



Montana Department of
ENVIRONMENTAL QUALITY

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February 4, 2013

Mr. Ron L. Lowney
WBI Energy Transmission, Inc.
2010 Montana Avenue
Glendive, MT 59330

Dear Mr. Lowney:

Montana Air Quality Permit #2801-04 is deemed final as of February 2, 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

Deanne Fischer, P.E.
Environmental Engineer
Air Resources Management Bureau
(406) 444-3403

JM:DF
Enclosure

Montana Department of Environmental Quality
Permitting and Compliance Division

Montana Air Quality Permit #2801-04

WBI Energy Transmission, Inc.
Monarch Compressor Station
2010 Montana Avenue
Glendive, MT 59330

February 2, 2013



MONTANA AIR QUALITY PERMIT

Issued To: WBI Energy Transmission, Inc.
Monarch Compressor Station
2010 Montana Avenue
P.O. Box 131
Glendive, MT 59330

MAQP: #2801-04
Administrative Amendment (AA)
Request Received: 12/10/2012
Department's Decision on AA: 01/17/2013
Permit Final: 02/02/2013
AFS #:025-0008

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

SECTION I: Permitted Facilities

A. Plant Location

WBI owns and operates a natural gas compressor station and associated equipment located in the Northeast ¼ of Section 36, Township 9 North, Range 58 East, Fallon County, Montana. The facility is known as the Monarch Compressor Station. The list of permitted equipment can be found in Section I of the permit analysis.

B. Current Permit Action

On December 10, 2012, the Department of Environmental Quality-Air Resources Management Bureau (Department) received a request to change the permittee name from Williston Basin Interstate Pipeline Company to WBI Energy Transmission, Inc. (WBI). The current permit action is an administrative amendment pursuant to ARM 17.8.764 that changes the permittee name as requested.

SECTION II: Conditions and Limitations

A. Emission Limitations

1. WBI shall properly operate and maintain the two, 2,370-brake horsepower (bhp) compressor engines and associated control equipment. The engines shall be of a 4-stroke lean-burn engine class and shall be equipped with oxidation catalyst (ARM 17.8.749 and ARM 17.8.752).
2. The pound per hour (lb/hr) emission limits for each 2,370-bhp compressor engine (Unit #3 and Unit #4) shall be determined using the following equation and pollutant specific grams per brake horsepower-hour (g/bhp-hr) emission factors (ARM 17.8.749 and ARM 17.8.752):

Equation:

Emission Limit (lb/hr) = Emission Factor (g/bhp-hr) * maximum rated design capacity of engine (bhp) * 0.002205 lb/g

Emission Factors:

Oxides of Nitrogen (NO_x): 0.50 g/bhp-hr
Carbon Monoxide (CO): 0.20 g/bhp-hr
Volatile Organic Compounds (VOC): 0.32 g/bhp-hr

3. Emissions from each of the 2,000 brake horsepower (bhp) Superior 12SGTB compressor engines (Unit #1 and Unit #2) shall not exceed the following (ARM 17.8.749 and ARM 17.8.752):

NO _x ¹	8.80 lb/hr
CO	10.00 lb/hr
VOC	4.40 lb/hr

4. The hours of operation of each 2,000-hp Superior 12SGTB compressor engine shall not exceed 8,000 hours per rolling 12-month time period (ARM 17.8.749, ARM 17.8.1204).
5. Emissions from the 248-bhp Waukesha F1197G emergency generator engine shall not exceed the following (ARM 17.8.749 and ARM 17.8.752):

NO _x	10.91 lb/hr
CO	0.55 lb/hr
VOC	0.55 lb/hr

6. WBI shall operate the 248-hp Waukesha F1197G generator engine in a backup or emergency capacity only (up to 500 hours per rolling 12-month time period), except for engine maintenance related operations (ARM 17.8.749).
7. WBI shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any sources or stacks installed or modified after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.304).
8. WBI shall not cause or authorize the use of any street, road, or parking area without taking reasonable precautions to control emissions of airborne particulate matter (ARM 17.8.308).
9. 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.A.8 (ARM 17.8.749).
10. WBI shall operate all equipment to provide the maximum air pollution control for which it was designed (ARM 17.8.752).
11. WBI shall comply with all applicable standards and limitations, monitoring, reporting, recordkeeping, and notification requirements contained in 40 CFR 60, Subpart JJJJ and 40 CFR 63, Subpart ZZZZ (ARM 17.8.340 and 40 CFR 60, Subpart JJJJ, and ARM 17.8.342 and 40 CFR 63, Subpart ZZZZ).

¹ NO_x reported as NO₂.

B. Testing Requirements

1. Each 2,370-bhp compressor engine shall be tested for NO_x and CO, concurrently, within 180 days of the initial start-up date of each compressor engine (ARM 17.8.105 and ARM 17.8.749).
2. Each of the four compressor engines shall be tested for NO_x and CO, concurrently, on an every 4-year basis, or according to another testing/monitoring schedule as may be approved in writing by the Department (ARM 17.8.105 and ARM 17.8.749).
3. All compliance source tests shall conform to the requirements of the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).
4. The Department may require further testing, including testing of other emitting units (ARM 17.8.105).

C. Operational Reporting Requirements

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 estimated 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, that would include *the addition of a new emissions unit*, change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation. The notice must be submitted to the Department, in writing, 10 days prior to startup or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.745(1)(d) (ARM 17.8.745).
3. WBI shall document, by month, the hours of operation of each 2,000-bhp compressor engine. By the 25th day of each month, WBI shall total the hours of operation for the previous month, and calculate the rolling 12-month sum. The monthly information will be used to verify compliance with the rolling 12-month limitation of Section II.A.4. The monthly information shall be submitted to the Department upon request, and shall be submitted along with the annual emissions inventory.
4. WBI shall annually certify that its emissions are less than those that would require the source to obtain an air quality operating permit as required by ARM 17.8.1204(3)(b). The annual certification shall comply with the certification requirements of ARM 17.8.1207. The annual certification shall be submitted along with the annual emissions inventory information (ARM 17.8.749 and ARM 17.8.1204).

5. 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).

SECTION 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 (continuous emissions monitoring system (CEMS), continuous emissions rate monitoring system (CERMS)) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.
- B. Waiver – The permit and the terms, conditions, and matters stated herein shall be deemed accepted if 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 of the MAQP 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
WBI Energy Transmission, Inc.
Monarch Compressor Station
MAQP #2801-04

I. Introduction/Process Description

A. Permitted Equipment

WBI Energy Transmission, Inc. (WBI) owns and operates a natural gas compressor station. The facility is located in the Northeast ¼ of Section 36, Township 9 North, Range 58 East, Fallon County, Montana, and is known as the Monarch Compressor Station. WBI's Monarch compressor station includes, but is not limited to, the following equipment:

Source ID #	Source
EU #1	2000-bhp 4-stroke 'Clean-Burn' Compressor Engine (Superior 12SGTB)
EU #2	2000-bhp 4-stroke 'Clean-Burn' Compressor Engine (Superior 12SGTB)
EU #3	2370-bhp 4-stroke Lean-Burn compressor engine w/ oxidation catalyst (CAT 3608 LE)
EU #4	2370-bhp 4-stroke Lean-Burn compressor engine w/ oxidation catalyst (CAT 3608 LE)
EU #5	248-bhp Emergency Generator (Waukesha F1197G)
EU #6	TEG Dehydration Unit Still Vent
IEU #1a	Tri-ethylene Glycol (TEG) Dehydration Unit Reboiler - 1.5 MMBtu/hr
IEU #1b	Flash Tank (to atmosphere)
IEU #2	2.47 MMBtu/hr Boiler (Weil Mclain Boiler)
IEU #3	0.063 MMBtu/hr Water Heater (A.O. Smith)
IEU #4	0.075 MMBtu/hr Space Heater (Gordon Ray)
IEU #5	0.075 MMBtu/hr Space Heater (Gordon Ray)

** bhp = brake horsepower
EU = Emitting Unit
hr = hour
IEU = Insignificant Emitting Unit
MMBtu = million British Thermal Units

B. Source Description

The complex has several purposes. The first is to pump the field gas up to the required pressure in the natural gas transmission system. Compression of the gas is accomplished using the compressor engines described above. Three heaters provide heat to the various station facilities.

The second purpose of the complex is to "dry" the gas. The gas contains some moisture, which must be removed from the system prior to being sent into the transmission system. This is accomplished with a tri-ethylene glycol dehydrator.

The gas is treated with a tri-ethylene glycol solution, which absorbs the water in the gas stream. The glycol solution is then heated to about 300 degrees Fahrenheit (°F) to drive off the water and return the glycol. The heat necessary for this activity is generated by burning natural gas in the dehydrator reboiler.

C. Permit History

On November 7, 1993, WBI submitted a permit application to operate two, 2,000-bhp Superior 12 SGTB compressor engines and associated equipment at a compressor station in Fallon County. **MAQP #2801-00** was issued on March 15, 1994.

MAQP #2801-01 was issued in response to a modification request from WBI. WBI requested that the carbon monoxide (CO) emission limit for the two, 2,000-bhp Superior 12SGTB compressor engines be reduced from 13.2 pounds per hour to 10.0 pounds per hour. After this permit action, WBI was considered a synthetic minor source from the Title V operating permit program. In addition, the permit was updated to reflect the current format and language. **MAQP #2801-01** was issued on June 15, 2000.

After further review, the Department of Environmental Quality (Department) determined that the Title V synthetic minor language needed in **MAQP #2801-01** was not included in the previous modification. Specifically, a requirement for annual certification of being below the Title V permitting threshold was necessary for those sources classified as Title V synthetic minors. WBI became a synthetic minor source following the issuance of **MAQP #2801-01**. **MAQP #2801-02** addressed the administrative action and replaced **MAQP #2801-01**.

On January 10, 2011, the Department received an application for a modification to add two 2,370 bhp 4-stroke lean-burn compressor engines equipped with oxidation catalyst. An affidavit of public notice was received on February 1, 2011, and final correspondence completed the application on February 15, 2011.

In addition, a review of previous permit actions was accomplished to determine the appropriate rule reference and status of the allowable carbon monoxide (CO) emissions reduction accomplished in **MAQP #2801-01**. The permit history led the permitter to believe an Administrative Rules of Montana (ARM) 17.8.1204 reference may have been missed in the permitting action of **MAQP 2801-01** or **-02**. The modification action of **MAQP #2801-01** reduced the allowable emissions rate. The action was essentially updating the appropriate emissions factor, correcting the Best Available Control Technology (BACT) condition, and accepted with the BACT reference in **MAQP #2801-01**. Therefore, no ARM 17.8.1204 reference was appropriate for that CO limit.

The Department added the two compressor engines, and updated the permit to reflect current permit language and rule references used by the Department. **MAQP #2801-03** replaced **MAQP #2801-02**.

D. Current Permit Action

On December 10, 2012, the Department received a request to change the permittee name from Williston Basin Interstate Pipeline Company to WBI Energy Transmission, Inc. (WBI). The current permit action is an administrative amendment pursuant to ARM 17.8.764 that changes the permittee name as requested. **MAQP #2801-04** replaces MAQP #2801-03.

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 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 to, using the proper test methods and supplying the required reports. A copy of the Montana Source Test Protocol and Procedures Manual is available from the Department upon request.

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

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

1. ARM 17.8.204 Ambient Air Monitoring
2. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide
3. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide
4. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide
5. ARM 17.8.213 Ambient Air Quality Standard for Ozone
6. ARM 17.8.214 Ambient Air Quality Standard for Hydrogen Sulfide
7. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter
8. ARM 17.8.221 Ambient Air Quality Standard for Visibility
9. ARM 17.8.222 Ambient Air Quality Standard for Lead
10. ARM 17.8.223 Ambient Air Quality Standard for 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 less than 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 17.8.322 Sulfur Oxide Emissions--Sulfur in Fuel. (4) Commencing July 1, 1972, no person shall burn liquid or solid fuels containing sulfur in excess of 1 pound of sulfur per million Btu fired. (5) 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. WBI will burn pipeline quality natural gas, which will meet this limitation.
6. ARM 17.8.324 Hydrocarbon Emissions--Petroleum Products. (3) No person shall load or permit the loading of gasoline into any stationary tank with a capacity of 250 gallons or more from any tank truck or trailer, except through a permanent submerged fill pipe, unless such tank is equipped with a vapor loss control device as described in (1) of this rule.
7. ARM 17.8.340 Standard of Performance for New Stationary Sources and Emission Guidelines for Existing Sources. This rule incorporates, by reference, 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS). This facility is an NSPS affected source because it meets the definition of a NSPS subpart defined in 40 CFR Part 60.

- 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 JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. The provisions of this subpart are applicable to owners and operators of stationary spark ignition internal combustion engines (SI ICE) that commence modification or reconstruction after June 12, 2006. Therefore, the two CAT G3608 LE compressor engines may be subject to this standard.
 - c. 40 CFR 60, Subpart KK – Standards of Performance for Equipment leaks of VOC from Onshore Natural Gas Processing Plants. The provisions of this subpart apply to affected facilities in onshore natural gas processing plants. Natural gas processing plant (gas plant) is defined in this subpart as any processing site engaged in the extraction of natural gas liquids from field gas, fractionation of mixed natural gas liquids to natural gas products, or both. Therefore, WBI is not subject to this subpart.
8. ARM 17.8.341 Emission Standards for Hazardous Air Pollutants. This source shall comply with the standards and provisions of 40 CFR Part 61, as appropriate.
9. ARM 17.8.342 Emission Standards for Hazardous Air Pollutants for Source Categories. The source, as defined and applied in 40 CFR Part 63, shall comply with the requirements of 40 CFR Part 63, as listed below:
- a. 40 CFR 63, Subpart A – General Provisions apply to all equipment or facilities subject to an New Emissions Standard for Hazardous Air Pollutants (NESHAP) Subpart as listed below:
 - b. 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 applicable provisions of 40 CFR 63, Subpart HH. In order for a natural gas production facility to be subject to 40 CFR 63, Subpart HH requirements, certain criteria must be met. First, the facility must be a major or area source of Hazardous Air Pollutants (HAPs) as determined according to paragraphs (a)(1)(i) through (a)(1)(iii) of 40 CFR 63, Subpart HH. Second, a facility that is determined to be a major or area source for HAPs must also either process, upgrade, or store hydrocarbon liquids prior to the point of custody transfer, or process, upgrade, or store natural gas prior to the point at which natural gas enters the natural gas transmission and storage source category or is delivered to a final end user. Third, the facility must also contain an affected source as specified in paragraphs (b)(1) through (b)(4) of 40 CFR 63, Subpart HH. Finally, if the first three criteria are met, and the exemptions contained in paragraphs (e)(1) and (e)(2) of 40 CFR 63, Subpart HH do not apply, the facility is subject to the applicable provisions of 40 CFR 63, Subpart HH. Based on the information submitted by WBI Energy, the facility is not a major source of HAPs. For area sources under 40 CFR 63, Subpart HH, the affected sources include each TEG glycol dehydration unit. The WBI Monarch compressor station operates TEG units; however, because the glycol dehydration unit emits less than 0.9 megagrams (one ton per year (TPY)) of benzene, it is exempt from the control requirements listed in 40 CFR 63, Subpart HH. Records of the determinations applicable to this exemption must be maintained as required in 40 CFR 63.774(d)(1)..

- c. 40 CFR 63, Subpart HHH - National Emission Standards for Hazardous Air Pollutants From Natural Gas Transmission and Storage Facilities. This subpart applies to owners and operators of natural gas transmission and storage facilities that transport or store natural gas prior to entering the pipeline to a local distribution company or to a final end user (if there is no local distribution company), and that are major sources of hazardous air pollutant (HAP) emissions as defined in 40 CFR 63.1271. WBI is not a major source of HAP emissions; therefore, this subpart does not apply.
 - d. 40 CFR 63, Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE). An owner or operator of a stationary RICE at a major or area source of HAP emissions is subject to this subpart, except if the stationary RICE is being tested at a stationary RICE test cell/stand. Therefore, WBI is subject to this subpart.
- D. ARM 17.8, Subchapter 4 – Stack Height and Dispersion Techniques, including, but not limited to:
- 1. ARM 17.8.401 Definitions. This rule includes a list of definitions used in this chapter, unless indicated otherwise in a specific subchapter.
 - 2. ARM 17.8.402 Requirements. WBI must demonstrate compliance with the ambient air quality standards with a stack height that does not exceed Good Engineering Practices (GEP). The proposed height of the new or modified stack for WBI is below the allowable 65-meter GEP stack height.
- E. 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 MAQP application fee concurrent with the submittal of an MAQP application. A permit application is incomplete until the proper application fee is paid to the Department. WBI was not required to submit a permit application fee for the current permit action because it is considered an administrative action.
 - 2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an MAQP (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 MAQP 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.
- F. 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 MAQP or permit modification to construct, modify, or use any air contaminant sources that have the potential to emit (PTE) greater than 25 tons per year of any pollutant. WBI has a PTE greater than 25 tons per year of oxides of nitrogen (NO_x), CO, and volatile organic compounds (VOC); therefore, an MAQP is required.
3. ARM 17.8.744 Montana Air Quality Permits--General Exclusions. This rule identifies the activities that are not subject to the MAQP 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 MAQP Program.
5. ARM 17.8.748 New or Modified Emitting Units--Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, modification, or use of a source. WBI was not required to submit a permit application for the current permit action because it is considered an administrative 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. WBI was not required to submit a public notice for the current permit action because it is considered an administrative action.
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 MAQPs 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 MAQP shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or modified source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.

12. ARM 17.8.763 Revocation of Permit. An MAQP 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 MAQP 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 MAQP 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.
- G. ARM 17.8, Subchapter 8 – Prevention of Significant Deterioration of Air Quality, including, but not limited to:
1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this subchapter.
 2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications--Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through ARM 17.8.827 shall apply to any major stationary source and any major modification, with respect to each pollutant subject to regulation under the FCAA that it would emit, except as this subchapter would otherwise allow.

This facility is not a major stationary source because this facility is not a listed source and the facility's PTE is below 250 tons per year of any pollutant.

- H. 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/year of any pollutant;
 - b. PTE > 10 tons/year of any one hazardous air pollutant (HAP), PTE > 25 tons/year of a combination of all HAPs, or lesser quantity as the Department may establish by rule; or
 - c. PTE > 70 tons/year of particulate matter with an aerodynamic diameter of 10 microns or less (PM₁₀) in a serious PM₁₀ nonattainment area.
 2. ARM 17.8.1204 Air Quality Operating Permit Program. (1) Title V of the FCAA amendments of 1990 requires that all sources, as defined in ARM 17.8.1204(1), obtain a Title V Operating Permit. In reviewing and issuing MAQP #2801-04 for WBI, the following conclusions were made:

- a. The facility's PTE is less than 100 tons/year for any pollutant.
- b. The facility's PTE is less than 10 tons/year for any one HAP and less than 25 tons/year for all HAPs.
- c. This source is not located in a serious PM₁₀ nonattainment area.
- d. This facility is subject to current NSPS (Subpart JJJJ).
- e. This facility is subject to current NESHAP standards (Subpart ZZZZ).
- f. This source is not a Title IV affected source.
- g. This source is not a solid waste combustion unit.
- h. As allowed by ARM 17.8.1204(3), the Department may exempt a source from the requirement to obtain an air quality operating permit by establishing federally enforceable limitations which limit that source's PTE.
 - i. In applying for an exemption under this section, the owner or operator of the source shall certify to the Department that the source's potential to emit, does not require the source to obtain an air quality operating permit.
 - ii. Any source that obtains a federally enforceable limit on potential to emit shall annually certify that its actual emissions are less than those that would require the source to obtain an air quality operating permit.

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

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

3. ARM 17.8.1207 Certification of Truth, Accuracy, and Completeness.

WBI shall annually certify that its actual emissions are less than those that would require the source to obtain an air quality operating permit as required by ARM 17.8.1204 (3)(b). The annual certification shall comply with requirements of ARM 17.8.1207. The annual certification shall be submitted along with the annual emission inventory information.

III. BACT Determination

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

IV. Emissions Inventory

Williston Basin Interstate Pipeline Company									
Monarch Compressor Station									
Source	PM	PM₁₀	PM_{2.5}	NO_x	CO	VOC	SO₂	CH₂O	HAPs
2000-hp Superior 12SGTB	0.57	0.57	0.57	35.20	40.00	17.60	0.03	3.00	4.10
2000-hp Superior 12SGTB	0.57	0.57	0.57	35.20	40.00	17.60	0.03	3.00	4.10
2370-hp CAT 3608 LE	0.78	0.78	0.78	11.42	4.57	7.31	0.05	1.03	2.55
2370-hp CAT 3608 LE	0.78	0.78	0.78	11.42	4.57	7.31	0.05	1.03	2.55
248-hp Waukesha F1197G Backup/Emergency Generator	0.01	0.01	0.01	2.73	0.14	0.14	0.00	0.01	0.02
TEG Dehydration Unit Reboiler - 1.5 MMBtu/hr	0.05	0.05	0.05	0.63	0.53	0.03	0.00	0.00	0.02
TEG Dehydration Unit Still Vent						29.71			5.22
Flash Tank (to atmosphere)						4.61			0.03
2.47 MMBtu/hr Boiler (Weil Mclein)	0.08	0.08	0.08	1.03	0.87	0.06	0.01	0.00	0.02
0.063 MMBtu/hr Water Heater (A.O. Smith)	0.00	0.00	0.00	0.03	0.02	0.00	0.00	0.00	0.00
0.075 MMBtu/hr Space Heater (Gordon Ray)	0.00	0.00	0.00	0.03	0.03	0.00	0.00	0.00	0.00
0.075 MMBtu/hr Space Heater (Gordon Ray)	0.00	0.00	0.00	0.03	0.03	0.00	0.00	0.00	0.00
TOTAL:	2.84	2.84	2.84	97.71	90.74	84.37	0.17	8.08	18.60

**** Notes:**

- Calculated for MAQP#2801-03.
- Some emissions may show zero due to rounding. See calculations below. The emissions represent allowable emissions based on a requested hours of operation limitation on the 2000-hp Superior 12SGTB engines.
- TEG Dehydration Vent and Flash Tank emissions calculated using Gly-Calc Version 4.0 - see application

bhp = brake horsepower

Btu = British thermal unit

CAT = Caterpillar compressor engine

CH₂O = formaldehyde

CO = carbon monoxide

g/bhp-hr = grams per brake-horsepower hour

HAPs = hazardous air pollutants

hp = horsepower

hr = hour

lb = pound

MMBtu = million british thermal units

MMscf = million standard cubic feet

NO_x = oxides of nitrogen

PM = particulate matter

PM₁₀ = particulate matter with an aerodynamic diameter of 10 microns or less

PM_{2.5} = particulate matter with an aerodynamic diameter of 2.5 microns or less

SO₂ = sulfur dioxide

TEG = triethylene glycol

VOC = volatile organic compounds

yr = year

Emissions Calculations

2,000-bhp Superior 12SGTB

Hours of Operation:	8000	hr/yr
Maximum rated horsepower:	2000	bhp
Maximum rated heat input:	7100	Btu/hp-hr
	14200000	btu/hr

NO_x Emissions

Emissions Factor:	2.00	g/bhp-hr	(Permit Limit of 8.8 lb/hr based on Previous BACT limit)
Calculations:	$2\text{g/bhp-hr} \times 2000\text{bhp} \times 0.0022\text{ lb/g} =$	8.80	lb/hr
	$8.8\text{lb/hr} \times 8000\text{hr/yr} \times 0.0005\text{ ton/lb} =$	35.20	ton/yr

CO Emissions

Emissions Factor:	10	lb/hr	(Permit Limit from Previous BACT)
Calculations:	$10\text{lb/hr} \times 8000\text{hr/yr} \times 0.0005\text{ ton/lb} =$	40.00	ton/yr

VOC Emissions

Emissions Factor:	4.4	lb/hr	(Permit Limit from Previous BACT)
Calculations:	$4.4\text{lb/hr} \times 8000\text{hr/yr} \times 0.0005\text{ ton/lb} =$	17.60	ton/yr

PM/PM₁₀/PM_{2.5} Emissions

Filterable Emissions Factor:	0.0000771	lb/MMBtu	(AP-42 Table 3.2-2, 07/2000)
Calculations:	$0.0000771\text{lb/MMBtu} \times 14200000\text{btu/hr} \times 1/10^6\text{ MMBtu/Btu}$	0.001	lb/hr
	$0.00109482\text{lb/hr} \times 8000\text{hr/yr} \times 0.0005\text{ ton/lb} =$	0.004	ton/yr

Condensable Emissions Factor:	0.00991	lb/MMBtu	(AP-42 Table 3.2-2, 07/2000)
Calculations:	$0.00991\text{lb/MMBtu} \times 14200000\text{btu/hr} \times 1/10^6\text{ MMBtu/Btu}$	0.14	lb/hr
	$0.140722\text{lb/hr} \times 8000\text{hr/yr} \times 0.0005\text{ ton/lb} =$	0.56	ton/yr
TOTAL:		0.14	lb/hr
		0.57	ton/yr

SO₂ Emissions

Emissions Factor:	0.000588	lb/MMBtu	(AP-42 Table 3.2-2, 07/2000)
Calculations:	$0.000588\text{lb/MMBtu} \times 14200000\text{btu/hr} \times 1/10^6\text{ MMBtu/Btu}$	0.01	lb/hr
	$0.0083496\text{lb/hr} \times 8000\text{hr/yr} \times 0.0005\text{ ton/lb} =$	0.03	ton/yr

HAPs Emissions

<u>Component</u>	<u>Emissions Factor (lb/MMBtu)</u>
1,1,2,2-Tetrachloroethane	0.00004
1,1,2-Trichloroethane	0.0000318
1,3-Butadiene	0.000267
1,3-Dichloropropene	0.0000264
2,2,4-Trimethylpentane	0.00025
2-Methylnaphthalene	0.0000332
Acenaphthene	0.00000125
Acenaphthylene	0.00000553
Acetaldehyde	0.00836
Acrolein	0.00514
Anthracene	
Benz(a)anthracene	
Benzene	0.00044
Benzo(a)pyrene	
Benzo(b)fluoranthene	0.000000166
Benzo(e)pyrene	0.000000415
Benzo(g,h,i)perylene	0.000000414

Benzo(k)fluoranthene	
Biphenyl	0.000212
Carbon Tetrachloride	0.0000367
Chlorobenzene	0.0000304
Chloroform	0.0000285
Chrysene	0.000000693
Ethylbenzene	0.0000397
Ethylene Dibromide	0.0000443
Fluoranthene	0.00000111
Fluorene	0.00000567
Formaldehyde	0.0528
Indeno(1,2,3-c,d)pyrene	
Methanol	0.0025
Methylene Chloride	0.00002
n-Hexane	0.00111
Naphthalene	0.0000744
PAH	0.0000269
Perylene	
Phenanthrene	0.0000104
Phenol	0.000024
Pyrene	0.00000136
Styrene	0.0000236
Tetrachloroethane	0.00000248
Toluene	0.000408
Vinyl Chloride	0.0000149
Xylene	0.000184
<hr/>	
TOTAL:	0.07

Emissions Factor:	0.07 lb/MMBtu (AP-42 Table 3.2-2, 07/2000)	
Calculations:	$0.072195288\text{lb/MMBtu} * 14200000\text{btu/hr} * 1/10^6 \text{ MMBtu/Btu}$	1.03 lb/hr
	$1.0251730896\text{lb/hr} * 8000\text{hr/yr} * 0.0005 \text{ ton/lb} =$	4.10 ton/yr
As calculated in application:		4.60 ton/yr
Formaldehyde:	0.05 lb/MMBtu (AP-42 Table 3.2-2, 07/2000)	
	$0.0528\text{lb/MMBtu} * 14200000\text{btu/hr} * 1/10^6 \text{ MMBtu/Btu}$	0.75 lb/hr
	$0.74976\text{lb/hr} * 8000\text{hr/yr} * 0.0005 \text{ ton/lb} =$	3.00 ton/yr

2,370 bhp Caterpillar 4-stroke lean burn G3608LE

(4-stroke lean burn)

Hours of Operation:	8760	hr/yr
Maximum rated horsepower:	2370	bhp
Maximum rated heat input:	7539	Btu/hp-hr
	17867430	btu/hr

NO_x Emissions

Emission Factor:	0.5 g/bhp-hr (BACT derived Limit)	
Calculations:	$0.5\text{g/bhp-hr} * 2370\text{bhp} * 0.0022 \text{ lb/g} =$	2.61 lb/hr
	$2.607\text{lb/hr} * 8760\text{hr/yr} * 0.0005 \text{ ton/lb} =$	11.42 ton/yr

CO Emissions

Emissions Factor:	0.2 (BACT Derived Limit)	
Calculations:	$0.2 * 2370\text{bhp} * 0.0022 \text{ lb/g} =$	1.04 lb/hr
	$1.0428\text{lb/hr} * 8760\text{hr/yr} * 0.0005 \text{ ton/lb} =$	4.57 ton/yr

VOC Emissions

Emissions Factor: 0.32 g/bhp-hr (BACT derived Limit)
 Calculations: 0.32g/bhp-hr*2370bhp*0.0022 lb/g = 1.67 lb/hr
 1.66848lb/hr*8760hr/yr*0.0005 ton/lb = **7.31 ton/yr**

PM/PM₁₀/PM_{2.5} Emissions

Filterable Emissions Factor: 0.0000771 lb/MMBtu (AP-42 Table 3.2-2, 07/2000)
 Calculations: 0.0000771lb/MMBtu*17867430btu/hr*10⁻⁶ MMBtu/Btu = 0.001 lb/hr
 0.00137757lb/hr*8760hr/yr*0.0005ton/lb = **0.01 ton/yr**

(AP-42 Table 3.2-2,
 07/2000)

Condensable Emissions Factor: 0.00991 lb/MMBtu
 Calculations: 0.17706623lb/hr*8760hr/yr*0.0005ton/lb = **0.78 ton/yr**
0.78 ton/yr

SO₂ Emissions

Emissions Factor: 0.000588 lb/MMBtu (AP-42 Table 3.2-2, 07/2000)
 Calculations: 0.000588lb/MMBtu*17867430btu/hr*10⁻⁶ MMBtu/Btu = 0.01 lb/hr
 0.01050604lb/hr*8760hr/yr*0.0005ton/lb = **0.05 ton/yr**

HAPs Emissions

<u>Component</u>	<u>Emissions Factor (lb/MMBtu)</u>
1,1,2,2-Tetrachloroethane	0.00004
1,1,2-Trichloroethane	0.0000318
1,3-Butadiene	0.000267
1,3-Dichloropropene	0.0000264
2,2,4-Trimethylpentane	0.00025
2-Methylnaphthalene	0.0000332
Acenaphthene	0.00000125
Acenaphthylene	0.00000553
Acetaldehyde	0.00836
Acrolein	0.00514
Anthracene	
Benz(a)anthracene	
Benzene	0.00044
Benzo(a)pyrene	
Benzo(b)fluoranthene	0.000000166
Benzo(e)pyrene	0.000000415
Benzo(g,h,i)perylene	0.000000414
Benzo(k)fluoranthene	
Biphenyl	0.000212
Carbon Tetrachloride	0.0000367
Chlorobenzene	0.0000304
Chloroform	0.0000285
Chrysene	0.000000693
Ethylbenzene	0.0000397
Ethylene Dibromide	0.0000443
Fluoranthene	0.00000111
Fluorene	0.00000567
Formaldehyde	0.0132 (75% reduction by oxidation catalyst)
Indeno(1,2,3-c,d)pyrene	
Methanol	0.0025
Methylene Chloride	0.00002
n-Hexane	0.00111
Naphthalene	0.0000744
PAH	0.0000269

Perylene	
Phenanthrene	0.0000104
Phenol	0.000024
Pyrene	0.00000136
Styrene	0.0000236
Tetrachloroethane	0.00000248
Toluene	0.000408
Vinyl Chloride	0.0000149
Xylene	0.000184

TOTAL: 0.03

Emissions Factor:	0.03 lb/MMBtu (AP-42 Table 3.2-1, 07/2000)		
Calculations:	0.032595288lb/MMBtu*17867430btu/hr*10^-6 MMBtu/Btu =	0.58 lb/hr	
	0.58239402666984lb/hr*8760hr/yr*0.0005 ton/lb =	2.55 ton/yr	
	** there is likely reduction of other HAPS from oxidation catalyst, however, no information is available. Therefore, this is expected to be conservative but more correct		
As calculated in the application (no oxidation catalyst reductions accounted for):		5.45 ton/yr	
Formaldehyde:	0.01 lb/MMBtu (AP-42 Table 3.2-1, 07/2000)		
	0.0132lb/MMBtu*17867430btu/hr*10^-6 MMBtu/Btu =	0.24 lb/hr	
	0.235850076lb/hr*8760hr/yr*0.0005 ton/lb =	1.03 ton/yr	

248 bhp Natural Gas Generator Engine (Emergency generator)

(4-stroke rich-burn)

Hours of Operation:	500 hr/yr
Maximum rated horsepower:	248 bhp
Maximum rated heat input:	8200 Btu/hp-hr
	2033600 btu/hr

NO_x Emissions

Emissions Factor	20 g/bhp-hr	Previous Manufacturer's Data	
Calculations:	20g/bhp-hr*248bhp*0.0022 lb/g =	10.91 lb/hr	
	10.912lb/hr*500hr/yr*0.0005 ton/lb =	2.73 ton/yr	

CO Emissions

Emissions Factor	1 g/bhp-hr	Previous Manufacturer's Data	
Calculations:	1g/bhp-hr*248bhp*0.0022 lb/g =	0.55 lb/hr	
	0.5456lb/hr*500hr/yr*0.0005 ton/lb =	0.14 ton/yr	

VOC Emissions

Emissions Factor	1 g/bhp-hr	Previous Manufacturer's Data	
Calculations:	1g/bhp-hr*248bhp*0.0022 lb/g =	0.55 lb/hr	
	0.5456lb/hr*500hr/yr*0.0005 ton/lb =	0.14 ton/yr	

PM/PM₁₀/PM_{2.5} Emissions

Filterable Emissions Factor	0.0095 lb/MMBtu (AP-42 Table 3.2-3, 7/2000)		
Calculations:	0.0095lb/MMBtu*2033600btu/hr*10^-6 MMBtu/Btu =	0.02 lb/hr	
	0.0193192lb/hr*500hr/yr*0.0005 ton/lb =	0.0048 ton/yr	

Condensable Emissions Factor	0.00991 lb/MMBtu (AP-42 Table 3.2-3, 7/2000)		
Calculations:	0.00991lb/MMBtu*2033600btu/hr*10^-6 MMBtu/Btu =	0.02 lb/hr	
	0.020152976lb/hr*500hr/yr*0.0005 ton/lb =	0.01 ton/yr	

TOTAL: **0.01 ton/yr**

SO₂ Emissions

Emissions Factor 0.000588 lb/MMBtu (AP-42 Table 3.2-3, 7/2000)
 Calculations: 0.000588lb/MMBtu*2033600btu/hr*10⁻⁶ MMBtu/Btu = 0.001 lb/hr
 0.0011957568lb/hr*500hr/yr*0.0005 ton/lb = **0.0003 ton/yr**

HAPS Emissions

Pollutant	Emissions Factor (lb/MMBtu)
1,1,2,2-Tetrachloroethane	0.0000253
1,1,2-Trichloroethane	0.0000153
1,3-Butadiene	0.000663
1,3-Dichloropropene	0.0000127
Acetaldehyde	0.00279
Acrolein	0.00263
Benzene	0.00158
Carbon Tetrachloride	0.0000177
Chlorobenzene	0.0000129
Chloroform	0.0000137
Ethylbenzene	0.0000248
Ethylene Dibromide	0.0000213
Formaldehyde	0.0205
Methanol	0.00306
Methylene Chloride	0.0000412
Naphthalene	0.0000971
PAH	0.000141
Styrene	0.0000119
Toluene	0.000558
Vinyl Chloride	0.00000718
Xylene	0.000195
TOTAL:	0.03241808

Emissions Factor 0.03241808 lb/MMBtu (AP-42 Table 3.2-3, 7/2000)
 Calculations: 0.03241808lb/MMBtu*2033600btu/hr*10⁻⁶ MMBtu/Btu = 0.07 lb/hr
 0.065925407488lb/hr*500hr/yr*0.0005 ton/lb = **0.016 ton/yr**

Formaldehyde:

Emissions Factor 0.0205 lb/MMBtu (AP-42 Table 3.2-3, 7/2000)
 Calculations: 0.0205lb/MMBtu*2033600btu/hr*10⁻⁶ MMBtu/Btu = 0.04 lb/hr
 0.0416888lb/hr*500hr/yr*0.0005 ton/lb = **0.010 ton/yr**

TEG Dehydration Unit Reboiler

Maximum Rated Capacity: 1.5 MMBtu/hr
 Hours of Operation: 8760 hr/yr
 Gas Heat Content: 1050 btu/scf (MAQP 2801-03 Application)
 0.00142857 MMscf/hr (calculated)

PM/PM₁₀/PM_{2.5} Emissions

Filterable Emissions Factor: 1.9 lb/MMscf (AP-42 Table 1.4-2, 07/1998)
 Calculations: 1.9lb/MMscf*0.00142857MMscf/hr= 0.0027143 lb/hr
 0.0027142lb/hr*8760hr/yr*0.0005 ton/lb = 0.01 ton/yr

Condensable Emissions Factor: 5.7 lb/MMscf (AP-42 Table 1.4-2, 07/1998)
 Calculations: 5.7lb/MMscf*0.00142857MMscf/hr= 0.0081429 lb/hr
 0.0081428lb/hr*8760hr/yr*0.0005 ton/lb = 0.04 ton/yr
TOTAL: 0.05 ton/yr

NO_x Emissions:

Emissions Factor: 100 lb/MMscf (AP-42 Table 1.4-1, 07/1998)
 Calculations: 100lb/MMscf*0.00142857MMscf/hr= 0.1428571 lb/hr
 0.1428571lb/hr*8760hr/yr*0.0005 ton/lb = **0.63 ton/yr**

CO Emissions:

Emissions Factor: 84 lb/MMscf (AP-42 Table 1.4-1, 07/1998)
 Calculations: 84lb/MMscf*0.00142857MMscf/hr= 0.12 lb/hr
 0.12lb/hr*8760hr/yr*0.0005 ton/lb = **0.53 ton/yr**

VOC Emissions:

Emissions Factor: 5.5 lb/MMscf (AP-42 Table 1.4-1, 07/1998)
 Calculations: 5.5lb/MMscf*0.00142857MMscf/hr= 0.0078571 lb/hr
 0.0078571lb/hr*8760hr/yr*0.0005 ton/lb = **0.03 ton/yr**

SO₂ Emissions:

Emissions Factor: 0.6 lb/MMscf (AP-42 Table 1.4-1, 07/1998)
 Calculations: 0.6lb/MMscf*0.00142857MMscf/hr= 0.0008571 lb/hr
 0.00085714lb/hr*8760hr/yr*0.0005 ton/lb = **0.004 ton/yr**

HAPs Emissions:

Pollutant	Emissions Factor (lb/MMscf)
2-Methylnaphthalene	2.40E-05
3-Methylchloranthrene	1.80E-06
7,12-Dimethylbenz(a)anthracene	1.60E-05
Acenaphthene	1.80E-06
Acenaphthylene	1.80E-06
Anthracene	2.40E-06
Benz(a)anthracene	1.80E-06
Benzene	2.10E-03
Benzo(a)pyrene	1.20E-06
Benzo(b)fluoranthene	1.80E-06
Benzo(g,h,i)perylene	1.20E-06
Benzo(k)fluoranthene	1.80E-06
Chrysene	1.80E-06
Dibenzo(a,h)anthracene	1.20E-06
Dichlorobenzene	1.20E-03
Fluoranthene	3.00E-06
Fluorene	2.80E-06
Formaldehyde	7.50E-02
Hexane	1.80E+00
Indeno(1,2,3-cd)pyrene	1.80E-06
Naphthalene	6.10E-04
Phenanathrene	1.70E-05
Pyrene	5.00E-06
Toluene	3.40E-03
Arsenic	2.00E-04
Beryllium	1.20E-05
Cadmium	1.10E-03
Chromium	1.40E-03
Cobalt	8.40E-05
Manganese	3.80E-04
Mercury	2.60E-04

Nickel	2.10E-03
Selenium	2.40E-05
TOTAL:	1.89E+00

Emissions Factor:	1.89E+00 lb/MMscf		
Calculations:	1.89lb/MMscf*0.00142857142857143MMscf/hr=	0.0027	lb/hr
	0.0027lb/hr*8760hr/yr*0.0005 ton/lb =	0.012	ton/yr

As submitted in application calculations:		0.017	ton/yr
Formadehyde	7.50E-02 lb/MMscf		
Calculations:	0.075lb/MMscf*0.00142857142857143MMscf/hr=	0.0001071	lb/hr
	0.000107142857142857lb/hr*8760hr/yr*0.0005 ton/lb =	0.0005	ton/yr

2.47 MMBtu/HR WM Boiler

Hours of Operation:	8760	hr/yr
Heat Input:	2.47	MMBtu/hr
NG Heat Content:	1050	btu/scf
	0.00235238	MMscf/hr

PM/PM₁₀/PM_{2.5} Emissions

Filterable Emissions Factor:	1.9 lb/MMscf (AP-42 Table 1.4-2, 07/1998)		
Calculations:	1.9lb/MMscf*0.00235238095238095MMscf/hr=	0.00447	lb/hr
	0.00446952380952381lb/hr*8760hr/yr*0.0005 ton/lb =	0.020	ton/yr

Condensable Emissions Factor:	5.7 lb/MMscf (AP-42 Table 1.4-2, 07/1998)		
Calculations:	5.7lb/MMscf*0.00235238095238095MMscf/hr=	0.013409	lb/hr
	0.0134085714285714lb/hr*8760hr/yr*0.0005 ton/lb =	0.059	ton/yr
TOTAL:		0.08	ton/yr

NO_x Emissions:

Emissions Factor:	100 lb/MMscf (AP-42 Table 1.4-1, 07/1998)		
Calculations:	100lb/MMscf*0.00235238095238095MMscf/hr=	0.235238	lb/hr
	0.235238095238095lb/hr*8760hr/yr*0.0005 ton/lb =	1.03	ton/yr

CO Emissions:

Emissions Factor:	84 lb/MMscf (AP-42 Table 1.4-1, 07/1998)		
Calculations:	84lb/MMscf*0.00235238095238095MMscf/hr=	0.1976	lb/hr
	0.1976lb/hr*8760hr/yr*0.0005 ton/lb =	0.87	ton/yr

VOC Emissions:

Emissions Factor:	5.5 lb/MMscf (AP-42 Table 1.4-2, 07/1998)		
Calculations:	5.5lb/MMscf*0.00235238095238095MMscf/hr=	0.012938	lb/hr
	0.0129380952380952lb/hr*8760hr/yr*0.0005 ton/lb =	0.06	ton/yr

SO₂ Emissions:

Emissions Factor:	0.6 lb/MMscf (AP-42 Table 1.4-2, 07/1998)		
Calculations:	0.6lb/MMscf*0.00235238095238095MMscf/hr=	0.001411	lb/hr
	0.00141142857142857lb/hr*8760hr/yr*0.0005 ton/lb =	0.01	ton/yr

HAPs Emissions:'

Pollutant	Emissions Factor (lb/MMscf)
2-Methylnaphthalene	2.40E-05
3-Methylchloranthrene	1.80E-06
7,12-Dimethylbenz(a)anthracene	1.60E-05
Acenaphthene	1.80E-06
Acenaphthylene	1.80E-06

Anthracene	2.40E-06
Benz(a)anthracene	1.80E-06
Benzene	2.10E-03
Benzo(a)pyrene	1.20E-06
Benzo(b)fluoranthene	1.80E-06
Benzo(g,h,i)perylene	1.20E-06
Benzo(k)fluoranthene	1.80E-06
Chrysene	1.80E-06
Dibenzo(a,h)anthracene	1.20E-06
Dichlorobenzene	1.20E-03
Fluoranthene	3.00E-06
Fluorene	2.80E-06
Formaldehyde	7.50E-02
Hexane	1.80E+00
Indeno(1,2,3-cd)pyrene	1.80E-06
Naphthalene	6.10E-04
Phenanathrene	1.70E-05
Pyrene	5.00E-06
Toluene	3.40E-03
Arsenic	2.00E-04
Beryllium	1.20E-05
Cadmium	1.10E-03
Chromium	1.40E-03
Cobalt	8.40E-05
Manganese	3.80E-04
Mercury	2.60E-04
Nickel	2.10E-03
Selenium	2.40E-05
TOTAL:	1.89E+00

Emissions Factor: 1.89E+00 lb/MMscf (AP-42 Table 1.4-2, 07/1998)
Calculations: 1.8879582lb/MMscf*0.00235238095238095MMscf/hr= 0.004441 lb/hr
0.00444119690857143lb/hr*8760hr/yr*0.0005 ton/lb = 0.02 ton/yr

Formaldehyde: 7.50E-02 lb/MMscf (AP-42 Table 1.4-2, 07/1998)
0.075lb/MMscf*0.00235238095238095MMscf/hr= 0.000176 lb/hr
0.000176428571428571lb/hr*8760hr/yr*0.0005 ton/lb = 0.001 ton/yr

0.063 MMBtu/hr Water Heater

Hours of Operation: 8760 hr/yr
Heat Input: 0.063 MMBtu/hr
NG Heat Content: 1050 btu/scf
0.00006 MMscf/hr

PM/PM₁₀/PM_{2.5} Emissions

Filterable Emissions Factor: 1.9 lb/MMscf (AP-42 Table 1.4-2, 07/1998)
Calculations: 1.9lb/MMscf*0.00006MMscf/hr= 0.000114 lb/hr
0.000114lb/hr*8760hr/yr*0.0005 ton/lb = 0.000 ton/yr

Condensable Emissions Factor: 5.7 lb/MMscf (AP-42 Table 1.4-2, 07/1998)
Calculations: 5.7lb/MMscf*0.00006MMscf/hr= 0.000342 lb/hr
0.000342lb/hr*8760hr/yr*0.0005 ton/lb = 0.001 ton/yr
TOTAL: 0.002 ton/yr

NO_x Emissions:

Emissions Factor: 100 lb/MMscf (AP-42 Table 1.4-1, 07/1998)
 Calculations: $100\text{lb/MMscf} * 0.00006\text{MMscf/hr} = 0.006 \text{ lb/hr}$
 $0.006\text{lb/hr} * 8760\text{hr/yr} * 0.0005 \text{ ton/lb} = \mathbf{0.03 \text{ ton/yr}}$

CO Emissions:

Emissions Factor: 84 lb/MMscf (AP-42 Table 1.4-1, 07/1998)
 Calculations: $84\text{lb/MMscf} * 0.00006\text{MMscf/hr} = 0.00504 \text{ lb/hr}$
 $0.00504\text{lb/hr} * 8760\text{hr/yr} * 0.0005 \text{ ton/lb} = \mathbf{0.02 \text{ ton/yr}}$

VOC Emissions:

Emissions Factor: 5.5 lb/MMscf (AP-42 Table 1.4-2, 07/1998)
 Calculations: $5.5\text{lb/MMscf} * 0.00006\text{MMscf/hr} = 0.00033 \text{ lb/hr}$
 $0.00033\text{lb/hr} * 8760\text{hr/yr} * 0.0005 \text{ ton/lb} = \mathbf{0.001 \text{ ton/yr}}$

SO₂ Emissions:

Emissions Factor: 0.6 lb/MMscf (AP-42 Table 1.4-2, 07/1998)
 Calculations: $0.6\text{lb/MMscf} * 0.00006\text{MMscf/hr} = 0.000036 \text{ lb/hr}$
 $0.000036\text{lb/hr} * 8760\text{hr/yr} * 0.0005 \text{ ton/lb} = \mathbf{0.0002 \text{ ton/yr}}$

HAPs Emissions:

Pollutant	Emissions Factor (lb/MMscf)
2-Methylnaphthalene	2.40E-05
3-Methylchloranthrene	1.80E-06
7,12-Dimethylbenz(a)anthracene	1.60E-05
Acenaphthene	1.80E-06
Acenaphthylene	1.80E-06
Anthracene	2.40E-06
Benz(a)anthracene	1.80E-06
Benzene	2.10E-03
Benzo(a)pyrene	1.20E-06
Benzo(b)fluoranthene	1.80E-06
Benzo(g,h,i)perylene	1.20E-06
Benzo(k)fluoranthene	1.80E-06
Chrysene	1.80E-06
Dibenzo(a,h)anthracene	1.20E-06
Dichlorobenzene	1.20E-03
Fluoranthene	3.00E-06
Fluorene	2.80E-06
Formaldehyde	7.50E-02
Hexane	1.80E+00
Indeno(1,2,3-cd)pyrene	1.80E-06
Naphthalene	6.10E-04
Phenanathrene	1.70E-05
Pyrene	5.00E-06
Toluene	3.40E-03
Arsenic	2.00E-04
Beryllium	1.20E-05
Cadmium	1.10E-03
Chromium	1.40E-03
Cobalt	8.40E-05
Manganese	3.80E-04
Mercury	2.60E-04
Nickel	2.10E-03
Selenium	2.40E-05
TOTAL:	1.89E+00

Emissions Factor:	1.89E+00 lb/MMscf (AP-42 Table 1.4-2, 07/1998)	
Calculations:	1.8879582lb/MMscf*0.00006MMscf/hr=	0.000113 lb/hr
	0.000113277492lb/hr*8760hr/yr*0.0005 ton/lb =	0.0005 ton/yr

Formaldehyde:	7.50E-02 lb/MMscf (AP-42 Table 1.4-2, 07/1998)	
	0.075lb/MMscf*0.00006MMscf/hr=	4.5E-06 lb/hr
	0.0000045lb/hr*8760hr/yr*0.0005 ton/lb =	0.00002 ton/yr

0.063 MMBtu/hr Water Heater

Hours of Operation:	8760 hr/yr
Heat Input:	0.075 MMBtu/hr
NG Heat Content:	1050 btu/scf
	7.1429E-05 MMscf/hr

PM/PM₁₀/PM_{2.5} Emissions

Filterable Emissions Factor:	1.9 lb/MMscf (AP-42 Table 1.4-2, 07/1998)	
Calculations:	1.9lb/MMscf*7.14285714285714E-05MMscf/hr=	0.000136 lb/hr
	0.000135714285714286lb/hr*8760hr/yr*0.0005 ton/lb =	0.001 ton/yr

Condensable Emissions Factor:	5.7 lb/MMscf (AP-42 Table 1.4-2, 07/1998)	
Calculations:	5.7lb/MMscf*7.14285714285714E-05MMscf/hr=	0.000407 lb/hr
	0.000407142857142857lb/hr*8760hr/yr*0.0005 ton/lb =	0.002 ton/yr

TOTAL:		0.002 ton/yr
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NO_x Emissions:

Emissions Factor:	100 lb/MMscf (AP-42 Table 1.4-1, 07/1998)	
Calculations:	100lb/MMscf*7.14285714285714E-05MMscf/hr=	0.007143 lb/hr
	0.00714285714285714lb/hr*8760hr/yr*0.0005 ton/lb =	0.03 ton/yr

CO Emissions:

Emissions Factor:	84 lb/MMscf (AP-42 Table 1.4-1, 07/1998)	
Calculations:	84lb/MMscf*7.14285714285714E-05MMscf/hr=	0.006 lb/hr
	0.006lb/hr*8760hr/yr*0.0005 ton/lb =	0.03 ton/yr

VOC Emissions:

Emissions Factor:	5.5 lb/MMscf (AP-42 Table 1.4-2, 07/1998)	
Calculations:	5.5lb/MMscf*7.14285714285714E-05MMscf/hr=	0.000393 lb/hr
	0.000392857142857143lb/hr*8760hr/yr*0.0005 ton/lb =	0.002 ton/yr

SO₂ Emissions:

Emissions Factor:	0.6 lb/MMscf (AP-42 Table 1.4-2, 07/1998)	
Calculations:	0.6lb/MMscf*7.14285714285714E-05MMscf/hr=	4.29E-05 lb/hr
	4.28571428571428E-05lb/hr*8760hr/yr*0.0005 ton/lb =	0.0002 ton/yr

HAPs Emissions:

Pollutant	Emissions Factor (lb/MMscf)
2-Methylnaphthalene	2.40E-05
3-Methylchloranthrene	1.80E-06
7,12-Dimethylbenz(a)anthracene	1.60E-05
Acenaphthene	1.80E-06
Acenaphthylene	1.80E-06
Anthracene	2.40E-06
Benz(a)anthracene	1.80E-06
Benzene	2.10E-03

Benzo(a)pyrene	1.20E-06
Benzo(b)fluoranthene	1.80E-06
Benzo(g,h,i)perylene	1.20E-06
Benzo(k)fluoranthene	1.80E-06
Chrysene	1.80E-06
Dibenzo(a,h)anthracene	1.20E-06
Dichlorobenzene	1.20E-03
Fluoranthene	3.00E-06
Fluorene	2.80E-06
Formaldehyde	7.50E-02
Hexane	1.80E+00
Indeno(1,2,3-cd)pyrene	1.80E-06
Naphthalene	6.10E-04
Phenanathrene	1.70E-05
Pyrene	5.00E-06
Toluene	3.40E-03
Arsenic	2.00E-04
Beryllium	1.20E-05
Cadmium	1.10E-03
Chromium	1.40E-03
Cobalt	8.40E-05
Manganese	3.80E-04
Mercury	2.60E-04
Nickel	2.10E-03
Selenium	2.40E-05
TOTAL:	1.89E+00

Emissions Factor:	1.89E+00 lb/MMscf (AP-42 Table 1.4-2, 07/1998)		
Calculations:	1.8879582lb/MMscf*7.14285714285714E-05MMscf/hr=	0.000135	lb/hr
	0.000134854157142857lb/hr*8760hr/yr*0.0005 ton/lb =	0.0006	ton/yr
Formaldehyde:	7.50E-02 lb/MMscf (AP-42 Table 1.4-2, 07/1998)		
	0.075lb/MMscf*7.14285714285714E-05MMscf/hr=	5.36E-06	lb/hr
	5.35714285714286E-06lb/hr*8760hr/yr*0.0005 ton/lb =	0.00002	ton/yr

V. Existing Air Quality

The area of the Monarch compressor station is designated as attainment/unclassifiable for all criteria pollutants.

VI. Ambient Air Impact Analysis

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

VII. Taking or Damaging Implication Analysis

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

YES	NO	
X		1. Does the action pertain to land or water management or environmental regulation affecting private real property or water rights?
	X	2. Does the action result in either a permanent or indefinite physical occupation of private property?
	X	3. Does the action deny a fundamental attribute of ownership? (ex.: right to exclude others, disposal of property)
	X	4. Does the action deprive the owner of all economically viable uses of the property?
	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)

VIII. Environmental Assessment

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

Analysis Prepared By: Deanne Fischer
Date: January 3, 2013