



Montana Department of
ENVIRONMENTAL QUALITY

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February 12, 2013

Ron Lowney
WBI Energy Transmission, Inc.
Cabin Creek Compressor Station
2010 Montana Avenue
Glendive, Montana 89330

Dear Mr. Lowney:

Montana Air Quality Permit #2484-06 is deemed final as of February 12, 2013, by the Department of Environmental Quality (Department). This permit is for a natural gas compressor station. All conditions of the Department's Decision remain the same. Enclosed is a copy of your permit with the final date indicated.

For the Department,

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

Ed Warner
Environmental Engineer
Air Resources Management Bureau
(406) 444-2467

JM:EW
Enclosure

Montana Department of Environmental Quality
Permitting and Compliance Division

Montana Air Quality Permit #2484-06

WBI Energy Transmission, Inc. – Cabin Creek Compressor Station
2010 Montana Avenue
Glendive, Montana 59330

February 12, 2013



MONTANA AIR QUALITY PERMIT

Issued To: WBI Energy Transmission, Inc.
Cabin Creek Compressor Station
2010 Montana Avenue
Glendive, Montana 59330

MAQP: #2484-06
Administrative Amendment (AA) Request
Received: 12/4/12
Department's Decision on AA: 1/25/13
Permit Final: 2/12/13
AFS #: 025-0003

A Montana Air Quality Permit (MAQP), with conditions, is hereby granted to WBI Energy Transmission, Inc. (WBI) – Cabin Creek Compressor Station (Cabin Creek), pursuant to Sections 75-2-204 and 211 of the Montana Code annotated (MCA), as amended, and Administrative Rules of Montana (ARM) 17.8.740, *et seq.*, as amended, for the following:

I. Permitted Facilities

A. Plant Location

WBI operates a natural gas compressor station and associated equipment located in the SE¹/₄ of the SE¹/₄ of Section 16, Township 10 North, Range 58 East, Fallon County, Montana known as the Cabin Creek Compressor Station. The mailing address of the facility is 1651 Cabin Creek Road #1, Baker, MT 59313. A complete list of permitted equipment is contained in Section I.A of the permit analysis.

B. Current Permit Action

On December 4, 2012, the Montana Department of Environmental Quality – Air Resources Management Bureau (Department) received correspondence from WBI as notification of a change in company name from Williston Basin Interstate Pipeline Company to WBI Energy Transmission, Inc. The current permit action reflects this change in company name as well as updates the MAQP to reflect current Department format and language.

II. Conditions and Limitations

A. Emission Limitations:

1. Emissions from the 559-hp Waukesha 3521GL engine (Gen1) shall not exceed the following (ARM 17.8.752):

Nitrogen oxides (NO _x) ¹	2.46 pounds per hour (lb/hr)
Carbon monoxide (CO)	4.06 lb/hr
Volatile organic compounds (VOC)	1.23 lb/hr

2. Emissions from the 1149-hp Solar Saturn Mark II gas fired turbine (Unit #15) shall not exceed the following (ARM 17.8.752):

NO _x	2 grams per brake horsepower-hour (g/bhp-hr) or 5.07 lb/hr
CO	3 g/bhp-hr or 7.60 lb/hr
VOC	1 g/bhp-hr or 2.53 lb/hr

¹ NO_x reported as nitrogen dioxide (NO₂).

3. Emissions from Unit #9 and Unit #10, individually, shall not exceed the following (ARM 17.8.749):

NO_x 23.28 lb/hr

4. Emissions from the 1109-hp Waukesha engine (Unit #1) shall not exceed the following (ARM 17.8.749):

NO_x 2.00 g/bhp-hr or 4.88 lb/hr
CO 10.00 g/bhp-hr or 24.40 lb/hr
VOC 0.075 g/bhp-hr or 0.18 lb/hr

5. Emissions from the 1775-hp (site rating of 1714 hp) Caterpillar G3606LE (Unit #17) shall not exceed the following (ARM 17.8.752):

NO_x 0.70 g/bhp-hr and 2.74 lb/hr
CO 0.18 g/bhp-hr and 0.70 lb/hr
VOC 0.30 g/bhp-hr and 1.17 lb/hr

6. WBI shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any sources or stacks installed on or before November 23, 1968, that exhibit an opacity² of 40% or greater averaged over 6 consecutive minutes (ARM 17.8.304).
7. WBI shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any sources or stacks installed after November 23, 1968, that exhibit an opacity² of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.304).

B. Operational Limitations

1. WBI shall not burn, in the 1149-hp Solar Saturn Mark II gas turbine (Unit #15), any fuel that contains sulfur in excess of 0.8% by weight (ARM 17.8.340 and 40 CFR 60, Subpart GG).
2. Prior to initial start-up of the 1149-hp Solar Saturn Mark II natural gas fired turbine (Unit #15), WBI shall install a nonselective catalytic reduction (NSCR) system on the 1109-hp Waukesha L7042GSIU (Unit #1) (ARM 17.8.749).
3. WBI- Cabin Creek shall utilize lean burn engine technology and install an oxidation catalyst system on the 1775-hp Caterpillar G3606LE (Unit #17) (ARM 17.8.752).
4. Prior to initial start-up of the 1149-hp Solar Saturn Mark II natural gas fired turbine (Unit #15), WBI shall permanently modify the stack heights of each of the following units to the indicated minimum stack height requirements (ARM 17.8.749):

Unit #1 = 9.910 meters (m) above ground level
Units #9 and #10 = 14.94 m above ground level

² Opacity shall be determined according to 40 CFR Part 60, Appendix A, Method 9 Visual Determination of Opacity of Emissions from Stationary Sources.

5. WBI 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).
6. WBI shall treat all unpaved portions of the access roads, parking lots, and general plant area with water and/or chemical dust suppressant, as necessary, to maintain compliance with the reasonable precautions limitation in Section II.B.5 (ARM 17.8.749).
7. WBI shall operate all equipment to provide the maximum air pollution control for which it was designed (ARM 17.8.752).
8. WBI shall comply with all applicable standards, limitations, and the reporting, record keeping, and notification requirements contained in 40 CFR 60, Subpart GG, *Standards of Performance for Stationary Gas Turbines*, for any applicable turbine (ARM 17.8.340 and 40 CFR 60).
9. WBI shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements contained in 40 CFR 60, Subpart JJJJ, *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines* and 40 CFR 63, Subpart ZZZZ, *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*, for any applicable engine (ARM 17.8.340; 40 CFR 60, Subpart JJJJ; ARM 17.8.342 and 40 CFR 63, Subpart ZZZZ).

C. Testing Requirements:

1. WBI shall test the 1149-hp Solar Saturn Mark II gas fired turbine (Unit #15) for NO_x and CO, concurrently, and demonstrate compliance with the NO_x and CO emission limits contained in Section II.A.2. The compliance source testing shall be conducted within 180 days of initial start-up of the turbine. After the initial source test, additional testing shall be conducted on an every-5-year basis or according to another testing/monitoring schedule as may be approved by the Department (ARM 17.8.105 and 17.8.749).

The compliance source testing and monitoring for the 1149-hp Solar Saturn Mark II gas fired turbine shall be conducted as specified in 40 CFR 60.334 and 40 CFR 60.335 (40 CFR 60, Subpart GG, ARM 17.8.105, and ARM 17.8.340).

2. WBI shall test the 559-hp Waukesha 3521GL generator (Gen1) for NO_x and CO, concurrently, and demonstrate compliance with the NO_x and CO emission limits contained in Section II.A.1. The initial compliance source test was conducted on October 26, 1993 (ARM 17.8.105 and 17.8.749).
3. WBI shall test Unit #9 and Unit #10 for NO_x and demonstrate compliance with the NO_x emission limits contained in Section II.A.3. The compliance source testing shall be conducted within 180 days of issuance of MAQP #2484-03. After the initial source test, additional testing shall be conducted on an every 5-year-basis or according to another testing/monitoring schedule as may be approved by the Department (ARM 17.8.105 and 17.8.749).
4. WBI shall test the 1109-hp Waukesha L7042GSIU (Unit #1) for NO_x and CO, concurrently, and demonstrate compliance with the NO_x and CO emission limits contained in Section II.A.4. The compliance source testing shall be conducted within

180 days of initial start-up of the engine after installation of the NSCR system required in Section II.B.2. After the initial source test, additional source testing shall be conducted on an every-5-year basis or according to another testing/monitoring schedule as may be approved by the Department (ARM 17.8.105 and 17.8.749).

5. WBI shall test the 1775-hp Caterpillar G3606LE (Unit #17) for NO_x and CO, concurrently, and demonstrate compliance with the NO_x and CO emission limits contained in Section II.A.5. The compliance source testing shall be conducted within 180 days of initial start-up of the engine after installation of the oxidation catalyst system required in Section II.B.3. After the initial source test, additional source testing shall be conducted on an every-5-year basis or according to another testing/monitoring schedule as may be approved by the Department (ARM 17.8.105 and 17.8.749).
6. All compliance source tests shall conform to the requirements of the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).
7. All source tests shall be performed above 90% of the normal operating capacity of the source (ARM 17.8.749).
8. The Department may require further testing (ARM 17.8.105).

D. Operational Reporting Requirement:

1. WBI 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. WBI shall notify the Department of any construction or improvement project conducted pursuant to ARM 17.8.745(1), that would include *the addition of a new emission 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 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).
3. All records compiled in accordance with this permit must be maintained by WBI 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).
4. WBI shall comply with all the applicable standards and limitations and the reporting, recordkeeping, and notification requirements of 40 CFR 60, Subpart GG (40 CFR 60, Subpart GG, ARM 17.8.340).

5. WBI shall comply with all the applicable standards and limitations and the reporting, recordkeeping, and notification requirements of 40 CFR 60, Subpart JJJJ and 40 CFR 63, Subpart ZZZZ (40 CFR 60, Subpart JJJJ, 40 CFR 63, Subpart ZZZZ, ARM 17.8.340, and ARM 17.8.342).
6. For reporting purposes, the equipment should be identified using the Unit #s contained in Section I.A of the permit analysis (ARM 17.8.749).

III. General Conditions

- A. Inspection – WBI 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 such as continuous emission monitoring systems (CEMS) or continuous emission rate monitoring systems (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 WBI fails to appeal as indicated below.
- C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving WBI 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 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 WBI 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
 Williston Basin Interstate Pipeline Company
 Cabin Creek Compressor Station
 MAQP #2484-06

I. Introduction/Process Description

A. Permitted Equipment

The following table includes a complete list of permitted equipment at the WBI Energy Transmission, Inc. (WBI) – Cabin Creek Compressor Station (Cabin Creek).

Unit #	Year Installed	Make	Model	Capacity
1	1977	Waukesha	L7042GSU	1109 hp
9	1959	Ingersoll - Rand	48KVG	880 hp
10	1960	Ingersoll - Rand	48KVG	880 hp
11	1971	Solar	Saturn Ph. IV	1100 hp
12	1971	Solar	Saturn Ph. IV	1100 hp
13	1971	Solar	Saturn Ph. IV	1100 hp
14	1975	Solar	Saturn Ph. II	1200 hp
15	2003	Solar	Saturn Mark II	1149 hp
16	1975	Solar	Centaur	3800 hp
17	2011	Caterpillar	G3606LE	1775 hp
Gen1	1992	Waukesha	3521 GL	559 hp
Misc1 – Dehy Heater	1975	CE Natco	SOT-43702	15.25 MMBtu/hr
Misc2 – New Boiler	2011	--	--	1.5 MMBtu/hr
Misc3 – New Boiler	2011	--	--	1.5 MMBtu/hr
Misc4 – Boiler	1975	Eclipse	D-6	0.45 MMBtu/hr
Misc5 – Storage Tanks	--	--	--	--
Misc6 – Heater	1985	Reliance	501	0.03 MMBtu/hr
Misc7 – Heater	--	Seigler	550 UN-24	0.07 MMBtu/hr
Misc8 – Heater	--	Janitrol	880707	0.07 MMBtu/hr
Fug – VOC Sources	--	--	--	--

NOTES: hp horsepower
 MMBtu/hr million British thermal units per hour
 -- unknown or not applicable

B. Source Description

The compressor station is used to compress natural gas to the required pressure for transportation within the natural gas transmission system. Compression of the gas is accomplished using the compressors described above.

A dry-bead dehydration unit is used to remove liquid water and/or water vapor from the produced natural gas stream to prevent the formation of hydrates in the transmission lines. Dehydration is also necessary in order to meet water dew point requirements of the gas sales contract.

C. Permit History

On May 31, 1988, Williston Basin Interstate Pipeline Company (WBIPC) was issued a permit for the operation of the Cabin Creek compressor station consisting of 16 natural gas compressor engines, located in the SE¼ of the SE¼ of Section 16, Township 10 North, Range 58 East, Fallon County, Montana. The application was given **Montana Air Quality Permit (MAQP) #2484**.

On July 17, 1992, WBIPC was issued a permit to replace an existing 1961 Waukesha 1197G generator engine (248 hp) with a 1992 Waukesha 3521GL generator engine (544 hp) at their Cabin Creek facility. The old engine was removed. The application was given **MAQP #2484-01**.

The Department of Environmental Quality (Department) best available control technology (BACT) determination for MAQP #2484-01 was the use of a Waukesha, Model 3521GL Lean Combustion gas engine with emission factors of 2.0, 2.0, and 1.0 grams per brake horsepower hour (g/bhp-hr) for nitrogen oxides (NO_x), carbon monoxide (CO), and volatile organic compounds (VOC), respectively.

WBIPC applied for a permit modification to increase the permitted operational horsepower and the CO emission rate for the 1992 Waukesha 3512GL generator engine (544 hp). The engine was originally permitted to operate at 1200 revolutions per minute (rpm) and the corresponding CO emission rate of 2.0 g/bhp-hr. The actual installed horsepower of the engine/generator set was site rated at 559 hp and limited to 900 rpm. This de-torquing of an engine generally increases the CO emissions; therefore, WBIPC could only achieve the manufacturer's guaranteed emissions under limited conditions. This emission rate was also due to increase as a result of site specific fuel analysis quality. WBIPC submitted a revised manufacturer's emission guarantee for CO of 3.3 g/bhp-hr based on the results of a site specific fuel analysis.

WBIPC also requested that the permitted emission limits be expressed in pounds per hour (lb/hr) rather than g/bhp-hr, which is consistent with the Department's revised guidelines. The revision to the guidelines for developing an emission limitation is due to varying parameters such as engine rpm, operating load (bhp), ambient air temperature, gas temperature, site elevation, fuel gas quality, air/fuel ratio (AFR), field gas conditions, etc. Rather than limit the engine to a g/bhp-hr limit, the hourly emission limit allowed for needed operational flexibility. **MAQP #2484-02** replaced #2484-01.

On June 3, 2003, WBIPC was issued a permit for the installation and operation of an 1149-hp capacity natural gas fired turbine. Cabin Creek is a major stationary source of emissions as defined under the New Source Review Prevention of Significant Deterioration (PSD) program; however, potential emissions from the proposed turbine did not exceed any PSD significant emission thresholds and the permit action did not trigger PSD review.

Further, WBIPC submitted a modeling analysis including annual NO_x ambient air impacts as well as 1- and 8-hour CO ambient impacts from the turbine. A summary of modeled impacts is contained in Section VI of the permit analysis for the permit action. Based on the ambient air modeling results initially submitted by WBIPC, and in accordance with the Department's "Monitoring Requirements" guidance document (October 9, 1998), the Cabin Creek facility, as initially proposed, would be required to conduct ambient monitoring because the modeled nitrogen dioxide (NO₂) concentration was above 95% of the ambient standard.

Subsequently, WBIPC submitted a letter to the Department requesting various permit changes to keep the source emission impacts below the applicable ambient standards for NO_x and to avoid the requirement for ambient NO_x monitoring. Specifically, under this permit action, WBIPC was required to install a non-selective catalytic reduction system (NSCR) on Unit #1, raise the stack heights on Unit #1 and Units #4 through #10, lower the allowable NO_x emission rates for Units #8 through #10, and limit the operating hours for Unit #4 to 3500 hours during any rolling 12-month time period. **MAQP #2484-03** includes conditional requirements for all previously cited equipment/operational modifications.

Furthermore, WBIPC requested that the Department modify the testing schedule for the 559 hp Waukesha 3521GL (Gen1). Previously, based on Department source testing guidance, WBIPC was required to test Gen1 on an every-4-year schedule. However, the Title V operating permit for Cabin Creek requires semiannual testing for this unit. Therefore, at the request of WBIPC, the testing requirements for Gen1 have been modified to incorporate language allowing for consistency between the MAQP and the Title V operating permit source testing schedules for this unit.

Finally, the Department updated all rule references to reflect recent rule revisions. MAQP #2484-03 replaced #2484-02.

On August 7, 2003, WBIPC submitted a letter of application for a modification to MAQP #2484-03. WBI requested that the stack heights for Units #1, #4, #5, #6, and #7 be lowered. Additionally, to ensure compliance with the National Ambient Air Quality Standards (NAAQS) and the Montana Ambient Air Quality Standards (MAAQS), WBI requested hours of operation restrictions on Units #4, #5, #6, and #7.

An Air Dispersion Modeling Analysis was submitted along with the modification request by Aspen Consulting Engineering Inc. (Aspen). After reviewing the permit action request and modeling analysis, the Department determined the proposed modification could be accomplished according to Administrative Rule of Montana (ARM) 17.8.764(b) while adequately protecting the ambient standards.

In addition, according to ARM 17.8.764(c), the Department updated the emissions inventory based on emission factors, which more accurately reflect operation of the emitting units at Cabin Creek. The changes made to the emissions inventory do not affect substantive provisions of the permit. **MAQP #2484-04** replaced #2484-03.

On February 18, 2011, Department received a complete MAQP modification application for Cabin Creek. WBIPC requested that five compressor engines (Units #4 through #8) be removed from the permit and be replaced with a one Caterpillar G3606LE compressor engine. The Caterpillar G3606LE is a four-stroke lean burn engine equipped with an oxidation catalyst and with a maximum rated design capacity of 1775 hp (maximum site rating of 1714 hp). Also included in this project is an upgrade in the facility heating system involving the removal of a 0.819 MMBtu/hr, a 0.770 MMBtu/hr, and a 1.18 MMBtu/hr natural gas boiler and replacing them with two new 1.5 MMBtu/hr natural gas boilers. The 1.18 MMBtu/hr boiler was incorrectly labeled in earlier permits as a 1.47 MMBtu/hr boiler. The table of permitted equipment in Section I.A. of the permit analysis has been updated with the equipment as listed in the current permit application and to reflect the unit number designations used by WBIPC. **MAQP #2484-05** replaced #2484-04.

D. Current Permit Action

On December 4, 2012, the Montana Department of Environmental Quality – Air Resources Management Bureau (Department) received correspondence from WBI as notification of a change in company name from Williston Basin Interstate Pipeline Company to WBI Energy Transmission, Inc. The current permit action reflects this change in company name as well as updates the MAQP to reflect current Department format and language. **MAQP #2484-06** replaces #2484-05.

E. Additional Information

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

II. Applicable Rules and Regulations

The following are partial explanations of some applicable rules and regulations that apply to the facility. The complete rules are stated in the Administrative Rules of Montana (ARM) and are available, upon request, from the Department. Upon request, the Department will provide references for location of complete copies of all applicable rules and regulations or copies where appropriate.

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

1. ARM 17.8.101 Definitions. This rule includes a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.
2. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emission of any air contaminant into the outdoor atmosphere shall, upon written request of the Department, provide the facilities and necessary equipment (including instruments and sensing devices) and shall conduct tests, emission or ambient, for such periods of time as may be necessary using methods approved by the Department.
3. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by the Department, any source or other entity as required by any rule in this chapter, or any permit or order issued pursuant to this chapter, or the provisions of the Clean Air Act of Montana, 75-2-101, *et seq.*, Montana Code Annotated (MCA).

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

4. ARM 17.8.110 Malfunctions. (2) The Department must be notified promptly by telephone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation, or to continue for a period 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 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide (SO₂)
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 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter (PM)
6. ARM 17.8.221 Ambient Air Quality Standard for Visibility
7. ARM 17.8.223 Ambient Air Quality Standard for Particulate Matter with an Aerodynamic Diameter of 10 Microns or Less (PM₁₀)

WBI 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 20% for all fugitive emission sources, and that reasonable precautions be taken to control emissions of airborne particulate matter. (2) Under this rule, WBI 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, allow, or permit to be discharged into the atmosphere particulate matter in excess of the amount set forth in this rule.
5. ARM 17.8.340 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). WBI is 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 60, Subpart GG – Standards of Performance for Stationary Gas Turbines. This subpart applies to any stationary gas turbine with a heat input

at peak load equal to or greater than 10 MMBtu/hr which commenced construction, modification, or reconstruction after October 3, 1977. The 1149-hp Solar Saturn Mark II natural gas fired turbine (Unit #15) is an affected source under this subpart.

- c. 40 CFR 60, Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. This subpart applies to stationary spark ignition internal combustion engines that are constructed after June 12, 2006. The 1775-hp Caterpillar G3606LE engine (Unit #17) is an affected source under this subpart.
6. ARM 17.8.342 Emission Standards for Hazardous Air Pollutants for Source Categories. This rule incorporates, by reference, 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants (NESHAPs) for Source Categories. WBI is considered an NESHAP-affected facility under 40 CFR Part 63 and is subject to the requirements of the following subparts:
- a. 40 CFR 63, Subpart A – General Provisions apply to all equipment or facilities subject to a NESHAPs Subpart as listed below:
 - b. 40 CFR 63, Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants (HAPs) for Stationary Reciprocating Internal Combustion Engines (RICE). An owner or operator of a stationary reciprocating internal combustion engine (RICE) at a major or area source of HAP emissions is subject to this rule except if the stationary RICE is being tested at a stationary RICE test cell/stand. An area source of HAP emissions is a source that is not a major source. Units #1, #9, #10, and Gen1 are considered existing sources as defined by this subpart; therefore, they must comply with these standards by October 19, 2013. The 1775-hp Caterpillar G3606LE engine (Unit #17) is considered a new source and is required to meet the standards of this subpart by meeting the applicable standards in 40 CFR 60, Subpart JJJJ.
 - c. 40 CFR 63, Subpart HH – National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities. Owners or operators of oil and natural gas production facilities, as defined and applied in 40 CFR Part 63, shall comply with the standards and provisions of 40 CFR 63, Subpart HH. For area sources of HAP emissions, the affected source includes each triethylene glycol (TEG) dehydration unit located at the facility and all area sources with TEG units need to meet specific requirements of 40 CFR 63, Subpart HH. The Department determined that 40 CFR 63, Subpart HH does not apply to the WBI facility at this time because there are no TEG units.
 - d. 40 CFR 63, Subpart HHH – National Emission Standards for Hazardous Air Pollutants from Natural Gas Transmission and Storage Facilities. Owners or operators of natural gas transmission or storage facilities, as defined and applied in 40 CFR Part 63, shall comply with the standards and provisions of 40 CFR Part 63, Subpart HHH. The Department determined that 40 CFR Part 63, Subpart HHH, does not apply to the WBI facility because it is not a major source of HAPs.

D. ARM 17.8, Subchapter 5 – Air Quality Permit Application, Operation and Open Burning Fees, including, but not limited to:

1. ARM 17.8.504 Air Quality Permit Application Fees. This rule requires that an applicant submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the Department. A permit fee is not required for the current permit action because the permit action is considered an administrative permit change.
2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit, excluding an open burning permit, issued by the Department. The air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

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

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

1. ARM 17.8.740 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.
2. ARM 17.8.743 Montana Air Quality Permits--When Required. This rule requires a facility to obtain an air quality permit or permit modification if they construct, alter or use any air contaminant sources that have the potential to emit greater than 25 tons per year of any pollutant. Cabin Creek has the Potential to Emit (PTE) more than 25 tons per year of NO_x, VOC, and CO; therefore, an air quality permit is required.
3. ARM 17.8.744 Montana Air Quality Permits--General Exclusions. This rule identifies the activities that are not subject to the Montana Air Quality Permit program.
4. ARM 17.8.745 Montana Air Quality Permits—Exclusion for De Minimis Changes. This rule identifies the de minimis changes at permitted facilities that are not subject to the Montana Air Quality Permit Program.
5. ARM 17.8.748 New or Modified Emitting Units--Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, alteration, or use of a source. A permit application was not required for the current permit action because the permit change is considered an administrative permit change. (7) This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. An affidavit of publication of public notice was not required for the current permit action because the permit change is considered an administrative permit change.
6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by the Department must authorize the construction and operation of the facility or emitting unit subject to the conditions in the permit and the

requirements of this subchapter. This rule also requires that the permit must contain any conditions necessary to assure compliance with the Federal Clean Air Act (FCAA), the Clean Air Act of Montana, and rules adopted under those acts.

7. ARM 17.8.752 Emission Control Requirements. This rule requires a source to install the maximum air pollution control capability that is technically practicable and economically feasible, except that 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 WBI of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq.*
10. ARM 17.8.759 Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those permit applications that do not require the preparation of an environmental impact statement.
11. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or altered source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.
12. ARM 17.8.763 Revocation of Permit. An air quality permit may be revoked upon written request of the permittee, or for violations of any requirement of the Clean Air Act of Montana, rules adopted under the Clean Air Act of Montana, the FCAA, rules adopted under the FCAA, or any applicable requirement contained in the Montana State Implementation Plan (SIP).
13. ARM 17.8.764 Administrative Amendment to Permit. An air quality permit may be amended for changes in any applicable rules and standards adopted by the Board of Environmental Review (Board) or changed conditions of operation at a source or stack that do not result in an increase of emissions as a result of those changed conditions. The owner or operator of a facility may not increase the facility's emissions beyond permit limits unless the increase meets the criteria in ARM 17.8.745 for a de minimis change not requiring a permit, or unless the owner or operator applies for and receives another permit in accordance with ARM 17.8.748, ARM 17.8.749, ARM 17.8.752, ARM 17.8.755, and ARM 17.8.756, and with all applicable requirements in ARM Title 17, Chapter 8, subchapters 8, 9, and 10.
14. ARM 17.8.765 Transfer of Permit. 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.

- 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 listed source, but emissions are greater than or equal to 250 tons per year; therefore, the facility is major. The current permitting action is an administrative permitting action with no associated changes in potential 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 tons per year of any pollutant;
 - b. PTE > 10 tons per year of any one Hazardous Air Pollutant (HAP), PTE > 25 tons per year of a combination of all HAPs, or lesser quantity as the Department may establish by rule; or
 - c. PTE > 70 tons per year of 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 #2484-06 for WBI, the following conclusions were made.
 - a. The facility's PTE is greater than 100 tons per year for NO_x, CO, and VOC.
 - b. The facility's PTE is less than 10 tons per year for any one HAP and less than 25 tons per year for all HAPs.
 - c. This source is not located in a serious PM₁₀ nonattainment area.
 - d. This facility is subject to current NSPS: 40 CFR 60, Subpart A – General Provisions, 40 CFR 60, Subpart GG – Standards of Performance for Stationary Gas Turbines, and 40 CFR 60, Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines, as applicable to the facility.
 - e. This facility is subject to current NESHAP: 40 CFR 63, Subpart A – General Provisions and 40 CFR 63, Subpart ZZZZ – National Emissions Standards for HAPs for Stationary RICE, as applicable to the facility.
 - f. This source is not a Title IV affected source, nor a solid waste combustion unit.
 - g. This source is not an EPA designated Title V source.

Based on these facts, the Department determined that Cabin Creek is subject to the Title V operating permit program. Cabin Creek's most current Title V Operating Permit (at the time of the drafting of MAQP #2484-06) was issued final and effective on November 8, 2011.

III. BACT Determination

A BACT determination is required for each new or modified source. WBI 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.

A BACT analysis was not required for the current permit action because the current permit action is considered an administrative permit action.

IV. Emission Inventory

Source – Source Number	tons per year						
	PM	PM ₁₀	PM _{2.5}	NO _x	VOC	CO	SO _x
1109 hp Waukesha – #1	0.69	0.69	0.69	21.37	0.80	106.89	0.02
880 hp Ingersoll Rand – #9	0.60	0.60	0.60	101.97	.636	135.67	0.02
880 hp Ingersoll Rand – #10	0.60	0.60	0.60	101.97	.636	135.67	0.02
1100 hp Solar – #11	0.40	0.40	0.40	17.28	.795	25.86	0.02
1100 hp Solar – #12	0.40	0.40	0.40	17.28	.795	25.86	0.02
1100 hp Solar – #13	0.40	0.40	0.40	17.28	.795	25.86	0.02
1200 hp Solar – #14	0.44	0.44	0.44	17.23	0.19	25.79	0.02
1149 hp Solar – #15	0.34	0.34	0.34	22.19	11.09	33.28	0.39
3800 hp Solar – #16	0.84	0.84	0.84	67.45	0.33	33.73	0.07
1775 hp Caterpillar – #17	0.53	0.53	0.53	11.97	5.13	2.99	0.03
559 Hp Waukesha – Gen1	0.19	0.19	0.19	10.77	5.39	17.78	0.01
Dehydrator Heater – Misc1	0.48	0.48	0.48	9.00	0.37	2.25	0.04
New Boiler – Misc2	0.05	0.05	0.05	0.63	0.03	0.53	0.00
New Boiler – Misc3	0.05	0.05	0.05	0.63	0.03	0.53	0.00
Eclipse Boiler – Misc4	0.01	0.01	0.01	0.19	0.01	0.04	0.00
Storage Tanks – Misc5	--	--	--	--	0.00	--	--
Reliance Heater – Misc6	0.00	0.00	0.00	0.01	0.00	0.01	0.00
Seigler Heater – Misc7	0.00	0.00	0.00	0.03	0.00	0.03	0.00
Janitrol Heater – Misc8	0.00	0.00	0.00	0.03	0.00	0.03	0.00
Fugitive VOC Sources – Fug	--	--	--	--	1.48	--	--
Total Potential Emissions	6.01	6.01	6.01	417.28	28.52	572.78	0.69

NOTE:

For natural gas combustion, all PM is assumed to be less than one (1) micron in diameter (AP-42, Table 1.4-2 footnote c, Section 3.1.3.3, Table 3.2.2 footnote i, and Table 3.2.3 footnote j). Therefore, total PM = total PM₁₀ = total PM_{2.5}. PM emissions have been recalculated below for existing natural gas combusting units prior to MAQP #2484-05 to reflect filterable and condensable fractions. The PM, PM₁₀, and PM_{2.5} values in the Emission Inventory table reflect the sum of the filterable and condensable fractions.

1109 hp Waukesha, #1

Fuel Consumption Factor = 7300 Btu/hp-hr (Applicant Information)

Consumption Conversion = (7300 Btu/hp-hr) * (1109 hp) * (1 MMBtu/1E6 Btu) = 8.10 MMBtu/hr

Hours of Operation = 8,760 hours

Filterable PM/PM₁₀/PM_{2.5} Emissions:

Emission Factor = 0.0095 lb/MMBtu (All PM < 1 mm, AP-42, Sec. 3.2, Table 3.2-3, 7/00)

Calculation: (8,760 hours) * (8.10 MMBtu/hr) * (0.0095 lb/MMBtu) * (ton/2000 lb) = 0.34 ton/yr

Condensable PM Emissions:

Emission Factor = 0.00991 lb/MMBtu (AP-42, Sec. 3.2, Table 3.2-3, 7/00)

Calculation: (8,760 hours) * (8.10 MMBtu/hr) * (0.00991 lb/MMBtu) * (ton/2000 lb) = 0.35 ton/yr

NO_x Emissions:

Emission factor: 2.00 gram/bhp-hr (Information from company)

Calculations: 2.00 gram/bhp-hr * 1109 bhp * 0.00220 lb/gram * 8760 hr/yr /2000 = 21.37 ton/yr

VOC Emissions:

Emission factor: 0.075 gram/bhp-hr (Information from company)

Calculations: 0.075 gram/bhp-hr * 1109 bhp * 0.0022 lb/gram * 8760 hr/yr /2000 = 0.80 ton/yr

CO Emissions:

Emission factor: 10.00 gram/bhp-hr (Permit Application #OP2484-00)

Calculations: 10.00 gram/bhp-hr * 1109 bhp * 0.0022 lb/gram * 8760 hr/yr /2000 = 106.89 ton/yr

- Prior to MAQP #2484-03 the CO emission rate in the permit emission inventory was incorrectly referenced as 1.0 g/hp-hr. WBI reported a CO emission rate of 10.0 g/hp-hr in the respective permit applications.

SO_x Emissions:

Emission factor: 0.002 gram/hp-hr (AP-42, Table 3.2-1, 9/85)

Calculations: 0.002 gram/hp-hr * 1109 bhp * 0.0022 lb/gram * 8760 hr/yr /2000 = 0.02 ton/yr

880 hp Ingersoll Rand, #9

Fuel Consumption Factor = 8000 Btu/hp-hr (Applicant Information)

Consumption Conversion = (8000 Btu/hp-hr) * (880 hp) * (1 MMBtu/1E6 Btu) = 7.04 MMBtu/hr

Hours of Operation = 8,760 hours

Filterable PM/PM₁₀/PM_{2.5} Emissions:

Emission Factor = 0.0095 lb/MMBtu (All PM < 1 mm, AP-42, Sec. 3.2, Table 3.2-3, 7/00)

Calculation: (8,760 hours) * (7.04 MMBtu/hr) * (0.0095 lb/MMBtu) * (ton/2000 lb) = 0.29 ton/yr

Condensable PM Emissions:

Emission Factor = 0.00991 lb/MMBtu (AP-42, Sec. 3.2, Table 3.2-3, 7/00)

Calculation: (8,760 hours) * (7.04 MMBtu/hr) * (0.00991 lb/MMBtu) * (ton/2000 lb) = 0.31 ton/yr

NO_x Emissions:

Emission factor: 23.28 lb/hr (Permit Limit)
Calculations: $23.28 \text{ lb/hr} * 8760 \text{ hr/yr} / 2000 = 101.97 \text{ ton/yr}$

VOC Emissions:

Emission factor: .075 gram/bhp-hr (Information from company)
Calculations: $.075 \text{ gram/bhp-hr} * 880 \text{ bhp} * 0.0022 \text{ lb/gram} * 8760 \text{ hr/yr} / 2000 = .636 \text{ ton/yr}$

CO Emissions:

Emission factor: 16.00 gram/bhp-hr (Information from company)
Calculations: $16.00 \text{ gram/bhp-hr} * 880 \text{ bhp} * 0.0022 \text{ lb/gram} * 8760 \text{ hr/yr} / 2000 = 135.67 \text{ ton/yr}$

SO_x Emissions:

Emission factor: 0.002 gram/hp-hr (AP-42, Table 3.2-1, 9/85)
Calculations: $0.002 \text{ gram/hp-hr} * 880 \text{ bhp} * 0.0022 \text{ lb/gram} * 8760 \text{ hr/yr} / 2000 = 0.02 \text{ ton/yr}$

880 hp Ingersoll Rand, #10

Fuel Consumption Factor = 8000 Btu/hp-hr (Applicant Information)

Consumption Conversion = $(8000 \text{ Btu/hp-hr}) * (880 \text{ hp}) * (1 \text{ MMBtu}/1\text{E}6 \text{ Btu}) = 7.04 \text{ MMBtu/hr}$

Hours of Operation = 8,760 hours

Filterable PM/PM₁₀/PM_{2.5} Emissions:

Emission Factor = 0.0095 lb/MMBtu (All PM < 1 mm, AP-42, Sec. 3.2, Table 3.2-3, 7/00)

Calculation: $(8,760 \text{ hours}) * (7.04 \text{ MMBtu/hr}) * (0.0095 \text{ lb/MMBtu}) * (\text{ton}/2000 \text{ lb}) = 0.29 \text{ ton/yr}$

Condensable PM Emissions:

Emission Factor = 0.00991 lb/MMBtu (AP-42, Sec. 3.2, Table 3.2-3, 7/00)

Calculation: $(8,760 \text{ hours}) * (7.04 \text{ MMBtu/hr}) * (0.00991 \text{ lb/MMBtu}) * (\text{ton}/2000 \text{ lb}) = 0.31 \text{ ton/yr}$

NO_x Emissions:

Emission factor: 23.28 lb/hr (Permit Limit)
Calculations: $23.28 \text{ lb/hr} * 8760 \text{ hr/yr} / 2000 = 101.67 \text{ ton/yr}$

VOC Emissions:

Emission factor: .075 gram/bhp-hr (Information from company)
Calculations: $.075 \text{ gram/bhp-hr} * 880 \text{ bhp} * 0.0022 \text{ lb/gram} * 8760 \text{ hr/yr} / 2000 = .636 \text{ ton/yr}$

CO Emissions:

Emission factor: 16.00 gram/bhp-hr (Information from company)
Calculations: $16.00 \text{ gram/bhp-hr} * 880 \text{ bhp} * 0.0022 \text{ lb/gram} * 8760 \text{ hr/yr} / 2000 = 135.96 \text{ ton/yr}$

SO_x Emissions:

Emission factor: 0.002 gram/hp-hr (AP-42, Table 3.2-1, 9/85)
Calculations: 0.002 gram/hp-hr * 880 bhp * 0.0022 lb/gram * 8760 hr/yr /2000 = 0.02 ton/yr

1100 hp Solar, #11

Fuel Consumption Factor = 12500 Btu/hp-hr (Applicant Information)
Consumption Conversion = (12500 Btu/hp-hr) * (1100 hp) * (1 MMBtu/1E6 Btu) = 13.75 MMBtu/hr
Hours of Operation = 8,760 hours

Filterable PM/PM₁₀/PM_{2.5} Emissions:

Emission Factor = 0.0019 lb/MMBtu (All PM < 1 mm, AP-42, Sec. 3.1, Table 3.1-1, 4/00)
Calculation: (8,760 hours) * (13.75 MMBtu/hr) * (0.0019 lb/MMBtu) * (ton/2000 lb) = 0.11 ton/yr

Condensable PM Emissions:

Emission Factor = 0.0047 lb/MMBtu (AP-42, Sec. 3.1, Table 3.1-1, 4/00)
Calculation: (8,760 hours) * (13.75 MMBtu/hr) * (0.0047 lb/MMBtu) * (ton/2000 lb) = 0.28 ton/yr

NO_x Emissions:

Emission factor: 1.63 gram/bhp-hr (Information from company)
Calculations: 1.63 gram/bhp-hr * 1100 bhp * 0.00220 lb/gram * 8760 hr/yr /2000 = 17.28 ton/yr

VOC Emissions:

Emission factor: 0.075 gram/bhp-hr (Information from company)
Calculations: 0.075 gram/bhp-hr * 1100 bhp * 0.0022 lb/gram * 8760 hr/yr /2000 = .795 ton/yr

CO Emissions:

Emission factor: 2.44 gram/bhp-hr (Information from company)
Calculations: 2.44 gram/bhp-hr * 1100 bhp * 0.0022 lb/gram * 8760 hr/yr /2000 = 25.86 ton/yr

SO_x Emissions:

Emission factor: 0.002 gram/hp-hr (AP-42, Table 3.2-1,9/85)
Calculations: 0.002 gram/hp-hr * 1100 bhp * 0.0022 lb/gram * 8760 hr/yr /2000 = 0.02 ton/yr

1100 hp Solar, #12

Fuel Consumption Factor = 12500 Btu/hp-hr (Applicant Information)
Consumption Conversion = (12500 Btu/hp-hr) * (1100 hp) * (1 MMBtu/1E6 Btu) = 13.75 MMBtu/hr
Hours of Operation = 8,760 hours

Filterable PM/PM₁₀/PM_{2.5} Emissions:

Emission Factor = 0.0019 lb/MMBtu (All PM < 1 mm, AP-42, Sec. 3.1, Table 3.1-1, 4/00)
Calculation: (8,760 hours) * (13.75 MMBtu/hr) * (0.0019 lb/MMBtu) * (ton/2000 lb) = 0.11 ton/yr

Condensable PM Emissions:

Emission Factor = 0.0047 lb/MMBtu (AP-42, Sec. 3.1, Table 3.1-1, 4/00)

Calculation: (8,760 hours) * (13.75 MMBtu/hr) * (0.0047 lb/MMBtu) * (ton/2000 lb) = 0.28 ton/yr

NO_x Emissions:

Emission factor: 1.63 gram/bhp-hr (Information from company)

Calculations: 1.63 gram/bhp-hr * 1100 bhp * 0.00220 lb/gram * 8760 hr/yr /2000 = 17.28 ton/yr

VOC Emissions:

Emission factor: .018 gram/bhp-hr (Information from company)

Calculations: .018 gram/bhp-hr* 1100 bhp* 0.0022 lb/gram * 8760 hr/yr /2000 = 0.19 ton/yr

CO Emissions:

Emission factor: 2.44 gram/bhp-hr (Information from company)

Calculations: 2.44 gram/bhp-hr * 1100 bhp* 0.0022 lb/gram* 8760 hr/yr /2000= 25.86 ton/yr

SO_x Emissions:

Emission factor: 0.002 gram/hp-hr (AP-42, Table 3.2-1, 9/85)

Calculations: 0.002 gram/hp-hr * 1100 bhp * 0.0022 lb/gram * 8760 hr/yr /2000 = 0.02 ton/yr

1100 hp Solar, #13

Fuel Consumption Factor = 12500 Btu/hp-hr (Applicant Information)

Consumption Conversion = (12500 Btu/hp-hr) * (1100 hp) * (1 MMBtu/1E6 Btu) = 13.75 MMBtu/hr

Hours of Operation = 8,760 hours

Filterable PM/PM₁₀/PM_{2.5} Emissions:

Emission Factor = 0.0019 lb/MMBtu (All PM < 1 mm, AP-42, Sec. 3.1, Table 3.1-1, 4/00)

Calculation: (8,760 hours) * (13.75 MMBtu/hr) * (0.0019 lb/MMBtu) * (ton/2000 lb) = 0.11 ton/yr

Condensable PM Emissions:

Emission Factor = 0.0047 lb/MMBtu (AP-42, Sec. 3.1, Table 3.1-1, 4/00)

Calculation: (8,760 hours) * (13.75 MMBtu/hr) * (0.0047 lb/MMBtu) * (ton/2000 lb) = 0.28 ton/yr

NO_x Emissions:

Emission factor: 1.63 gram/bhp-hr (Information from company)

Calculations: 1.63 gram/bhp-hr * 1100 bhp * 0.00220 lb/gram * 8760 hr/yr /2000 = 17.28 ton/yr

VOC Emissions:

Emission factor: .018 gram/bhp-hr (Information from company)

Calculations: .018 gram/bhp-hr* 1100 bhp* 0.0022 lb/gram * 8760 hr/yr /2000 = 0.19 ton/yr

CO Emissions:

Emission factor: 2.44 gram/bhp-hr (Information from company)
Calculations: $2.44 \text{ gram/bhp-hr} * 1100 \text{ bhp} * 0.0022 \text{ lb/gram} * 8760 \text{ hr/yr} / 2000 = 25.86 \text{ ton/yr}$

SO_x Emissions:

Emission factor: 0.002 gram/hp-hr (AP-42, Table 3.2-1, 9/85)
Calculations: $0.002 \text{ gram/hp-hr} * 1100 \text{ bhp} * 0.0022 \text{ lb/gram} * 8760 \text{ hr/yr} / 2000 = 0.02 \text{ ton/yr}$

1200 hp Solar, #14

Fuel Consumption Factor = 12550 Btu/hp-hr (Applicant Information)
Consumption Conversion = $(12550 \text{ Btu/hp-hr}) * (1200 \text{ hp}) * (1 \text{ MMBtu}/1\text{E}6 \text{ Btu}) = 15.06 \text{ MMBtu/hr}$
Hours of Operation = 8,760 hours

Filterable PM/PM₁₀/PM_{2.5} Emissions:

Emission Factor = 0.0019 lb/MMBtu (All PM < 1 mm, AP-42, Sec. 3.1, Table 3.1-1, 4/00)
Calculation: $(8,760 \text{ hours}) * (15.06 \text{ MMBtu/hr}) * (0.0019 \text{ lb/MMBtu}) * (\text{ton}/2000 \text{ lb}) = 0.13 \text{ ton/yr}$

Condensable PM Emissions:

Emission Factor = 0.0047 lb/MMBtu (AP-42, Sec. 3.1, Table 3.1-1, 4/00)
Calculation: $(8,760 \text{ hours}) * (15.06 \text{ MMBtu/hr}) * (0.0047 \text{ lb/MMBtu}) * (\text{ton}/2000 \text{ lb}) = 0.31 \text{ ton/yr}$

NO_x Emissions:

Emission factor: 1.49 gram/bhp-hr (Information from company)
Calculations: $1.49 \text{ gram/bhp-hr} * 1200 \text{ bhp} * 0.00220 \text{ lb/gram} * 8760 \text{ hr/yr} / 2000 = 17.23 \text{ ton/yr}$

VOC Emissions:

Emission factor: 0.016 gram/bhp-hr (Information from company)
Calculations: $0.016 \text{ gram/bhp-hr} * 1200 \text{ bhp} * 0.0022 \text{ lb/gram} * 8760 \text{ hr/yr} / 2000 = 0.19 \text{ ton/yr}$

CO Emissions:

Emission factor: 2.23 gram/bhp-hr (Information from company)
Calculations: $2.23 \text{ gram/bhp-hr} * 1200 \text{ bhp} * 0.0022 \text{ lb/gram} * 8760 \text{ hr/yr} / 2000 = 25.79 \text{ ton/yr}$

SO_x Emissions:

Emission factor: 0.002 gram/hp-hr (AP-42, Table 3.2-1, 9/85)
Calculations: $0.002 \text{ gram/hp-hr} * 1200 \text{ bhp} * 0.0022 \text{ lb/gram} * 8760 \text{ hr/yr} / 2000 = 0.02 \text{ ton/yr}$

1149 hp Solar, #15

Fuel Consumption Factor = 10183 Btu/hp-hr (Applicant Information)
Consumption Conversion = $(10183 \text{ Btu/hp-hr}) * (1149 \text{ hp}) * (1 \text{ MMBtu}/1\text{E}6 \text{ Btu}) = 11.70 \text{ MMBtu/hr}$
Hours of Operation = 8,760 hours

Filterable PM/PM₁₀/PM_{2.5} Emissions:

Emission Factor = 0.0019 lb/MMBtu (All PM < 1 mm, AP-42, Sec. 3.1, Table 3.1-1, 4/00)

Calculation: (8,760 hours) * (11.70 MMBtu/hr) * (0.0019 lb/MMBtu) * (ton/2000 lb) = 0.10 ton/yr

Condensable PM Emissions:

Emission Factor = 0.0047 lb/MMBtu (AP-42, Sec. 3.1, Table 3.1-1, 4/00)

Calculation: (8,760 hours) * (11.70 MMBtu/hr) * (0.0047 lb/MMBtu) * (ton/2000 lb) = 0.24 ton/yr

NO_x Emissions

Emission Factor: 2.0 g/bhp (Department BACT Determination – Turbines with Capacity > 360 Hp)

Calculations: 2.0 g/bhp * 1149 Hp * 1 lb/453.6 g * 8760 hr/yr * 0.0005 ton/lb = 22.19 ton/yr

VOC Emissions

Emission Factor: 1.0 g/bhp (Department BACT Determination – Turbines with Capacity > 360 Hp)

Calculations: 1.0 g/bhp * 1149 Hp * 1 lb/453.6 g * 8760 hr/yr * 0.0005 ton/lb = 11.09 ton/yr

CO Emissions

Emission Factor: 3.0 g/bhp (Department BACT Determination – Turbines with Capacity > 360 Hp)

Calculations: 3.0 g/bhp * 1149 Hp * 1 lb/453.6 g * 8760 hr/yr * 0.0005 ton/lb = 33.28 ton/yr

SO_x Emissions

Sulfur Content: 0.80% = S (40 CFR 60.333 Limit)

Emission Factor: 0.94S (AP-42, Table 3.1-2a, 04/00)

0.94 * 0.008 = 0.0075 lb/MMBtu

Calculations: 0.0075 lb/MMBtu * 11.7 MMBtu/hr * 8760 hr/yr * 0.0005 ton/lb = 0.39 ton/yr

3800 hp Solar, #16

Fuel Consumption Factor = 7610 Btu/hp-hr (Applicant Information)

Consumption Conversion = (7610 Btu/hp-hr) * (3800 hp) * (1 MMBtu/1E6 Btu) = 28.92 MMBtu/hr

Hours of Operation = 8,760 hours

Filterable PM/PM₁₀/PM_{2.5} Emissions:

Emission Factor = 0.0019 lb/MMBtu (All PM < 1 mm, AP-42, Sec. 3.1, Table 3.1-1, 4/00)

Calculation: (8,760 hours) * (28.92 MMBtu/hr) * (0.0019 lb/MMBtu) * (ton/2000 lb) = 0.24 ton/yr

Condensable PM Emissions:

Emission Factor = 0.0047 lb/MMBtu (AP-42, Sec. 3.1, Table 3.1-1, 4/00)

Calculation: (8,760 hours) * (28.92 MMBtu/hr) * (0.0047 lb/MMBtu) * (ton/2000 lb) = 0.60 ton/yr

NO_x Emissions:

Emission factor: 2.0 gram/bhp-hr (Information from company)

Calculations: 2.0 gram/bhp-hr * 3500 bhp * 0.00220 lb/gram * 8760 hr/yr /2000 = 67.45 ton/yr

VOC Emissions:

Emission factor: 0.009 gram/bhp-hr (Information from company)
Calculations: $0.009 \text{ gram/bhp-hr} * 3500 \text{ bhp} * 0.0022 \text{ lb/gram} * 8760 \text{ hr/yr} / 2000 = .33 \text{ ton/yr}$

CO Emissions:

Emission factor: 1.65 gram/bhp-hr (Information from company)
Calculations: $1.65 \text{ gram/bhp-hr} * 3500 \text{ bhp} * 0.0022 \text{ lb/gram} * 8760 \text{ hr/yr} / 2000 = 33.73 \text{ ton/yr}$

SO_x Emissions:

Emission factor: 0.002 gram/hp-hr (AP-42, Table 3.2-1, 9/85)
Calculations: $0.002 \text{ gram/hp-hr} * 3500 \text{ bhp} * 0.0022 \text{ lb/gram} * 8760 \text{ hr/yr} / 2000 = 0.07 \text{ ton/yr}$

1775 hp Caterpillar G3606LE, #17

Fuel Consumption Factor = 6822 Btu/hp-hr (Applicant Information)
Consumption Conversion = $(6822 \text{ Btu/hp-hr}) * (1775 \text{ hp}) * (1 \text{ MMBtu}/1\text{E}6 \text{ Btu}) = 12.11 \text{ MMBtu/hr}$
Hours of Operation = 8,760 hours

Filterable PM/PM₁₀/PM_{2.5} Emissions:

Emission Factor = 0.0000771 lb/MMBtu (All PM < 1 um, AP-42, Sec. 3.2, Table 3.2-2, 7/00)
Calculation: $(8,760 \text{ hours}) * (12.11 \text{ MMBtu/hr}) * (0.0000771 \text{ lb/MMBtu}) * (\text{ton}/2000 \text{ lb}) = 0.00 \text{ ton/yr}$

Condensable PM Emissions:

Emission Factor = 0.00991 lb/MMBtu (AP-42, Sec. 3.2, Table 3.2-2, 7/00)
Calculation: $(8,760 \text{ hours}) * (12.11 \text{ MMBtu/hr}) * (0.00991 \text{ lb/MMBtu}) * (\text{ton}/2000 \text{ lb}) = 0.53 \text{ ton/yr}$

NO_x Emissions:

Emission Factor = 0.70 g/bhp-hr (Manufacturer Information)
Calculation: $(8,760 \text{ hours}) * (1775 \text{ hp}) * (0.70 \text{ g/bhp-hr}) * (0.0022 \text{ lb/g}) * (\text{ton}/2000 \text{ lb}) = 11.97 \text{ ton/yr}$

CO Emissions:

Emission Factor = 0.18 g/bhp-hr (Manufacturer Information)
Calculation: $(8,760 \text{ hours}) * (1775 \text{ hp}) * (0.18 \text{ g/bhp-hr}) * (0.0022 \text{ lb/g}) * (\text{ton}/2000 \text{ lb}) = 2.99 \text{ ton/yr}$

VOC Emissions:

Emission Factor = 0.30 g/bhp-hr (Manufacturer Information)
Calculation: $(8,760 \text{ hours}) * (1775 \text{ hp}) * (0.30 \text{ g/bhp-hr}) * (0.0022 \text{ lb/g}) * (\text{ton}/2000 \text{ lb}) = 5.13 \text{ ton/yr}$

SO_x Emissions:

Emission Factor = 0.000588 lb/MMBtu (AP-42, Sec. 3.2, Table 3.2-2, 7/00)
Calculation: $(8,760 \text{ hours}) * (12.11 \text{ MMBtu/hr}) * (0.000588 \text{ lb/MMBtu}) * (\text{ton}/2000 \text{ lb}) = 0.03 \text{ ton/yr}$

559 hp Waukesha, Gen1

Fuel Consumption Factor = 7875 Btu/hp-hr (Applicant Information)

Consumption Conversion = (7875 Btu/hp-hr) * (559 hp) * (1 MMBtu/1E6 Btu) = 4.40 MMBtu/hr

Hours of Operation = 8,760 hours

Filterable PM/PM₁₀/PM_{2.5} Emissions:

Emission Factor = 0.0000771 lb/MMBtu (All PM < 1 mm, AP-42, Sec. 3.2, Table 3.2-2, 7/00)

Calculation: (8,760 hours) * (4.40 MMBtu/hr) * (0.0000771 lb/MMBtu) * (ton/2000 lb) = 0.00 ton/yr

Condensable PM Emissions:

Emission Factor = 0.00991 lb/MMBtu (AP-42, Sec. 3.2, Table 3.2-2, 7/00)

Calculation: (8,760 hours) * (4.40 MMBtu/hr) * (0.00991 lb/MMBtu) * (ton/2000 lb) = 0.19 ton/yr

NO_x Emissions:

Emission factor: 2.0 gram/bhp-hr (Manufacturers Design)

Calculations: 2.0 gram/bhp-hr * 559 bhp * 0.0022 lb/gram * 8760 hr/yr /2000 = 10.77 ton/yr

VOC Emissions:

Emission factor: 1.00 gram/bhp-hr (Manufacturers Design)

Calculations: 1.00 gram/bhp-hr * 559 bhp * 0.0022 lb/gram * 8760 hr/yr /2000 = 5.39 ton/yr

CO Emissions:

Emission factor: 3.30 gram/bhp-hr (Manufacturers Design)

Calculations: 3.30 gram/bhp-hr * 559 bhp * 0.0022 lb/gram * 8760 hr/yr /2000 = 17.78 ton/yr

SO_x Emissions:

Emission factor: 0.002 gram/hp-hr (AP-42, Table 3.2-1, 9/85)

Calculations: 0.002 gram/hp-hr * 559 bhp * 0.0022 lb/gram * 8760 hr/yr /2000 = 0.01 ton/yr

Dehy Heater, Misc1 15.25 MMBtu/hr

Heat Content of Fuel = 1,050 MMBtu/10⁶ cf (Applicant Information)

Consumption Conversion = (15.25 MMBtu/hr) / (1050 MMBtu/10⁶ cf) = 0.01452 10⁶ cf/hr

Maximum Hours of Operation = 8,760 hrs/yr

Filterable PM/PM₁₀/PM_{2.5} Emissions:

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

Calculation: (0.01452 10⁶ cf/hr) * (8760 hrs/yr) * (1.9 lb/10⁶ cf) * (ton/2000 lb) = 0.12 ton/yr

Condensable PM_{2.5} Emissions:

Emission Factor = 5.7 lb/10⁶ cf (AP 42, Table 1.4-2, 7/98)

Calculation: (0.01452 10⁶ cf/hr) * (8760 hrs/yr) * (5.7 lb/10⁶ cf) * (ton/2000 lb) = 0.36 ton/yr

NO_x Emissions:

Emission Factor: 140 lb/10⁶ ft³ gas (AP-42, 1.4-2, 10/92)
Fuel Consumption: 128.58 10⁶ ft³/yr (Application 1988)
Calculations: 128.58 * 10⁶ ft³/yr * 140 lb/10⁶ ft³ gas * 0.0005 ton/lb = 9.00 ton/yr

VOC Emissions:

Emission Factor: 5.8 lb/10⁶ ft³ gas (AP-42, 1.4-3, 10/92)
Fuel Consumption: 128.58 10⁶ ft³/yr (Application 1988)
Calculations: 128.58 * 10⁶ ft³/yr * 5.8 lb/10⁶ ft³ gas * 0.0005 ton/lb = 0.37 ton/yr

CO Emissions:

Emission Factor: 35 lb/10⁶ ft³ (AP-42, 1.4-2, 10/92)
Fuel Consumption: 128.58 10⁶ ft³/yr (Application 1988)
Calculations: 128.58 * 10⁶ ft³/yr * 35 lb/10⁶ ft³ gas * 0.0005 ton/lb = 2.25 ton/yr

SO_x Emissions:

Emission Factor: 0.6 lb/10⁶ ft³ gas (AP-42, 1.4-2, 10/92)
Fuel Consumption: 128.58 10⁶ ft³/yr (Application 1988)
Calculations: 128.58 * 10⁶ ft³/yr * 0.6 lb/10⁶ ft³ gas * 0.0005 ton/lb = 0.04 ton/yr

New Boiler, Misc2 1.5 MMBtu/hr

Heat Content of Fuel = 1,050 MMBtu/10⁶ cf (Applicant Information)

Consumption Conversion = (1.5 MMBtu/hr) / (1050 MMBtu/10⁶ cf) = 0.00143 10⁶ cf/hr

Maximum Hours of Operation = 8,760 hrs/yr

Filterable PM/PM₁₀/PM_{2.5} Emissions:

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

Calculation: (0.00143 10⁶ cf/hr) * (8760 hrs/yr) * (1.9 lb/10⁶ cf) * (ton/2000 lb) = 0.01 ton/yr

Condensable PM_{2.5} Emissions:

Emission Factor = 5.7 lb/10⁶ cf (AP 42, Table 1.4-2, 7/98)

Calculation: (0.00143 10⁶ cf/hr) * (8760 hrs/yr) * (5.7 lb/10⁶ cf) * (ton/2000 lb) = 0.04 ton/yr

CO Emissions:

Emission Factor = 84 lb/10⁶ cf (AP 42, Table 1.4-2, 7/98)

Calculation: (0.00143 10⁶ cf/hr) * (8760 hrs/yr) * (84 lb/10⁶ cf) * (ton/2000 lb) = 0.52560 ton/yr

NO_x Emissions:

Emission Factor = 100 lb/10⁶ cf (AP 42, Table 1.4-1, Small Boilers < 100 MMBtu/hr, 7/98)

Calculation: (0.00143 10⁶ cf/hr) * (8760 hrs/yr) * (100 lb/10⁶ cf) * (ton/2000 lb) = 0.62571 ton/yr

SO₂ Emissions:

Emission Factor = 0.6 lb/10⁶ cf (AP 42, Table 1.4-2, 7/98)

Calculation: (0.00143 10⁶ cf/hr) * (8760 hrs/yr) * (0.6 lb/10⁶ cf) * (ton/2000 lb) = 0.00375 ton/yr

VOC Emissions:

Emission Factor = 5.5 lb/10⁶ cf (AP 42, Table 1.4-2, 7/98)

Calculation: (0.00143 10⁶ cf/hr) * (8760 hrs/yr) * (5.5 lb/10⁶ cf) * (ton/2000 lb) = 0.03441 ton/yr

New Boiler, Misc3 1.5 MMBtu/hr

Heat Content of Fuel = 1,050 MMBtu/10⁶ cf (Applicant Information)

Consumption Conversion = (1.5 MMBtu/hr) / (1050 MMBtu/10⁶ cf) = 0.00143 10⁶ cf/hr

Maximum Hours of Operation = 8,760 hrs/yr

Filterable PM/PM₁₀/PM_{2.5} Emissions:

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

Calculation: (0.00143 10⁶ cf/hr) * (8760 hrs/yr) * (1.9 lb/10⁶ cf) * (ton/2000 lb) = 0.01 ton/yr

Condensable PM_{2.5} Emissions:

Emission Factor = 5.7 lb/10⁶ cf (AP 42, Table 1.4-2, 7/98)

Calculation: (0.00143 10⁶ cf/hr) * (8760 hrs/yr) * (5.7 lb/10⁶ cf) * (ton/2000 lb) = 0.04 ton/yr

CO Emissions:

Emission Factor = 84 lb/10⁶ cf (AP 42, Table 1.4-2, 7/98)

Calculation: (0.00143 10⁶ cf/hr) * (8760 hrs/yr) * (84 lb/10⁶ cf) * (ton/2000 lb) = 0.52560 ton/yr

NO_x Emissions:

Emission Factor = 100 lb/10⁶ cf (AP 42, Table 1.4-1, Small Boilers < 100 MMBtu/hr, 7/98)

Calculation: (0.00143 10⁶ cf/hr) * (8760 hrs/yr) * (100 lb/10⁶ cf) * (ton/2000 lb) = 0.62571 ton/yr

SO₂ Emissions:

Emission Factor = 0.6 lb/10⁶ cf (AP 42, Table 1.4-2, 7/98)

Calculation: (0.00143 10⁶ cf/hr) * (8760 hrs/yr) * (0.6 lb/10⁶ cf) * (ton/2000 lb) = 0.00375 ton/yr

VOC Emissions:

Emission Factor = 5.5 lb/10⁶ cf (AP 42, Table 1.4-2, 7/98)

Calculation: (0.00143 10⁶ cf/hr) * (8760 hrs/yr) * (5.5 lb/10⁶ cf) * (ton/2000 lb) = 0.03441 ton/yr

Eclipse Heater, Misc4 450,000 Btu/hr

Heat Content of Fuel = 1,050 MMBtu/10⁶ cf (Applicant Information)

Consumption Conversion = (0.45 MMBtu/hr) / (1050 MMBtu/10⁶ cf) = 0.00043 10⁶ cf/hr

Maximum Hours of Operation = 8,760 hrs/yr

Filterable PM/PM₁₀/PM_{2.5} Emissions:

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

Calculation: (0.00043 10⁶ cf/hr) * (8760 hrs/yr) * (1.9 lb/10⁶ cf) * (ton/2000 lb) = 0.00 ton/yr

Condensable PM_{2.5} Emissions:

Emission Factor = 5.7 lb/10⁶ cf (AP 42, Table 1.4-2, 7/98)

Calculation: (0.00043 10⁶ cf/hr) * (8760 hrs/yr) * (5.7 lb/10⁶ cf) * (ton/2000 lb) = 0.01 ton/yr

NO_x Emissions:

Emission Factor: 100 lb/10⁶ ft³ gas (AP-42, 1.4-2, 10/92)

Fuel Consumption: 3.79 10⁶ ft³/yr (Application 1988)

Calculations: 3.79 * 10⁶ ft³/yr * 100 lb/10⁶ ft³ gas * 0.0005 ton/lb = 0.19 ton/yr

VOC Emissions:

Emission Factor: 5.8 lb/10⁶ ft³ gas (AP-42, 1.4-3, 10/92)

Fuel Consumption: 3.79 10⁶ ft³/yr (Application 1988)

Calculations: 3.79 * 10⁶ ft³/yr * 5.8 lb/10⁶ ft³ gas * 0.0005 ton/lb = 0.01 ton/yr

CO Emissions:

Emission Factor: 21 lb/10⁶ ft³ gas (AP-42, 1.4-2, 10/92)

Fuel Consumption: 3.79 10⁶ ft³/yr (Application 1988)

Calculations: 3.79 * 10⁶ ft³/yr * 21 lb/10⁶ ft³ gas * 0.0005 ton/lb = 0.04 ton/yr

SO_x Emissions:

Emission Factor: 0.6 lb/10⁶ ft³ gas (AP-42, 1.4-2, 10/92)

Fuel Consumption: 3.79 10⁶ ft³/yr (Application 1988)

Calculations: 3.79 * 10⁶ ft³/yr * 0.6 lb/10⁶ ft³ gas * 0.0005 ton/lb = 0.00 ton/yr

Reliance Heater, Misc6 0.03 MMBtu/hr

Heat Content of Fuel = 1,050 MMBtu/10⁶ cf (Applicant Information)

Consumption Conversion = (0.03 MMBtu/hr) / (1050 MMBtu/10⁶ cf) = 0.00003 10⁶ cf/hr

Maximum Hours of Operation = 8,760 hrs/yr

Filterable PM/PM₁₀/PM_{2.5} Emissions:

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

Calculation: (0.00003 10⁶ cf/hr) * (8760 hrs/yr) * (1.9 lb/10⁶ cf) * (ton/2000 lb) = 0.00024 ton/yr

Condensable PM_{2.5} Emissions:

Emission Factor = 5.7 lb/10⁶ cf (AP 42, Table 1.4-2, 7/98)

Calculation: (0.00003 10⁶ cf/hr) * (8760 hrs/yr) * (5.7 lb/10⁶ cf) * (ton/2000 lb) = 0.00071 ton/yr

CO Emissions:

Emission Factor = 84 lb/10⁶cf (AP 42, Table 1.4-2, 7/98)

Calculation: (0.00003 10⁶cf/hr) * (8760 hrs/yr) * (84 lb/10⁶cf) * (ton/2000 lb) = 0.01051 ton/yr

NO_x Emissions:

Emission Factor = 100 lb/10⁶cf (AP 42, Table 1.4-1, Small Boilers < 100 MMBtu/hr, 7/98)

Calculation: (0.00003 10⁶cf/hr) * (8760 hrs/yr) * (100 lb/10⁶cf) * (ton/2000 lb) = 0.01251 ton/yr

SO₂ Emissions:

Emission Factor = 0.6 lb/10⁶cf (AP 42, Table 1.4-2, 7/98)

Calculation: (0.00003 10⁶cf/hr) * (8760 hrs/yr) * (0.6 lb/10⁶cf) * (ton/2000 lb) = 0.00008 ton/yr

VOC Emissions:

Emission Factor = 5.5 lb/10⁶cf (AP 42, Table 1.4-2, 7/98)

Calculation: (0.00003 10⁶cf/hr) * (8760 hrs/yr) * (5.5 lb/10⁶cf) * (ton/2000 lb) = 0.00069 ton/yr

Seigler Heater, Misc7 0.07 MMBtu/hr

Heat Content of Fuel = 1,050 MMBtu/10⁶ cf (Applicant Information)

Consumption Conversion = (0.07 MMBtu/hr) / (1050 MMBtu/10⁶ cf) = 0.00007 10⁶ cf/hr

Maximum Hours of Operation = 8,760 hrs/yr

Filterable PM/PM₁₀/PM_{2.5} Emissions:

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

Calculation: (0.00007 10⁶ cf/hr) * (8760 hrs/yr) * (1.9 lb/10⁶ cf) * (ton/2000 lb) = 0.00055 ton/yr

Condensable PM_{2.5} Emissions:

Emission Factor = 5.7 lb/10⁶ cf (AP 42, Table 1.4-2, 7/98)

Calculation: (0.00007 10⁶ cf/hr) * (8760 hrs/yr) * (5.7 lb/10⁶ cf) * (ton/2000 lb) = 0.00166 ton/yr

CO Emissions:

Emission Factor = 84 lb/10⁶cf (AP 42, Table 1.4-2, 7/98)

Calculation: (0.00007 10⁶cf/hr) * (8760 hrs/yr) * (84 lb/10⁶cf) * (ton/2000 lb) = 0.02453 ton/yr

NO_x Emissions:

Emission Factor = 100 lb/10⁶cf (AP 42, Table 1.4-1, Small Boilers < 100 MMBtu/hr, 7/98)

Calculation: (0.00007 10⁶cf/hr) * (8760 hrs/yr) * (100 lb/10⁶cf) * (ton/2000 lb) = 0.02920 ton/yr

SO₂ Emissions:

Emission Factor = 0.6 lb/10⁶cf (AP 42, Table 1.4-2, 7/98)

Calculation: (0.00007 10⁶cf/hr) * (8760 hrs/yr) * (0.6 lb/10⁶cf) * (ton/2000 lb) = 0.00018 ton/yr

VOC Emissions:

Emission Factor = 5.5 lb/10⁶cf (AP 42, Table 1.4-2, 7/98)

Calculation: (0.00007 10⁶cf/hr) * (8760 hrs/yr) * (5.5 lb/10⁶cf) * (ton/2000 lb) = 0.00161 ton/yr

Janitrol Heater, Misc8 0.07 MMBtu/hr

Heat Content of Fuel = 1,050 MMBtu/10⁶ cf (Applicant Information)

Consumption Conversion = (0.07 MMBtu/hr) / (1050 MMBtu/10⁶ cf) = 0.00007 10⁶ cf/hr

Maximum Hours of Operation = 8,760 hrs/yr

Filterable PM/PM₁₀/PM_{2.5} Emissions:

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

Calculation: (0.00007 10⁶ cf/hr) * (8760 hrs/yr) * (1.9 lb/10⁶ cf) * (ton/2000 lb) = 0.00055 ton/yr

Condensable PM_{2.5} Emissions:

Emission Factor = 5.7 lb/10⁶ cf (AP 42, Table 1.4-2, 7/98)

Calculation: (0.00007 10⁶ cf/hr) * (8760 hrs/yr) * (5.7 lb/10⁶ cf) * (ton/2000 lb) = 0.00166 ton/yr

CO Emissions:

Emission Factor = 84 lb/10⁶cf (AP 42, Table 1.4-2, 7/98)

Calculation: (0.00007 10⁶cf/hr) * (8760 hrs/yr) * (84 lb/10⁶cf) * (ton/2000 lb) = 0.02453 ton/yr

NO_x Emissions:

Emission Factor = 100 lb/10⁶cf (AP 42, Table 1.4-1, Small Boilers < 100 MMBtu/hr, 7/98)

Calculation: (0.00007 10⁶cf/hr) * (8760 hrs/yr) * (100 lb/10⁶cf) * (ton/2000 lb) = 0.02920 ton/yr

SO₂ Emissions:

Emission Factor = 0.6 lb/10⁶cf (AP 42, Table 1.4-2, 7/98)

Calculation: (0.00007 10⁶cf/hr) * (8760 hrs/yr) * (0.6 lb/10⁶cf) * (ton/2000 lb) = 0.00018 ton/yr

VOC Emissions:

Emission Factor = 5.5 lb/10⁶cf (AP 42, Table 1.4-2, 7/98)

Calculation: (0.00007 10⁶cf/hr) * (8760 hrs/yr) * (5.5 lb/10⁶cf) * (ton/2000 lb) = 0.00161 ton/yr

V. Existing Air Quality

The existing air quality in the proposed area of operation is unclassified or attainment for all national and Montana ambient air quality standards.

VI. Air Quality Impacts

The current permit action is an administrative permitting action with no associated increase in potential emissions. Therefore, there are no air quality impacts expected.

VII. Ambient Air Impact Analysis

The current permit action is an administrative permitting action with no associated increase in potential emissions. Therefore, the Department did not conduct an ambient air impact analysis. MAQP #2484-06 has limits and conditions that are designed to be protective of all ambient air quality standards.

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	
X		1. Does the action pertain to land or water management or environmental regulation affecting private real property or water rights?
	X	2. Does the action result in either a permanent or indefinite physical occupation of private property?
	X	3. Does the action deny a fundamental attribute of ownership? (ex.: right to exclude others, disposal of property)
	X	4. Does the action deprive the owner of all economically viable uses of the property?

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

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

IX. Environmental Assessment

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

Analysis Prepared By: Ed Warner

Date: 1/2/13