestick flare at the landfill located approximately 2 miles north of Bozeman. The legal description of the landfill is the SE¼ and SW¼ of Section 30, Township 1 South, Range 6 East, in Gallatin County, Montana. Montana Air Quality Permit (MAQP) #2951-05 would permit the replacement of that flare with a new enclosed flare.

B. Process Description

The Bozeman Landfill uses the landfill flare system to combust landfill gas collected by a gas extraction system. The collected gas is composed mainly of methane, carbon dioxide, and other trace gases. The gas extraction system was installed to comply with Resource Conservation and Recovery Act (RCRA) Subtitle D regulations, prevent the migration of gas into adjacent soils, and remove excess gas from within the waste mass to prevent vegetative stress, control odors, and maintain ground water quality.

A variety of pollutants are emitted from the flare including primarily carbon monoxide (CO), nitrous oxides (NO_x), and volatile organic compounds (VOCs). There are only minimal particulate emissions from the facility. A health risk assessment was completed on the emissions of hazardous air pollutants. A description of the health risk assessment is contained in Section VI of the analysis.

C. Permit History

On June 6, 1996, the Bozeman Landfill submitted an application for **Permit #2951-00** for the construction and operation of a utility candlestick flare at the landfill located approximately 2 miles north of Bozeman. The application was deemed complete August 7, 1996, upon receipt of the affidavit of public notice.

On August 5, 1998, the Bozeman Landfill submitted a complete permit application for **Permit #2951-01**, which was an alteration to their existing permit. The permit alteration corrected the flare inlet concentration limitations for ethyl chloride, toluene, and styrene. The concentrations were incorrectly identified during the initial permitting action. The correct flare inlet concentration limitations for ethyl chloride, toluene, and styrene are 15,300 parts per billion by volume (ppbv), 51,560 ppbv, and 980 ppbv, respectively. The permitting action did not result in an increase in actual emissions from the facility. However, because there was an increase in the allowable emissions, a risk assessment was completed to ensure that this facility would cause no more than a negligible risk to human health and the environment at its permitted levels. Permit #2951-01 replaced Permit #2951-00.

During the Department of Environmental Quality (Department) decision stage of the previous permit alteration, Maxim Technologies informed the Department that not all of the flare inlet concentrations were corrected. However, at that point it was too late for the Department to make the necessary changes. Therefore, **Permit #2951-02** corrected the flare inlet concentration limitations for methylene chloride, carbon disulfide, and hydrogen sulfide. The concentrations were the result of Department errors made during the initial permitting action and were inadvertently not corrected during the previous permitting action. The flare inlet concentration limitations for methylene chloride, carbon disulfide, and hydrogen sulfide were corrected to 43,000 ppbv, 590 ppbv, and 5000 ppbv, respectively. The permitting action did not result in an increase in actual emissions and the facility still caused no more than a negligible risk to human health and the environment. Permit #2951-02 replaced Permit #2951-01.

On April 11, 2001, Maxim Technologies, on behalf of the Bozeman Landfill, requested a modification to Permit #2951-02. Maxim Technologies requested that hydrogen sulfide be removed from Table I of the permit because it is not a hazardous air pollutant according to ARM 17.8.214, and therefore, compliance monitoring for hydrogen sulfide is not necessary. The Department removed hydrogen sulfide from Table I of the permit and removed the requirement for the Bozeman Landfill to do compliance monitoring for hydrogen sulfide. This permitting action was considered an administrative action and did not result in an increase in actual emissions. **Permit #2951-03** replaced Permit #2951-02.

On March 30, 2007, the Department received a letter from Tetra Tech, Inc. on behalf of the Bozeman Landfill, requesting a modification to Permit #2951-03. After issuance of Permit #2951-00 in April 1997, the Bozeman Landfill proposed monitoring parameters using an "equivalent" approach with components installed on the Landfill Gas Extraction System (LGES) to demonstrate that emission levels were below threshold levels. The proposed monitoring parameters were approved by the Department in a letter dated September 18, 1997; however, the language in the permit was not updated. The current permit action is a request to update language to represent the equivalent monitoring approach that has been used by the Bozeman Landfill since 1997. In addition, the Department updated permit language and rule references to reflect current permit language and rule references. **Permit #2951-04** replaced Permit #2951-03.

D. Current Permit Action

On August 13, 2015, the Department received from the Bozeman Landfill an application to replace the existing landfill flare with a new flare. On September 3, 2015, the Department received the required affidavit of publication of public notice. On September 21, 2015, the Department received additional information necessary to determine applicable rules and complete the required human health risk assessment. **MAQP #2951-05** replaces MAQP #2951-04.

E. Response to Public Comments

Person/Group Commenting	Permit Reference	Comment	Department Response
City of Bozeman	II.A.3	Section II, Conditions A.3 of the Draft Permit establishes a	Although the control requirements of 40 CFR 60.752(b)(2)(iii)(B) do not

		requirement that the new enclosed flare must be designed and operated to reduce non-methane organic compounds emissions by 98% by weight or more. The City requests that MDEQ add an NMOC limit of 20 ppmv for the enclosed flare as an alternative to the 98% NMOC reduction requirement. This limit is consistent with the landfill NSPS emission limit for enclosed combustors. In addition, the alternative limit may be necessary to demonstrate adequate NMOC control in circumstances of declining gas flow, which has been observed at the Landfill	apply to this operation, the NSPS process is relevant to BACT determinations, as discussed in the City of Bozeman's letter. However, because the intent of this alternative limit is for scenarios after significant declining of gas flow, which the landfill is not currently at but may be in the future, the Department has requested, with the City of Bozeman's concurrence, that initial testing demonstrate 98% control efficiency.
City of Bozeman	II.A.6	The City requests that MDEQ note in Section II, Condition A.6 of the Draft Permit that the enclosed flare will be started up and shutdown in accordance with manufacturer's design specifications.	ARM 17.8.752 requires that all equipment be operated to provide the maximum air pollution control for which it was designed. The automated temperature control requirement provides a demonstrable requirement to ensure this occurs as the flare is operated. However, at the City of Bozeman's request, the Department has also added a condition to require startup and shutdown in accordance with the manufacturer's design specifications, to better represent the requirements of ARM 17.8.752 during startup and shutdown conditions.
City of Bozeman	II.B	Consistent with comment 1 above, the City requests that MDEQ clarify within Condition B.1 that the performance test may demonstrate compliance with either the NMOC control efficiency or the alternative 20 ppmv NMOC outlet concentration. Further, the City requests that Method 25A be listed in Condition B.1 as an approved test method, since using Method 25A may be more appropriate in circumstances of low inlet NMOC concentrations.	The Department has made changes as requested, with exception that the Department made changes as noted in response to comment 1.
City of Bozeman	II.C	Condition C.2 of the Draft Permit requires the Landflll to provide "annual production information" to MDEQ in the context of the annual emission inventory. Because landfills are unlike other sources that are associated with manufacturing or production processes, the concept	The Department has changed the standard permit language regarding 'production information' to better reflect the nature of operations at the Bozeman Landfill.

		of production data is not applicable. However, MDEQ has specifically required the Landfill to provide landfill gas flow volumes and flare operating hours on an annual basis - these are appropriate categories of information to support an emission inventory. Accordingly, the City requests that MDEQ remove the first two paragraphs of Condition C.2 because they are not applicable to Landfill operations. As set forth in the remaining paragraph of the condition, the annual emission inventory would be based on flow and hour of operation data as appropriate.	
City of Bozeman	Permit Analysis	In the Permit Analysis section of the Draft Permit, condition 5 on page 4 identifies sulfur in fuel limits for gaseous fuel, consisting of a prohibition on hydrogen sulfide concentrations in excess of 50 grains per 100 cubic foot. The City requests that MDEQ confirm that this prohibition is not applicable to landfill gas combusted in the proposed enclosed flare. Such a determination would be consistent with MDEQ's categorization of the flare as an incinerator, rather than a fuel-burning unit. Additionally, as MDEQ is aware, landfill gas is not a conventional fuel supplied by a fuel supplier and certified to sulfur content standards; the City can neither control nor dictate the sulfur content in landfill gas which results from the degradation of waste materials in a biological process.	The Department agrees with the City of Bozeman's assessment that the landfill gas going to the flare does not constitute a gaseous fuel as intended by this rule. The intent of burning the landfill gas is not to produce usable heat or power, rather, the intent and requirement of the flare is to reduce the amount of NMOC emitted to the atmosphere via oxidation. The permit analysis cites the rule as it exists for purposes of disclosure, however, the Department has provided additional language in this section of the permit to clarify that this rule is not intended to apply to the landfill gas itself.

F. Additional Information

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

II. Applicable Rules and Regulations

The following are partial explanations of some applicable rules and regulations that apply to the facility. The complete rules are stated in the Administrative Rules of Montana (ARM)

and are available, upon request, from the Department. Upon request, the Department will provide references for locations of complete copies of all applicable rules and regulations or copies where appropriate.

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

1. ARM 17.8.101 Definitions. This rule is 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. The Department has determined that semi-annual testing is necessary.

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).

   The Bozeman Landfill 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 which, without resulting in reduction in 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 that a public nuisance is created.

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

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

The Bozeman Landfill must comply 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 20% for all fugitive emission sources and that reasonable precautions be taken to control emissions of airborne particulate matter. (2) Under this rule, the Bozeman Landfill 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 section.

4. ARM 17.8.316 Incinerators. This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any incinerator, particulate matter in excess of 0.10 grains per standard cubic foot of dry flue gas, adjusted to 12% carbon dioxide and calculated as if no auxiliary fuel had been used. Also no person shall cause or authorize to be discharged into the outdoor atmosphere from any incinerator, emissions that exhibit an opacity of 10% or greater averaged over 6 consecutive minutes.

   While the Bozeman Landfill is required to comply with the emission limitations specified in Section II.A.8 of this MAQP, this particular ARM does not apply to the flare because Bozeman Landfill has applied for and will operate under an MAQP in accordance with ARM 17.8.770 and MCA 75-2-215.

5. ARM 17.8.322 Sulfur Oxide Emissions--Sulfur in Fuel. Commencing July 1, 1971, no person shall burn any gaseous fuel containing sulfur compounds in excess of 50 grains per 100 cubic feet of gaseous fuel, calculated as hydrogen sulfide at standard conditions.

   This condition is not intended to apply to the landfill gas itself going into the flare, as the landfill gas going to the flare is not interpreted to be a fuel in this case.

6. ARM 17.8.340 Standards of Performance for New Stationary Sources. This rule incorporates, by reference, 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS). Bozeman Landfill is considered an NSPS affected facility under 40 CFR Part 60 and is subject to the requirements of the following subparts.

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

b. 40 CFR Part 60 Subpart Cc – Emissions Guidelines and Compliance Times for Municipal Solid Waste Landfills

The designated facility to which this subpart applies is each existing municipal solid waste landfill for which construction, reconstruction or modification was commenced before May 30, 1991. Because the Bozeman Landfill first started operation in 1969, this subpart is potentially applicable to the Bozeman Landfill. However, the rule currently contains no provisions for landfills with a capacity less than 2.5 million megagrams. The Bozeman Landfill has a capacity less than 2.5 million megagrams.

c. 40 CFR Part 60 Subpart WWW Standards of Performance for Municipal Solid Waste Landfills

The provisions of this subpart apply to each municipal solid waste landfill that commenced construction, reconstruction, or modification on or after May 30, 1991. Because the Bozeman Landfill was modified after May 30, 1991 (a new cell was first deposited in 1997), the Bozeman Landfill is subject to this subpart.

Each owner or operator of an MSW landfill having a design capacity less than 2.5 million megagrams by mass or 2.5 million cubic meters by volume shall submit an initial design capacity report to the Administrator as provided in §60.757(a). The landfill may calculate design capacity in either megagrams or cubic meters for comparison with the exemption values. Any density conversions shall be documented and submitted with the report. Submittal of the initial design capacity report shall fulfill the requirements of this subpart except as provided for in paragraphs (a)(1) and (a)(2) of this section.

7. ARM 17.8.342 Emission Standards for Hazardous Air Pollutants for Source Categories

40 CFR 63 Subpart AAAA – National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills

This subpart applies to landfills which are, or are co-located with, a major source of hazardous air pollutant, or, is an area source with a design capacity greater than 2.5 million megagrams and 2.5 million cubic meters and has uncontrolled emissions equal to or greater than 50 megagrams per year of non-methane organic compounds. The Bozeman Landfill has a capacity less than 2.5 million megagrams, therefore, this subpart does not apply.

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. The Bozeman Landfill shall submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the Department. The Bozeman Landfill included payment of the required fee with the application.

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

   An air quality operation fee is separate and distinct from an air quality 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 pro-rate the required fee amount.

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

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

2. ARM 17.8.743 Montana Air Quality Permits -- When Required. This rule requires a person to obtain an air quality permit or permit alteration to construct, alter, or use any air contaminant sources that have the Potential to Emit (PTE) greater than 25 tons per year of any pollutant. In addition, an air quality permit must be obtained under the requirements of MCA 75-2-215; therefore, a permit is required.

3. ARM 17.8.744 Montana Air Quality Permits – General Exclusions. This rule identifies the activities that are not subject to the Montana Air Quality permit Program.

4. ARM 17.8.745 Montana Air Quality Permits – Exclusion for De Minimis Changes. This rule identifies the de minimis changes at permitted facilities that do not require a permit under the Montana Air Quality Permit Program. De Minimis does not apply to actions for which the requirements of MCA 75-2-215 are triggered.

5. ARM 17.8.748 New or Modified Emitting Units – Permit Application Requirements. (1)This rule requires that an application for an air quality permit be submitted for a new or altered source or stack. Bozeman Landfill 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. The Bozeman Landfill submitted an affidavit of publication of public notice for the August 21, 2015 issue of the *Bozeman Daily Chronical*, a newspaper of general circulation in the Town of Bozeman in Gallatin County, as proof of compliance with the public notice requirements.

6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by the Department must authorize the construction and operation of the facility or emitting unit subject to the conditions in the permit and the requirements of this subchapter. This rule also requires that the permit must contain

any conditions necessary to assure compliance with the Federal Clean Air Act (FCAA), the Clean Air Act of Montana, and rules adopted under those acts.

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

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

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

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

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

12. ARM 17.8.763 Revocation of Permit. An air quality permit may 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 Federal Clean Air Act (FCAA) that it would emit, except as this subchapter would otherwise allow.

   The Bozeman Landfill is not a PSD source since it is not a listed source and the site's potential to emit is below 250 tons per year of any pollutant.

G. 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.…

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

1. MCA 75-2-215 requires air quality permits for all new solid waste incinerators. The Bozeman Landfill has obtained an air quality permit as required.

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 has determined that the information submitted by the Bozeman Landfill is sufficient to fulfill this requirement.

3. MCA 75-2-215 requires that the Department reach a determination that the projected emissions and ambient concentrations constitute a negligible risk to public health, safety and welfare. The Department completed a health risk assessment based on an emissions inventory and ambient air quality modeling. Based on the results of the emission inventory, modeling, and health risk assessment, the Department determined that the Bozeman Landfill flare system is in compliance with this requirement.

4. MCA 75-2-215 requires the application of pollution control equipment or procedures that meet or exceed the BACT. MAQP #2951-05 contains operational and design requirements of the flare system that constitutes BACT.

III. BACT Determination

A BACT determination is required for each new or altered source. The Bozeman Landfill shall install on the new or altered source the maximum air pollution control capability which is technically practicable and economically feasible, except that BACT shall be utilized.

Further, as required by MCA 75-2-215(4), the Department shall require the application of air pollution control equipment, engineering, or other operating procedures as necessary to provide reductions of air pollutants, including hazardous air pollutants, equivalent to or more stringent than those achieved through the best available control technology.

The Bozeman Landfill proposed to install an enclosed flare capable of meeting a minimum destruction efficiency of 98% for non-methane organic compounds. Typically, such destruction efficiency can be obtained by maintaining a combustion temperature of at least 1400 °F, combined with a residence time of at least 0.5 seconds. Designing the enclosed flare to these standards, and utilizing work practices including automated controls that ensure operations of the flare under these conditions, provides the Best Available Control Technology. Such conditions are included in the permit.

Because the landfill is currently no longer accepting waste, the amount of methane and landfill gas being generated is and will diminish with time. An enclosed flare will allow the City of Bozeman to maintain an appropriate level of destruction efficiency under these conditions.

IV. Emissions Inventory

The Bozeman Landfill flare will emit extremely small amounts of conventional pollutants, less than 1 ton per year for all pollutants other than NO_X and CO, for which potential emissions are below 2 tons per year and 5.5 tons per year respectively. A more detailed emissions inventory of Hazardous Air Pollutants is located within the Human Health Risk Assessment portion of this Permit Analysis.

V. Existing Air Quality

The facility is located in the SE¼ and the SW¼ of Section 30, Township 1 South, Range 6 East, in Gallatin County, Montana. The air quality of this area is classified as either better than National Standards or unclassifiable/attainment for the National Ambient Air Quality Standards (NAAQS) for criteria pollutants.

VI. Air Quality Impacts

The Bozeman Landfill flare will emit extremely small amounts of conventional pollutants, less than 1 ton per year for all pollutants other than NO_X and CO, for which potential emissions are below 2 tons per year and 5.5 tons per year respectively. Any impacts to air quality from a conventional pollutant standpoint would be expected to be very minor, if any discernable amount at all.

VII. Health Risk Assessment

As part of this permit action, a health risk assessment was conducted by the Department to determine if the Bozeman Landfill flare would comply with the negligible risk requirement of MCA 75-2-215.

The table below shows the pollutants that were identified for the risk assessment, the emission rate in grams/second assumed, the corresponding ambient concentrations assumed, and comparison to the screening levels of ARM 17.8.770. A conservative screening level model, Screen 3, was used. This screening level model included consideration of complex terrain, and the result rounded up to the next whole microgram per cubic meter.

A number of conservative assumptions were made as noted below:

- The emissions inventory assumed 100% conversion of destructed chlorinated and fluorinated compounds to hydrochloric and hydrofluoric acid.
- Information providing a breakdown of dioxin compounds was not available. Because 2,3,7,8,-tetrachlorodibenzo-*p*-dioxin is the most toxic dioxin, and also a hazardous air pollutant, the risk assessment assumed all dioxin is this compound.
- A 98% destruction efficiency was assumed for all organic compounds.
- All mercury was assumed to be in elemental form, with no destruction efficiency applied.
- For purposes of the health risk assessment, 98% conversion of H_2S to other compounds was assumed. For purposes of determining the SO_X emissions, 100% conversion was assumed. AP-42 emission factors for H_2S in LFG were assumed, however, actual on-site data shows significantly less H_2S content.
- For emissions factors noted as 'less than' in AP-42, the emissions factor was assumed that number. Because the less than notation is likely related to laboratory detection limits/QA/QC limits associated with the tests conducted during development of the factors, assuming the actual emissions are equal to these factors is conservative.
- Emissions from combustion of natural gas/propane which may be used to support the incineration operation, is included. Emissions were calculated assuming 6 MMBtu/hr of supplemental fuel input. Because this is the max rated heat input into the flare, this calculation is very conservative from a fuel perspective, but also captures combustion related HAP formation.

Because the MAQP would permit the replacement of an existing flare, impacts of existing emissions or the synergistic effect of combined pollutants was not conducted. Further, 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 (MEPA).

				ARM 17.8.770 De Minimis Levels			Chronic Inhalation (http://www2.epa.gov/sites/production/files/2014-05/documents/table1.pdf)			
Compound	CAS #	Emissions (g/min)	Maximum Concentration in ug/m3 (corrected to annual)	Table 1 Cancer Annual (ug/m3)	Table 2 Noncancer Chronic Annual (ug/m3)	Table 2 Noncancer Acute Annual (ug/m3)	Noncancer (mg/m3)	Cancer (1/ug/m3)	CNCREL Quotient	Calculated Cancer Risk
2-Methylnaphthalene a	91-57-6	1.07E-06	9.59E-08				-	-		
3-Methylchloranthrene a	56-49-5	8.01E-08	7.19E-09				-	6.30E-03		4.53E-11
7,12-Dimethylbenz(a)anthracene a	57-97-6	7.12E-07	6.39E-08				-	7.10E-02		4.54E-09
Acenaphthene a	83-32-9	8.01E-08	7.19E-09				-	-		
Acenaphthylene a	203-96-8	8.01E-08	7.19E-09				-	-		
Anthracene a	120-12-7	1.07E-07	9.59E-09				-	-		
Benz(a)anthracene a	56-55-3	8.01E-08	7.19E-09	5.88E-05			-	1.10E-04		7.91E-13
Benzo(a)pyrene a	50-32-8	5.34E-08	4.79E-09	5.88E-05			-	1.10E-04		5.27E-13
Benzo(b)fluoranthene a	205-99-2	8.01E-08	7.19E-09	5.88E-05			-	1.10E-04		7.91E-13
Benzo(g,h,i)perylene a	191-24-2	5.34E-08	4.79E-09				-	-		
Benzo(k)fluoranthene a	207-08-9	8.01E-08	7.19E-09	5.88E-05			-	1.10E-04		7.91E-13
Chrysene a	218-01-9	8.01E-08	7.19E-09				-	1.10E-05		7.91E-14
Dibenzo(a,h)anthracene a	53-70-3	5.34E-08	4.79E-09	5.88E-05			-	1.20E-03		5.75E-12
Dichlorobenzene a	25321-22-6	5.34E-05	4.79E-06				8.00E-01	1.10E-05	5.99E-09	5.27E-11
Fluoranthene a	206-44-0	1.33E-07	1.20E-08				-	-		
Fluorene a	86-73-7	1.25E-07	1.12E-08				-	-		
Formaldehyde a	50-00-0	3.00E-03	2.70E-04	7.69E-03	3.60E-02	3.70E+00	9.80E-03	1.30E-05	2.75E-05	3.50E-09
Indeno(1,2,3-cd)pyrene a	193-39-5	8.01E-08	7.19E-09	5.88E-05			-	1.10E-04		7.91E-13
Naphthalene a	91-20-3	2.71E-05	2.44E-06		1.40E-01		3.00E-03	3.40E-05	8.13E-07	8.29E-11
Phenanathrene a	85-01-8	7.56E-07	6.79E-08				-	-		
Pyrene a	129-00-0	2.22E-07	2.00E-08				-	-		
Toluene a	108-88-3	1.51E-04	1.36E-05		4.00E+00		5.00E+00	-	2.72E-09	
1,1,1-Trichloroethane (methyl chloroform) a	71-55-6	4.21E-04	3.79E-05		3.20E+00	1.90E+03	5.00E+00	-	7.57E-09	
1,1,2,2-Tetrachloroethane a	79-34-5	1.23E-03	1.10E-04	1.72E-03			-	-		
1,1-Dichloroethane (ethylidene dichloride) a	75-34-3	1.53E-03	1.38E-04				5.00E-01	1.60E-06	2.75E-07	2.20E-10
1,1-Dichloroethene (vinylidene chloride) a	75-35-4	1.28E-04	1.15E-05	2.00E-03	3.20E-01		2.00E-01	-	5.73E-08	
1,2-Dichloroethane (ethylene dichloride) a	107-06-2	2.67E-04	2.40E-05	3.85E-03	9.50E-01		2.40E+00	2.60E-05	1.00E-08	6.24E-10
1,2-Dichloropropane (propylene dichloride) a	78-87-5	1.34E-04	1.20E-05		4.00E-02		4.00E-03	-	3.01E-06	
2-Propanol (isopropyl alcohol)	67-63-0	1.98E-02	1.78E-03				-	-		
Acetone	67-64-1	2.68E-03	2.41E-04				-	-		
Acrylonitrile a	107-13-1	2.21E-03	1.99E-04	1.47E-03	2.00E-02		2.00E-03	6.80E-05	9.93E-05	1.35E-08
Benzene a	71-43-2	1.60E-04	1.44E-05	1.20E-02	7.10E-01		3.00E-02	7.80E-06	4.80E-07	1.12E-10
Bromodichloromethane	75-27-4	3.37E-03	3.03E-04				-	-		
Butane	106-97-8	1.92E-03	1.73E-04				-	-		
Carbon disulfide a	75-15-0	1.35E-05	1.22E-06		7.00E+00		7.00E-01	-	1.74E-09	
Carbon tetrachloride a	56-23-5	4.05E-06	3.64E-07	6.67E-03	2.40E-02	1.90E+00	1.00E-01	6.00E-06	3.64E-09	2.18E-12
Carbonyl sulfide a	463-58-1	1.94E-04	1.74E-05				-	-		
Chlorobenzene a	108-90-7	1.85E-04	1.66E-05		7.00E-01		1.00E+00	-	1.66E-08	
Chlorodifluoromethane	75-45-6	7.40E-04	6.65E-05				-	-		
Chloroethane (ethyl chloride) a	75-00-3	1.70E-04	1.53E-05		1.00E+02		1.00E+01	-	1.53E-09	
Chloroform a	67-66-3	2.36E-05	2.12E-06	4.35E-03	3.50E-01		9.80E-02	-	2.16E-08	
Chloromethane	74-87-3	4.02E-04	3.61E-05				9.00E-02	-	4.01E-07	
Dichlorobenzene a	106-46-7	2.03E-04	1.83E-05	0.0090909 (1,4 only)	8.00E+00		8.00E-01	1.10E-05	2.28E-08	2.01E-10
Dichlorodifluoromethane	75-71-8	1.25E-02	1.12E-03				-	-		
Dichlorofluoromethane	75-43-4	1.77E-03	1.59E-04				-	-		
Dichloromethane (methylene chloride) a	75-09-2	4.53E-04	4.07E-05	2.13E-01	3.00E+01	3.50E+01	6.00E-01	1.00E-08	6.78E-08	4.07E-13
Dimethyl sulfide (methyl sulfide)	75-18-3	3.20E-03	2.87E-04				-	-		
Ethane	74-84-0	1.76E-01	1.58E-02				-	-		
Ethanol	64-17-5	8.25E-03	7.41E-04				-	-		
Ethyl mercaptan (ethanethiol)	75-08-1	9.32E-04	8.38E-05				-	-		
Ethylbenzene a	100-41-4	6.29E-06	5.65E-07		1.00E+01		1.00E+00	2.50E-06	5.65E-10	1.41E-12
Ethylene dibromide	106-93-4	1.24E-06	1.11E-07	4.55E-04	4.60E-02		9.00E-03	6.00E-04	1.23E-08	6.67E-11
Fluorotrichloromethane	75-69-4	6.87E-04	6.17E-05				-	-		
Hexane a	110-54-3	8.37E-02	7.52E-03		2.00E+00		7.00E-01	-	1.07E-05	
Hydrogen sulfide	7783-06-4	7.96E-03	7.15E-04				2.00E-03	-	3.58E-04	
Mercury (total) a,b	7439-97-6	1.80E-05	1.61E-06				3.00E-04	-	5.38E-06	
Methyl ethyl ketone a	78-93-3	3.36E-03	3.02E-04		1.00E+01		-	-		
Methyl isobutyl ketone a	108-10-1	1.23E-03	1.11E-04				3.00E+00	-	3.69E-08	
Methyl mercaptan	74-93-1	7.88E-04	7.08E-05				-	-		
Pentane	109-66-0	1.56E-03	1.40E-04				-	-		
Propane	74-98-6	3.22E-03	2.89E-04				-	-		
t-1,2-dichloroethene	156-60-5	1.81E-03	1.63E-04				-	-		
Tetrachloroethylene (Perchloroethene) a	127-18-4	8.73E-06	7.84E-07	1.69E-02	3.50E-01	6.80E+01	4.00E-02	2.60E-07	1.96E-08	2.04E-13
Toluene a	108-88-3	1.64E-04	1.47E-05		4.00E+00		5.00E+00	-	2.94E-09	
Trichloroethylene (trichloroethene) a	79-01-6	6.23E-05	5.59E-06	5.00E-02	6.40E+00		2.00E-03	4.10E-06	2.80E-06	2.29E-11
Vinyl chloride a	75-01-4	3.25E-03	2.92E-04	1.28E-03	2.60E-01		1.00E-01	8.80E-06	2.92E-06	2.57E-09
Xylenes a	1330-20-7	1.45E-05	1.30E-06		3.00E+00	4.40E+01	1.00E-01	-	1.30E-08	
HCl (formed by combustion of Cl containing compounds)	7647-01-0	9.91E-01	8.91E-02		2.00E-01	3.00E+01	2.00E-02	-	4.45E-03	
HF (formed by combustion of F containing compounds)	7664-39-3	4.40E-01	3.95E-02		5.90E-02	5.80E+00	1.40E-02	-	2.82E-03	
Dioxins/Furans - assume all dioxins are 2,3,7,8, TCDD	1746-01-6	4.90E-08	4.40E-09		3.50E-08		4.00E-08	3.30E+01	1.10E-04	1.45E-07

Based on the results of this risk assessment, the Department has determined that the emissions from the new Bozeman Landfill flare will not constitute more than a negligible risk to public health, safety, and welfare, as defined by ARM 17.8.770. No individual pollutant concentration exceeds the cancer risk threshold of 1.00E-06, the sum of all cancer risks does not exceed 1.00E-05, and the sum of chronic non-cancer reference exposure level hazard quotients is less than 1.0. Further, concentrations do not exceed the De Minimis levels of Table 1 and Table 2 of ARM 17.8.770. A full health risk assessment was carried out for demonstration purposes.

VIII. Taking or Damaging Implication Analysis

As required by 2-10-101 through 105, MCA, the Department conducted the following private property taking and damaging assessment.

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

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

IX. Environmental Assessment

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

Analysis Completed By: Shawn Juers
Date: 09/21/2015

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

FINAL ENVIRONMENTAL ASSESSMENT (EA)

Issued To: City of Bozeman
Bozeman Sanitary Landfill
PO Box 1230
Bozeman, MT 59771

Montana Air Quality Permit Number: 2951-05
Preliminary Determination Issued: September 28, 2015
Department Decision Issued: November 10, 2015
Permit Final: November 26, 2015

1. *Legal Description of Site*: Southeast quarter of Section 30, Township 1 South, Range 6 East

2. *Description of Project*: Landfill Flare

3. *Objectives of Project*: To replace the current landfill flare

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 the City of Bozeman (the Bozeman Landfill) 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 Montana Air Quality Permit (MAQP) #2951-05.

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			**XX**			Yes
B	Water Quality, Quantity, and Distribution			**XX**			Yes
C	Geology and Soil Quality, Stability and Moisture			**XX**			Yes
D	Vegetation Cover, Quantity, and Quality			**XX**			Yes
E	Aesthetics			**XX**			Yes
F	Air Quality			**XX**			Yes
G	Unique Endangered, Fragile, or Limited Environmental Resources			**XX**			Yes
H	Demands on Environmental Resource of Water, Air and Energy			**XX**			Yes
I	Historical and Archaeological Sites			**XX**			Yes
J	Cumulative and Secondary Impacts			**XX**			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

MAQP #2951-05 would permit a replacement flare at an existing landfill. The MAQP would provide the air quality permit as required by Montana Code Annotated 75-2-215. The landfill itself is also subject to other environmental programs.

Because this action would permit a replacement flare within the boundaries of an existing landfill, impacts, if any, to existing terrestrial and aquatic life and habitats would be expected to be minor. MAQP #2951-05 would contain conditions and limitations to ensure appropriate destruction of the gases flared. Emissions of conventional pollutants from the flare would be extremely small on an industrial scale.

B. Water Quality, Quantity and Distribution

MAQP #2951-05 would permit a replacement flare at an existing landfill. The MAQP would provide the air quality permit as required by Montana Code Annotated 75-2-215. The landfill itself is also subject to other environmental programs.

The flare would not be expected to cause any impacts to water quality, quantity, or distribution. The flare would be a replacement flare at an existing and operating site. MAQP #2951-05 would contain conditions and limitations to ensure appropriate destruction of the gases flared. Emissions of conventional pollutants from the flare would be extremely small on an industrial scale. Impacts, if any, due to the flare, would be expected to be minor.

C. Geology and Soil Quality, Stability and Moisture

MAQP #2951-05 would permit a replacement flare at an existing landfill. The MAQP would provide the air quality permit as required by Montana Code Annotated 75-2-215. The landfill itself is also subject to other environmental programs.

Impacts to geology, soil quality, stability, and moisture, if any, due to the flare, would be expected to be minor.

D. Vegetation Cover, Quantity, and Quality

MAQP #2951-05 would permit a replacement flare at an existing landfill. Emissions of conventional pollutants from the flare would be extremely small on an industrial scale. Impacts, if any, on vegetation cover, quantity, and quality due to the flare would be expected to be minor.

E. Aesthetics

Flares can be a source of noise. The Bozeman Landfill currently has a flare in operation, and MAQP #2951-05 would provide approval for replacement of that flare. Further, conditions in the MAQP would limit allowable visible emissions.

In consideration that the Bozeman Landfill currently has and operates a flare, no more than a minor impact to aesthetics would be expected as a result of the issuance of MAQP #2951-05. An improvement in aesthetic impacts of the flare may be realized.

F. Air Quality

The flare would be an extremely minor source of emissions of conventional pollutants compared to industrial emissions. The need for a Montana Air Quality Permit is based on the requirements of Montana Code Annotated 75-2-215, requiring the permitting of sources which meet the definition of an 'incinerator' as defined in Montana Code Annotated 75-2-103. Further, the project would be for replacement of an existing and operating flare. Any impacts to air quality, if not an improvement, would be minor.

G. Unique Endangered, Fragile, or Limited Environmental Resources

The landfill currently operates a flare, and the replacement flare is to be located within the boundaries of the landfill. The production of landfill gas is expected to decrease with time, as the cessation of waste acceptance at the landfill has occurred. Issuance of MAQP #2951-05 would ensure that the gas which is collected will be destroyed with proper destruction efficiency.

The new flare would be placed within the boundaries of a facility already operating a flare. Further, as an already existing and operating landfill, and given the relatively low levels of hazardous air pollutants associated with the landfill gas, the issuance of MAQP #2951-05 would not be expected to pose any more than minor impacts to any unique endangered, fragile, or limited environmental resources, if any impacts at all. These resources would be already present despite current landfill operations in order to be impacted by this action.

In efforts to ensure a complete review, the Department requested a file search from the Montana Natural Heritage Program to review any known species of special concern which may be located in or near the area. File search results included observations of the Pacific Wren and the Veery, birds listed as potentially at risk because of limited or declining numbers. It should be noted that recorded observations of these birds have occurred in 2008 and 2009, respectively; a timeframe during which operation of the existing landfill was likely occurring.

According to the Montana Field Guide, in Montana Pacific Wrens are most commonly seen preferring cedar-hemlock, cedar-grand fir, and spruce-fir forests and are strongly associated with riparian areas within these forest types. Veerys are often associated with willow thickets and cottonwood along streams and lakes in valleys and lower mountain canyons. Direct disturbance of this habitat would not be expected as part of this project. Given the observance of these birds despite previous landfill operation, no more than a minor impact to this bird, if any, would be expected as a result of the flare.

The file search also returned a recorded observation of the Little Brown Myotis, a species of Bat, and the Hooked Snowfly, a type of stonefly, in the 1970s. No further observations are made within these files. No more than minor impacts to these animals would be expected, if they are currently present.

Also included in the report was a recorded observation of the Western Pearlshell, a type of coldwater mussel, likely observed within a nearby waterway. As described in Section 7.b. above, no more than minor impacts to water quality would be expected as a result of issuance of MAQP #2951-05. This action would permit the replacement of an existing flare at an existing and operating landfill.

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

MAQP #2951-05 would permit a replacement flare at an existing landfill. The MAQP would provide the air quality permit as required by Montana Code Annotated 75-2-215. The landfill itself is also subject to other environmental programs.

Demands of the flare, if any, placed on water, air, and energy, would be expected to be minor.

I. Historical and Archaeological Sites

MAQP #2951-05 would permit a replacement flare to be located within the footprint of an existing landfill. No impacts to any historical sites would be expected as a result of this project. Further, based on a file search requested of the Montana Historical Society, no known archeological or historical sites are within the vicinity.

J. Cumulative and Secondary Impacts

No more than minor impacts to the physical and biological considerations above were found.

No secondary impacts (those that occur at a different location or later time than the action) are apparent. Cumulative impacts (the collective impacts on the human environment when considered in conjunction with other past, present, and future actions related to the proposed action) would be expected to be minor given the existing nature of the landfill, which is a landfill no longer accepting waste.

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			**XX**			Yes
B	Cultural Uniqueness and Diversity			**XX**			Yes
C	Local and State Tax Base and Tax Revenue			**XX**			Yes
D	Agricultural or Industrial Production			**XX**			Yes
E	Human Health			**XX**			Yes
F	Access to and Quality of Recreational and Wilderness Activities			**XX**			Yes
G	Quantity and Distribution of Employment			**XX**			Yes
H	Distribution of Population			**XX**			Yes
I	Demands for Government Services			**XX**			Yes
J	Industrial and Commercial Activity			**XX**			Yes
K	Locally Adopted Environmental Plans and Goals			**XX**			Yes
L	Cumulative and Secondary Impacts			**XX**			Yes

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

A. Social Structures and Mores

MAQP #2951-05 would permit the replacement of a flare at an existing landfill. Impacts to Social Structures and Mores, if any, would be expected to be minor.

B. Cultural Uniqueness and Diversity

MAQP #2951-05 would permit the replacement of a flare at an existing landfill. Impacts to Cultural Uniqueness and Diversity, if any, would be expected to be minor.

C. Local and State Tax Base and Tax Revenue

MAQP #2951-05 would permit the replacement of a flare at an existing landfill. Impacts to Local and State Tax Base and Tax Revenue, if any, would be expected to be minor.

D. Agricultural or Industrial Production

MAQP #2951-05 would permit the replacement of a flare at an existing landfill. Impacts to Agricultural or Industrial Production, if any, would be expected to be minor.

E. Human Health

As required by the Montana Code Annotated 75-2-215 and implemented in accord with the Administrative Rules of Montana 17.8.770, a human health risk assessment was conducted for this action and is included in the Permit Analysis. No more than a negligible risk to human health would be expected from the emissions from the flare.

F. Access to and Quality of Recreational and Wilderness Activities

MAQP #2951-05 would permit the replacement of a flare at an existing landfill. Impacts to Recreational and Wilderness activities, if any, would be expected to be minor.

G. Quantity and Distribution of Employment

MAQP #2951-05 would permit the replacement of a flare at an existing landfill. MAQP #2951-05 would require the appropriate operation and compliance demonstration related activities associated with the flare. No more than minor impacts to quantity and distribution of employment would be expected.

H. Distribution of Population

MAQP #2951-05 would permit the replacement of a flare at an existing landfill. Impacts to Distribution of Population, if any, would be expected to be minor.

I. Demands for Government Services

This project requires application review, permit development, and the ongoing compliance verification of the terms of the permit and applicable rules. A minor demand for government services would be expected.

J. Industrial and Commercial Activity

MAQP #2951-05 would permit the replacement of a flare at an existing landfill, which is no longer accepting waste. Impacts to Industrial and Commercial Activity, if any, would be expected to be minor.

K. Locally Adopted Environmental Plans and Goals

The Department is not aware of any locally adopted environmental plans and goals for which the issuance of MAQP #2951-05 would disrupt. The MAQP would contain limitations and conditions to ensure impacts to human health and the environment from the flare would be minimized.

L. Cumulative and Secondary Impacts

No more than minor impacts to the economic and social considerations above were found.

No secondary impacts (those that occur at a different location or later time than the action) are apparent. Cumulative impacts (the collective impacts on the human environment when considered in conjunction with other past, present, and future actions related to the proposed action) would be expected to be minor given the existing nature of the landfill, which is a landfill no longer accepting waste.

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 replacement flare. MAQP #2951-05 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, Montana Historical Society – State Historic Preservation Office, Natural Resource Information System – Montana Natural Heritage Program

EA prepared by: Shawn Juers
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