



ADMINISTRATIVE AMENDMENT
TO MONTANA AIR QUALITY PERMIT

Date of Mailing: August 17, 2016

Name of Applicant: Hiland Partners Holdings, LLC

Source: Natural Gas Processing Plant

Location: NE ¼ of NW ¼ of Section 3, Township 23 North, Range 58 East, Richland County, Montana

Proposed Action: The Department of Environmental Quality (Department) proposes to issue an Administrative Amendment, with conditions, to the above-named permittee. The permit will be assigned #3331-10. The permittee may appeal the Department's decision to the Board of Environmental Review (Board). A request for hearing must be filed by 9/1/2016. This permit shall become final on 9/2/2016, unless the Board orders a stay on the permit.

Proposed Conditions: See attached.

Procedures for Appeal: The permittee may request a hearing before the Board. Any appeal must be filed before the final date stated above. The request for hearing shall contain an affidavit setting forth the grounds for the request. Any hearing will be held under the provisions of the Montana Administrative Procedures Act. Submit requests for hearing in triplicate to: Chairman, Board of Environmental Review, P.O. Box 200901, Helena, Montana 59620.

For the Department,

A handwritten signature in black ink that reads "Julie A. Merkel".

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

A handwritten signature in black ink that reads "Loni Patterson".

Loni Patterson
Environmental Engineer
Air Quality Bureau
(406) 444-1452

JM:LP
Enclosure

MONTANA AIR QUALITY PERMIT

Issued To: Hiland Partners Holdings, LLC
Bakken Gathering Plant
370 Van Gordon Street
Lakewood, CO 80228

MAQP: #3331-10
Administrative Amendment (AA)
Request Received: 7/25/2016
Department Decision on AA: 8/17/2016
Permit Final: 9/2/2016
AFS: #083-0038

A Montana Air Quality Permit (MAQP), with conditions, is hereby granted to Hiland Partners Holdings, LLC (HPH), 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:

SECTION I: Permitted Facilities

A. Plant Location

HPH owns and operates a natural gas processing plant located approximately 8 miles northwest of Sidney, Montana, in the NE $\frac{1}{4}$ of the NW $\frac{1}{4}$ of Section 3, Township 23 North, Range 58 East, in Richland County, Montana. The facility extracts natural gas liquids from field gas and is known as the Bakken Gathering Plant.

B. Current Permit Action

On July 25 2016, the Department received a request from Hiland Partners Holdings, LLC, to change the mailing address from PO Box 5103, Enid, OK 73702 to 370 Van Gordon Street, Lakewood, CO 80228.

SECTION II: Conditions and Limitations

A. Emission Limitations

1. HPH shall not operate more than eight natural gas-fired compressor engines at any given time. The maximum rated design capacities shall not exceed (ARM 17.8.749):

Unit 1	912 bhp
Unit 2	912 bhp
Unit 3	912 bhp
Unit 4	185 bhp
Unit 5	550 bhp
Unit 6	185 bhp
Unit 7	840 bhp
Unit 8	265 bhp

2. The compressor engine Units 1 – 4 shall each be a rich-burn natural gas-fired engine controlled with non-selective catalytic reduction (NSCR) units and air-to-fuel ratio (AFR) controllers. The pound per hour (lb/hr) emission limits for each of the engines shall be determined using the following equation and pollutant specific grams per brake horsepower-hour (g/bhp-hr) emission factors (ARM 17.8.752):

Equation:

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

<u>Emission Factors</u>	<u>Units 1 – 4</u>
Nitrogen Oxides (NO _x)	1.0 g/bhp-hr
Carbon Monoxide (CO)	2.0 g/bhp-hr
Volatile Organic Compounds (VOC)	1.0 g/bhp-hr

- The compressor engine Units 5 – 7 shall be four-stroke rich-burn natural gas-fired engines controlled with NSCR units and AFR controllers. The lb/hr emission limits for each of the engines shall be determined using the following equation and pollutant specific g/bhp-hr emission factors (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

<u>Emission Factors</u>	<u>Units 5 – 7</u>
NO _x	1.0 g/bhp-hr
CO	1.0 g/bhp-hr
VOC	1.0 g/bhp-hr

- The compressor engine Unit 8 shall be a four-stroke rich-burn natural gas-fired engine controlled with an NSCR unit and an AFR controller. The lb/hr emission limits for this engine shall be determined using the following equation and pollutant specific g/bhp-hr emission factors (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

<u>Emission Factors</u>	<u>Unit 8</u>
NO _x	1.0 g/bhp-hr
CO	1.0 g/bhp-hr
VOC	0.5 g/bhp-hr

- The natural gas-fired Hot Oil Heater shall be limited to a maximum heat input capacity of 44.82 million Btu per hour (MMBtu/hr) (ARM 17.8.749).
- The natural gas-fired Hot Oil Heater shall comply with the following emission limits (ARM 17.8.752):

NO _x	0.112 lb/MMBtu
CO	0.045 lb/MMBtu

7. HPH shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any sources installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.304).
8. HPH 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).
9. HPH shall treat all unpaved portions of the haul roads, access roads, parking lots, or 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. Loading tank trucks shall be restricted to the use of submerged fill and dedicated normal service (ARM 17.8.749).
11. HPH shall control VOCs emitted from tank trucks during loading through use of a vapor return line (ARM 17.8.749 and 17.8.752).
12. HPH shall not operate the 1,135 bhp diesel-fired emergency/backup engine/generator more than 500 hours per rolling 12-month time period. HPH shall not operate this engine/generator as a part of routine operations (ARM 17.8.749).
13. HPH shall only burn diesel fuel with a sulfur content less than 0.5% in the 1,135 bhp emergency/backup engine/generator (ARM 17.8.752).
14. HPH shall control VOC's emitted from the 11 MMSCFD EG dehydrator and associated still vent through the use of a flash tank separator and routing the flash tank gases to the existing 98%-efficient flare (ARM 17.8.752)
15. HPH shall limit the use of the emergency flare to 35 million standard cubic feet per year (MMSCF/yr) of gas, on a 12-month rolling basis. Any calculations used to establish emissions shall be based on the most recent Environmental Protection Agency (EPA) AP-42 factors, unless otherwise allowed by the Department (ARM 17.8.749 and ARM 17.8.1204).
16. HPH shall comply with all applicable standards, limitations, reporting, record keeping, and notification requirements contained in 40 Code of Federal Regulations (CFR) 60, Subpart A, *General Provisions*, and Subpart KKK, *Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants* (ARM 17.8.340 and 40 CFR 60, Subpart A and Subpart KKK).
17. HPH shall comply with all applicable standards, limitations, reporting, record keeping, and notification requirements contained in 40 CFR 60, Subpart Dc, *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Plants* (ARM 17.8.340 and 40 CFR 60, Subpart Dc).

18. HPH shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements contained in 40 CFR 60, Subpart IIII, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*, and 40 CFR 60, Subpart JJJJ, *Standards of Performance for Stationary Spark Ignition Internal Combustion Engine* (ARM 17.8.340; 40 CFR 60, Subpart IIII and Subpart JJJJ).
19. HPH shall comply with any applicable standards, limitations, reporting, recordkeeping, and notification requirements contained in Title 40 CFR 63, Subpart ZZZZ, *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines* (ARM 17.8.342 and 40 CFR 63, Subpart ZZZZ).

B. Inspection and Repair Requirements

1. Each calendar month, all fugitive piping components (valves, flanges, pump seals, open-ended lines, etc.) shall be inspected for leaks. For purposes of this requirement, detection methods incorporating sight, sound, or smell are acceptable (ARM 17.8.105 and ARM 17.8.752).
2. HPH shall (ARM 17.8.105 and ARM 17.8.752):
 - a. Make a first attempt at repair for any leak not later than 5 calendar days after the leak is detected; and
 - b. Repair any leak as soon as practicable, but no later than 15 calendar days after it is detected, except as provided in Section II.B.3.
3. Delay of repair of equipment for which a leak has been detected will be allowed if repair is technically infeasible without a source shutdown. Such equipment shall be repaired before the end of the first source shutdown after detection of the leak (ARM 17.8.752).

C. Testing Requirements

1. Each compressor engine shall be initially tested for NO_x and CO (the pollutants to be tested concurrently). The initial source testing shall be conducted within 180 days of the initial start-up date of the compressor engine(s). After the initial source test, additional testing shall continue on an every 4-year basis, or according to another testing/monitoring schedule as may be approved by the Department in writing, to demonstrate compliance with NO_x and CO lb/hr emission limits as calculated in Sections II.A.2, II.A.3, and II.A.4 (ARM 17.8.105 and ARM 17.8.749).
2. All compliance source tests shall conform to the requirements of the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).
3. The Department may require additional testing (ARM 17.8.105).

D. Operational Reporting Requirements

1. HPH 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. HPH shall document, by month, the hours of operation of the 1,135 bhp emergency/backup engine/generator. By the 25th day of each month, HPH shall calculate the total hours of operation of the 1,135 bhp emergency/backup engine/generator for the previous month. The monthly information shall be used to verify compliance with the rolling 12-month limitation in Section II.A.12. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749).
3. HPH shall document, by month, the amount of gas controlled by the emergency flare, in MMSCF. By the 25th day of each month, HPH shall calculate the total amount of gas combusted by the flare for the previous month. The monthly information shall be used to verify compliance with the rolling 12-month limitation in Section II.A.14. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749).
4. HPH 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 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).
5. All records compiled in accordance with this permit must be maintained by HPH 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).
6. HPH 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 the certification requirements of ARM 17.8.1207. The annual certification shall be submitted along with the annual emission inventory information (ARM 17.8.749 and ARM 17.8.1204).

E. Notification

1. Prior to installation, HPH shall provide the Department with written notification of the maximum rated design capacities of each compressor engine identified in Section II.A.1 (ARM 17.8.749).
2. HPH shall provide the Department with written notification of the actual start-up date of each compressor engine identified in Section II.A.1 within 15 days after the actual start-up date of the affected unit (ARM 17.8.749).

F. Recordkeeping Requirements

1. HPH shall maintain a record that only diesel fuel with a sulfur content less than 0.5% was burned in the 1,135 bhp emergency/backup engine/generator, for use in verifying compliance with the limitation in Section II.A.13 (ARM 17.8.749).
2. A record of each monthly leak inspection required by Section II.B.1 of this permit shall be kept on file with HPH. Inspection records shall include, at a minimum, the following information (ARM 17.8.749):
 - a. Date of inspection;
 - b. Findings (may indicate no leaks discovered or location, nature, and severity of each leak);
 - c. Leak determination method;
 - d. Corrective action (date each leak repaired and reasons for any repair interval in excess of 15 calendar days); and
 - e. Inspector's name and signature.
3. All records compiled in accordance with this permit must be maintained by HPH 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 – HPH 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 (e.g., Continuous Emission Monitoring System (CEMS), Compliance Emission Rate Monitoring System (CERMS)) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.
- B. Waiver – The permit and the terms, conditions, and matters stated herein shall be deemed accepted if HPH fails to appeal as indicated below.
- C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving HPH 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 therefore, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The filing of a request for a hearing does not stay the Department’s decision, unless the Board issues a stay upon receipt of a petition and a finding that a stay is appropriate under Section 75-2- 211(11)(b), MCA. The issuance of a stay on a permit by the Board postpones the effective date of the Department’s decision until conclusion of the hearing and issuance of a final decision by the Board. If a stay is not issued by the Board, the Department’s decision on the application is final 16 days after the Department’s decision is made.
- F. Permit Inspection – As required by ARM 17.8.755, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by the Department at the location of the source.
- G. Permit Fee – Pursuant to Section 75-2-220, MCA, failure to pay the annual operation fee by HPH 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
Hiland Partners Holdings, LLC
Bakken Gathering Plant
MAQP #3331-10

I. Introduction/Process Description

Hiland Partners Holdings, LLC (HPH), is permitted for the construction and operation of the Bakken Gathering Plant. The facility will extract natural gas liquids from field gas and is located in the NE ¼ of the NW ¼ of Section 3, Township 23 North, Range 58 East, in Richland County, Montana.

A. Permitted Equipment

The facility consists of the following permitted equipment:

ID	Equipment
Unit 1	Natural gas-fired, rich-burn compressor engine with a maximum rated design capacity equal to or less than 912 brake-horsepower (bhp)
Unit 2	Natural gas-fired, rich-burn compressor engine with a maximum rated design capacity equal to or less than 912 bhp
Unit 3	Natural gas-fired, rich-burn compressor engine with a maximum rated design capacity equal to or less than 912 bhp
Unit 4	Natural gas-fired, rich-burn compressor engine with a maximum rated design capacity equal to or less than 185 bhp
Unit 5	Natural gas-fired, rich-burn compressor engine with a maximum rated design capacity equal to or less than 550 bhp
Unit 6	Natural gas-fired, rich-burn compressor engine with a maximum rated design capacity equal to or less than 185 bhp
Unit 7	Natural gas-fired, rich-burn compressor engine with a maximum rated design capacity equal to or less than 840 hp
Unit 8	Natural gas-fired, rich-burn compressor engine with a maximum rated design capacity equal to or less than 265 bhp
Hot Oil Heater	40 CFR 60, Subpart Dc, affected Natural gas-fired Hot Oil Heater with a maximum rated heat input capacity of 44.82 million British thermal units per hour (MMBtu/hr)
Fugitive	Fractionation Unit, including new debutanizer and other plant-wide leaks
Dehydration Unit #1	Ethylene Glycol (EG) dehydrator and associated still vent (11 million standard cubic feet per day (MMSCF/d))
Dehydration Unit #2	EG dehydrator and associated still vent (9 MMSCF/d)
Truck Loading	Truck loading @ 4775 barrels per day (bbl/day) (increased by 1,000 bbl/day in MAQP#3331-07); submerged fill and vapor return lines
Tanks #1 & 2	2-400 barrel (bbl) condensate storage tanks
Tank #3	1-500 gallon diesel storage tank
Emergency Generator	Diesel-fired emergency/backup engine/generator with a maximum rated design capacity equal to or less than 1,135 bhp.
Emergency Flare	Emergency Flare with 0.5 MMBtu/hr pilot

B. Source Description

The Bakken Gathering Plant extracts natural gas liquids from field gas. The fractionation unit (including a depropanizer and a debutanizer) consists of a Hot Oil Heater, several reboilers, multiple holding tanks, an electric refrigeration compressor, and a truck loading station. The EG dehydration units remove moisture from the gas prior to transmission.

C. Permit History

On May 4, 2004, the Department of Environmental Quality (Department) received a complete MAQP Application from Hiland Partners, LLC (HPLLC) for the construction and operation of the Bakken Gathering Plant. **MAQP #3331-00** became final and effective on July 3, 2004.

On August 17, 2004, the Department received a complete MAQP Application from HPLLC for the modification of MAQP #3331-00. Specifically, HPLLC requested the following: 1) to add a natural gas compressor engine with a maximum capacity equal to or less than 500 bhp; 2) to add a 1,135 bhp emergency/backup diesel-fired generator and an associated 500-gallon diesel storage tank; and 3) to remove the 10 MMBtu/hr Hot Oil Heater. **MAQP #3331-01** replaced MAQP #3331-00.

On June 14, 2005, the Department received a letter from HPLLC for an administrative amendment to MAQP #3331-01. Specifically, HPLLC requested to add an 11 MMSCF/d refrigeration unit, a standby electric compressor, and a dehydrator reboiler and still vent. The potential emissions from the proposed equipment were less than the de minimis threshold of 15 tons per year (tpy). The permit action updated the permit analysis (including the emission inventory) with the new equipment. **MAQP #3331-02** replaced MAQP #3331-01.

On November 10, 2005, the Department received a letter from Hiland Partners, LP (HPL) for an administrative amendment to MAQP #3331-02. Specifically, HPL requested to change the corporate name on MAQP #3331-02 from HPLLC to Hiland Partners, LP and update the permit to reflect the current permit language and rule references used by the Department. **MAQP #3331-03** replaced MAQP #3331-02.

On March 17, 2006, the Department received an application from HPL for a number of process changes to eliminate production bottlenecks and ensure processing capability for 20 MMSCF/d of natural gas. The project included installation of two natural gas-fired compressor engines up to 185 bhp and 930 bhp, as well as other process improvements. The application included an administrative amendment request to reduce the maximum rating for Unit #1 from 1,478 bhp to 912 bhp. HPL submitted further information on April 17, 2006, including a request to reduce the maximum rating for Unit #2 from 1,478 bhp to 912 bhp, and permit the use of an emergency flare for up to 35 million standard cubic feet per year (MMSCF/yr). **MAQP #3331-04** replaced MAQP #3331-03.

On May 25, 2007, the Department received a complete application from HPL for the installation and operation of a 44.82 MMBtu/hr capacity natural gas-fired Hot Oil Heater and the removal of an existing 25 MMBtu/hr capacity Hot Oil Heater from permitted operations. The proposed natural gas-fired Hot Oil Heater is an affected facility as defined in 40 CFR 60, Subpart Dc, Standards of Performance for Small Industrial-Commercial- Institutional Steam Generating Units. Further, HPL requested an administrative permit amendment to reduce the permitted maximum rated design capacity of the Unit #7 natural gas-fired compressor engine from 930 bhp to 740 bhp. **MAQP**

#3331-05 became final on July 7, 2007, and replaced MAQP #3331-04.

On April 9, 2009, the Department received a complete application from HPL for a permit modification to increase the listed maximum power rating for Compressor Engine Unit 5 from 500 bhp to 550 bhp. The application was in response to a compliance inspection in October 2008 that noted the capacity of Unit #5 was 550 bhp rather than the permitted 500 bhp. Also, this permit modification incorporates a de minimis request received by the Department on February 5, 2009, to add a second fuel line/fuel source for the Hot Oil Heater. The second source of fuel will be the de-ethanizer tower. Gas from this source has a heat content of 1400 million British thermal units per million cubic feet (MMBtu/MMCF). The Hot Oil Heater at the Bakken plant is now capable of burning fuel from either source.

Finally, this permit modification updated permit conditions and language, and incorporates new and recently modified Federal New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants, as applicable. **MAQP #3331-06** replaced MAQP #3331-05.

On October 8, 2009, the Department received an application from Bison Engineering, Inc. (Bison), on behalf of HPL, for a permit modification to install one four-stroke, rich-burn design compressor engine with a rating equal to or less than 265 bhp, and to install an additional 33,600 gallon pressurized bullet tank for fractionated product. The additional tank would be for storage purposes and the truck loading capabilities would not increase.

On January 15, 2010, the Department received a revised application from Bison, on behalf of HPL, for a permit modification to install one four-stroke, rich-burn design compressor engine with a rating equal to or less than 265 bhp, to install an additional 84,000 gallon (instead of the previously proposed 33,600 gallon) pressurized bullet tank for fractionated product, and to increase the truck loading capabilities at the facility by 1,000 barrels (bbl) per day.

On January 18, 2010, the Department received notification (via email) from Bison, on behalf of HPL to request that the installation of the 84,000 gallon pressurized bullet tank for fractionated product be considered de minimis. According to the submitted potential to emit (PTE) calculations, the PTE for this project is estimated to be approximately 0.5 tpy. Based on the emission information provided, the proposed change associated with the installation of the pressurized tank meets the definition of de minimis change under the Administrative Rules of Montana (ARM) 17.8.745. On January 20, 2010, HPL and Bison were notified that the Department determined the installation of this proposed tank is excluded from requiring a permit as described in ARM 17.8.745(1) because the tank's potential emissions are less than 15 tpy (the de minimis level at that time) and the proposal would not violate any conditions of HPL's current MAQP #3331-06. In addition, the Department agrees that the installation of the 84,000 gallon pressurized bullet tank does not warrant an administrative amendment and accepts this as a courtesy notice on the part of HPL. The 84,000 gallon pressurized tank was not a requirement for the installation of the 265 bhp engine, nor the increased truck loading capability, and would not require an operating permit revision under ARM 17.8.1224(5). **MAQP #3331-07** replaced MAQP #3331-06.

On July 14, 2014, the Department received an application from Bison Engineering, Inc. (Bison), on behalf of HPL to modify MAQP #3331-07. The modification included replacement of the existing 740 brake horsepower (bhp) compressor engine with a four-stroke, rich-burn design compressor engine with a rating equal to or less than 840 bhp. The proposed action also included the installation of pollution controls on the 11 million standard cubic feet per day (MMSCFD) ethylene glycol (EG) dehydrator and associated still vent, consisting of a flash tank separator and routing the flash tank gases to the existing flare. **MAQP #3331-08** replaced MAQP #3331-07.

On September 30, 2015, the Department received a request from Hiland Partners Holdings, LLC, to change the name from Hiland Partners, LP, to the current legal name of Hiland Partners Holdings, LLC, and to update contact information. **MAQP#3331-09** replaced MAQP#3331-08.

D. Current Permit Action

On July 25 2016, the Department received a request from Hiland Partners Holdings, LLC, to change the mailing address from PO Box 5103, Enid, OK 73702 to 370 Van Gordon Street, Lakewood, CO 80228. The current permit action reflects this change and updates the permit language to reflect current permit language and references. **MAQP #3331-10** replaces MAQP #3331-09.

E. Additional Information

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

II. Applicable Rules and Regulations

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

HPH 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; and
10. ARM 17.8.223 Ambient Air Quality Standard for PM₁₀;
11. ARM 17.8.230 Fluoride in Forage

HPH 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, HPH 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 MMBtu 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. HPH will utilize pipeline-quality natural gas for operating its fuel burning equipment, which meets 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 Code of Federal Regulations (CFR) Part 60, Standards of Performance for New Stationary Sources (NSPS). This facility is considered an NSPS-affected facility under 40 CFR Part 60 and is subject to the requirements of the following Subparts:
 - a. Subpart A - General Provisions. This subpart applies to all equipment or facilities subject to an NSPS Subpart as listed below.
 - b. Subpart KKK - Standards of Performance for Onshore Natural Gas Processing Plants: HPH is an NSPS-affected source because it meets the definition of a natural gas processing plant as defined in 40 CFR 60, Subpart KKK.
 - c. Subpart Dc - Standards of Performance for Small Industrial-Commercial- Institutional Steam Generating Units. HPH is an NSPS-affected source because the natural gas-fired Hot Oil Heater with a maximum rated heat input capacity of 44.82 MMBtu/hr meets the definition of an affected source as defined in 40 CFR 60, Subpart Dc.
 - d. Subpart XX – Standards of Performance for Bulk Gasoline Terminals. Owners and operators are subject to 40 CFR 60, Subpart XX if the bulk gasoline terminal has loading racks that deliver liquid product into gasoline tank trucks. Under 40 CFR 60, Subpart XX, gasoline is defined as any petroleum distillate or petroleum distillate/ alcohol blend having a Reid vapor pressure of 27.6 kilopascals or greater that is used as a fuel for internal combustion engines. The product loaded at the facility is Y-grade fractionated natural gas liquids and does not fit the definition of gasoline; therefore 40 CFR 60, Subpart XX is not applicable to the Bakken Gathering Plant.
 - e. Subpart IIII - Standards of Performance for Compression Ignition Internal Combustion Engines. NSPS-affected engines at the HPH facility include any new or reconstructed stationary compression ignition (CI) internal combustion engines (ICE) that commence construction after July 11, 2005, where the stationary CI ICE are manufactured after April 1, 2006, and are not fire pump engines, and stationary CI ICE that modify or reconstruct their stationary CI ICE after July 11, 2005 (40 CFR 60, Subpart IIII). None of the current engines are subject to 40 CFR 60, Subpart IIII because they are not compression ignition engines. However, because this permit is written in a de minimis-friendly manner, this regulation may apply to future engines at the facility.

- f. Subpart JJJJ - Standards of Performance for Spark Ignition Internal Combustion Engines. This rule contains provisions that apply to owners or operators of stationary spark ignition (SI) internal combustion engines (ICE) that commence construction, modification, or reconstruction after June 12, 2006, where the stationary ICE is manufactured after July 1, 2007, for engines greater than 500 bhp, or after July 1, 2008, for engines less than 500 bhp. The NSPS-affected engines at the HPH facility include any new or reconstructed stationary SI ICE. Compressor engine Units 8 (265 bhp) and 7 (840 hp) commenced construction after June 12, 2006, however, Unit 8 has a maximum engine bhp less than 500 bhp and was manufactured before July 1, 2008, and Unit 7 has a maximum engine bhp greater than 500 bhp and was manufactured before July 1, 2007. Neither engine has been modified or reconstructed after that date. Therefore, compressor engine Units 7 and 8 are not subject to 40 CFR 60, Subpart JJJJ. Compressor engines Units 1 through 6 are not subject to 40 CFR 60, Subpart JJJJ because they have not been constructed, modified, or reconstructed after June 12, 2006. Because this permit is written in a de minimis-friendly manner, this regulation may apply to future engines at the facility.
8. 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 a 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 either 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 Bison, on behalf of HPH, the Bakken Gathering Plant 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 Bakken Gathering Plant operates dehydration units; however, they are EG dehydration units not TEG units and therefore does not operate an affected source under the area source provisions.
- c. 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 63, Subpart HHH. In order for a natural gas transmission and storage facility to be subject to 40 CFR 63, Subpart HHH requirements,

certain criteria must be met. First, the facility must transport or store natural gas prior to the gas entering the pipeline to a local distribution company or to a final end user if there is no local distribution company. In addition, the facility must be a major source of HAPs as determined using the maximum natural gas throughput as calculated in either paragraphs (a)(1) and (a)(2) or paragraphs (a)(2) and (a)(3) of 40 CFR 63, Subpart HHH. Second, a facility must contain an affected source (glycol dehydration unit) as defined in paragraph (b) of 40 CFR 63, Subpart HHH. Finally, if the first two criteria are met, and the exemptions contained in paragraph (f) of 40 CFR 63, Subpart HHH, do not apply, the facility is subject to the applicable provisions of 40 CFR 63, Subpart HHH. Based on the information submitted by Bison, on behalf of HPH, the Bakken Gathering Plant facility is not subject to the provisions of 40 CFR 63, Subpart HHH because the facility is not a major source of HAPs.

d. 40 CFR 63, Subpart ZZZZ National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. This rule incorporates, by reference, 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants (NESHAP). The proposed facility contains compressor engines which are affected sources under 40 CFR 63 Subpart ZZZZ. Compressor engine Units 1-3 and 5 are existing four-stroke rich-burn (4SRB) reciprocating internal combustion engines (RICE) with a site rating of more than 500 hp and meet the definition of an affected source at a remote location. Compressor engine units 4 and 6 are existing four-stroke rich-burn (4SRB) reciprocating internal combustion engines (RICE) with a site rating of less than or equal to 500 hp and meet the definition of an affected source. Per 40 CFR 63.6595(a) an affected source that is an existing stationary RICE located at an area source of HAP emissions, must comply with the applicable emission limitations, operating limitations and other requirements of this section. Compressor engine units 7 and 8 are considered to be new stationary 4SRB RICE because construction commenced after June 12, 2006 and meet the definition of an affected source. Per 40 CFR 63.6590(c), an affected source that is a new or reconstructed stationary RICE located at an area source must meet the requirements of this part by meeting the NSPS requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR Subpart JJJJ for spark ignition engines.

- e. 40 CFR 63, Subpart BBBBBB National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities. This rule establishes national emission limitations and management practices for HAPs emitted from area source gasoline distribution bulk terminals, bulk plants, and pipeline facilities. 40 CFR 63, Subpart CC defines gasoline as any petroleum distillate or petroleum distillate/alcohol blend having a Reid vapor pressure of 27.6 kilopascals or greater that is used as a fuel for internal combustion engines. The product loaded at HPH's Bakken Gathering Plant is Y-grade fractionated natural gas liquids and does not fit under the definition of gasoline; therefore, 40 CFR 63, Subpart BBBBBB does not apply to the Bakken Gathering Plant.

- 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. HPH must demonstrate compliance with the ambient air quality standards with a stack height that does not exceed Good Engineering Practices (GEP).
- 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 air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the Department. The current permit action is considered an administrative amendment; therefore, HPH was not required to submit an application fee.
 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.
- 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 air quality permit or permit modification to construct, modify, or use any air contaminant sources that have the PTE greater than 25 tpy of any pollutant. The Bakken Gathering Plant has a PTE greater than 25 tpy of nitrogen oxides (NO_x), carbon monoxide (CO), and volatile organic compounds (VOC); 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 do not require a permit under the Montana Air Quality Permit Program.

5. ARM 17.8.748 New or Modified Emitting Units--Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, modification, or use of a source. The current permit action is considered an administrative amendment; therefore, a permit application was not required. (7) This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. The current permit action is an administrative amendment, and therefore, a public notice was not required.
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 and determination 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 HPH 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 17.8.760 Additional Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those applications that require an environmental impact statement.
12. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or modified source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.
13. 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).

14. 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.
15. 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.
16. ARM 17.8.770 Additional Requirements for Incinerators. This rule specifies the additional information that must be submitted to the Department for incineration facilities subject to 75-2-215, MCA.

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 tpy of any pollutant (excluding fugitive emissions).

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 greater than 100 tpy of any pollutant;
 - b. PTE greater than 10 tpy of any one HAP, PTE greater than 25 tpy of a combination of all HAPs, or lesser quantity as the Department may establish by rule; or
 - c. PTE greater than 70 tpy of particulate matter with an aerodynamic diameter of 10 microns or less (PM₁₀) in a serious PM₁₀ nonattainment area.

2. ARM 17.8.1204 Air Quality Operating Permit Program. (1) Title V of the FCAA amendments of 1990 requires that all sources, as defined in ARM 17.8.1204(1), obtain a Title V Operating Permit. In reviewing and issuing MAQP #3331-10 for HPH, the following conclusions were made:
- a. The facility's allowable PTE is less than 100 tpy for any pollutant.
 - b. The facility's PTE is less than 10 tpy for any individual HAP and less than 25 tpy 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, Subpart Dc, and Subpart KKK)
 - e. This facility is subject to a current NESHAP (40 CFR 63, Subpart ZZZZ).
 - f. This source is not a Title IV affected source.
 - g. This source is not a solid waste combustion unit.
 - h. This source is not an Environmental Protection Agency (EPA) designated Title V source.
 - i. 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 potential to emit.
 - 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.
3. ARM 17.8.1207 Certification of Truth, Accuracy, and Completeness.

HPH 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.

HPH 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. However, if minor sources subject to NSPS are required to obtain a Title V Operating Permit, HPH will be required to obtain a Title V Operating Permit.

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

III. BACT Determination

A BACT determination is required for each new or modified source. HPH 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. The current permit action is an administrative amendment and does not require a BACT analysis.

IV. Emission Inventory

Source	Tons/year					
	PM ₁₀	PM _{2.5} ⁽¹⁾	NO _x	VOC	CO	SO _x
912 bhp Waukesha 7042GU Compressor Engine Unit 1	0.60	0.60	8.81	8.81	17.62	0.02
912 bhp Waukesha 7042GU Compressor Engine Unit 2	0.60	0.60	8.81	8.81	17.62	0.02
912 bhp Waukesha 7042GU Compressor Engine Unit 3	0.60	0.60	8.81	8.81	17.62	0.02
185 bhp Waukesha 1197GU Compressor Engine Unit 4	0.13	0.13	1.79	1.79	3.57	0.004
550 bhp Caterpillar G398 TA LCR Compressor Engine Unit 5	0.37	0.37	5.31	5.31	5.31	0.01
185 bhp Waukesha 1197 Compressor Engine Unit 6	0.13	0.13	1.79	1.79	1.79	0.004
840 bhp Waukesha F3514 GSI Compressor Engine Unit 7	0.65	0.65	8.11	8.11	8.11	0.02
265 bhp Caterpillar G342 TA LCR Compressor Engine Unit 8	0.19	0.19	2.56	2.56	1.28	0.01
44.82-MMBtu/hr Natural Gas-fired Hot Oil Heater ⁽²⁾	1.24	1.24	21.99	0.90	8.83	0.10
Dehydration Unit #1--Still Vent (9 MMSCF/d)	---	---	---	26.70	---	---
Dehydration Unit #2--Still Vent (11 MMSCF/d)(included in Emergency Flare)	---	---	---	---	---	---
Fractionation Unit (included in fugitives)						
Fugitive Leaks (valves, flanges, etc.)	---	---	---	9.27	---	---
Truck Loading (4775 bbl/day) – <i>fugitive</i> (controlled by submerged filling and VRU)	---	---	---	79.72	---	---
400-bbl Condensate Storage Tank #1						
--Working & Breathing Loss	---	---	---	0.86	---	---
--Flashing Loss	---	---	---	6.70	---	---
400-bbl Condensate Storage Tank #2						
--Working & Breathing Loss	---	---	---	0.86	---	---
--Flashing Loss	---	---	---	6.70	---	---
500-Gallon Diesel Storage Tank				0.0002		
1135 bhp Cummins VTA28-G7 Emergency/Backup Generator	0.19	0.10	7.95	0.31	3.07	0.08
Emergency Flare (RESTRICTED to 35 MMSCF/yr)	0.13	0.13	1.43	2.94	7.77	0.01
Emergency Flare Pilot (0.5MMBtu/hr)	0.01	0.01	0.18	0.01	0.15	0.001
Total	4.84	4.75	77.54	180.96	92.74	0.3
Total Title V (non-Fugitive)	4.84	4.75	77.54	91.97	92.74	0.3

(1) All PM emissions from sources of natural gas combustion are assumed to be in the PM_{2.5} size fraction in accordance with AP-42 Table 3.2-3 and Table 1.4-2. Ninety seven percent of PM₁₀ emissions from the emergency back-up generator are estimated to be in the PM_{2.5} size fraction based on AP-42 Table 3.4-2.

(2) Emission inventory summary is based on the greater of two calculations below, using either the 1200 MMBtu/MMSCF or 1400 MMBtu/MMSCF fuel source.

Units 1 - 3: 912 bhp Compressor Engines (3 Engines)

Brake Horsepower: 912 bhp

Hours of operation: 8760 hr/yr

PM₁₀/PM_{2.5} Emissions (filterable & condensable)

Emission Factor: 1.94E-02 lb/MMBtu (AP-42, Table 3.2-3, 7/00) Fuel

Consumption: 7.1 MMBtu/hr (Maximum Design) Calculations:

$$7.1 \text{ MMBtu/hr} * 1.94\text{E-}02 \text{ lb/MMBtu} = 0.138 \text{ lb/hr}$$

$$0.138 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.60 \text{ ton/yr}$$

NO_x Emissions

Emission factor: 1.00 gram/bhp-hr (BACT Determination / Permit Limit)

Calculations: 1.00 gram/bhp-hr * 912 bhp * 0.002205 lb/gram = 2.011 lb/hr

$$2.011 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 8.81 \text{ ton/yr}$$

VOC Emissions

Emission factor: 1.00 gram/bhp-hr (BACT Determination / Permit Limit)

Calculations: 1.00 gram/bhp-hr * 912 bhp * 0.002205 lb/gram = 2.011 lb/hr

$$2.011 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 8.81 \text{ ton/yr}$$

CO Emissions

Emission factor: 2.00 gram/bhp-hr (BACT Determination / Permit Limit)

Calculations: 2.00 gram/bhp-hr * 912 bhp * 0.002205 lb/gram = 4.022 lb/hr

$$4.022 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 17.62 \text{ ton/yr}$$

SO₂ Emission

Emission factor: 5.88E-04 lb/MMBtu (AP-42, Table 3.2-3, 7/00) Fuel

Consumption: 7.1 MMBtu/hr (Maximum Design)

Calculations: 7.1 MMBtu/hr * 5.88E-04 lb/MMBtu = 0.004 lb/hr

$$0.004 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.02 \text{ ton/yr}$$

Units 4 and 6: 185 bhp Compressor Engines (2 Engines)

Brake Horsepower: 185 bhp

Hours of operation: 8760 hr/yr

PM₁₀/PM_{2.5} Emissions (filterable & condensable)

Emission Factor: 1.94E-02 lb/MMBtu (AP-42, Table 3.2-3, 7/00) Fuel

Consumption: 1.48 MMBtu/hr (Maximum Design) Calculations: 1.48

MMBtu/hr * 1.94E-02 lb/MMBtu = 0.029 lb/hr

$$0.029 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.13 \text{ ton/yr}$$

NO_x Emissions

Emission factor: 1.00 gram/bhp-hr (BACT Determination / Permit Limit)

Calculations: 1.00 gram/bhp-hr * 185 bhp * 0.002205 lb/gram = 0.41 lb/hr

$$0.41 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 1.79 \text{ ton/yr}$$

VOC Emissions

Emission factor: 1.00 gram/bhp-hr (BACT Determination / Permit Limit)

Calculations: 1.00 gram/bhp-hr * 185 bhp * 0.002205 lb/gram = 0.41 lb/hr

$$0.41 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 1.79 \text{ ton/yr}$$

CO Emissions (Unit 4)

Emission factor: 2.00 gram/bhp-hr (BACT Determination / Permit Limit)

Calculations: $2.00 \text{ gram/bhp-hr} * 185 \text{ bhp} * 0.002205 \text{ lb/gram} = 0.82 \text{ lb/hr}$
 $0.82 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 3.57 \text{ ton/yr}$

CO Emissions (Unit 6)

Emission factor: 1.00 gram/bhp-hr (BACT Determination – 2006 / Permit Limit)

Calculations: $1.00 \text{ gram/bhp-hr} * 185 \text{ bhp} * 0.002205 \text{ lb/gram} = 0.41 \text{ lb/hr}$
 $0.41 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 1.79 \text{ ton/yr}$

SO₂ Emission

Emission factor: 5.88E-04 lb/MMBtu (AP-42, Table 3.2-3, 7/00) Fuel

Consumption: 1.48 MMBtu/hr (Maximum Design)

Calculations: $1.48 \text{ MMBtu/hr} * 5.88\text{E-}04 \text{ lb/MMBtu} = 0.0009 \text{ lb/hr}$
 $0.0009 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.004 \text{ ton/yr}$

Unit 5: 550 bhp Compressor Engine

Brake Horsepower: 550 bhp

Hours of operation: 8760 hr/yr

PM₁₀/PM_{2.5} Emissions (filterable & condensable)

Emission Factor: 1.94E-02 lb/MMBtu (AP-42, Table 3.2-3, 7/00) Fuel

Consumption: 4.40 MMBtu/hr (Maximum Design) Calculations: 4.40

MMBtu/hr * 1.94E-02 lb/MMBtu = 0.085 lb/hr
 $0.085 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.374 \text{ ton/yr}$

NO_x Emissions

Emission factor: 1.00 gram/bhp-hr (BACT Determination / Permit Limit)

Calculations: $1.00 \text{ gram/bhp-hr} * 550 \text{ bhp} * 0.002205 \text{ lb/gram} = 1.21 \text{ lb/hr}$
 $1.21 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 5.31 \text{ ton/yr}$

VOC Emissions

Emission factor: 1.00 gram/bhp-hr (BACT Determination / Permit Limit)

Calculations: $1.00 \text{ gram/bhp-hr} * 550 \text{ bhp} * 0.002205 \text{ lb/gram} = 1.21 \text{ lb/hr}$
 $1.21 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 5.31 \text{ ton/yr}$

CO Emissions

Emission factor: 1.00 gram/bhp-hr (BACT Determination / Permit Limit)

Calculations: $1.00 \text{ gram/bhp-hr} * 550 \text{ bhp} * 0.002205 \text{ lb/gram} = 1.21 \text{ lb/hr}$
 $1.21 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 5.31 \text{ ton/yr}$

SO₂ Emission

Emission factor: 5.88E-04 lb/MMBtu (AP-42, Table 3.2-3, 7/00) Fuel

Consumption: 4.40 MMBtu/hr (Maximum Design)

Calculations: $4.40 \text{ MMBtu/hr} * 5.88\text{E-}04 \text{ lb/MMBtu} = 0.0026 \text{ lb/hr}$
 $0.0026 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.0113 \text{ ton/yr}$

Unit 7: 840 bhp Compressor Engine

Brake Horsepower: 840 bhp

Hours of operation: 8760 hr/yr

PM₁₀/PM_{2.5} Emissions (filterable & condensable)

Emission Factor: 1.94E-02 lb/MMBtu (AP-42, Table 3.2-3, 7/00) Fuel

Consumption: 7.69 MMBtu/hr (Maximum Design)

Calculations: $7.69 \text{ MMBtu/hr} * 1.94\text{E-}02 \text{ lb/MMBtu} = 0.149 \text{ lb/hr}$

$0.149 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.65 \text{ ton/yr}$

NO_x Emissions

Emission factor: 1.00 gram/bhp-hr (BACT Determination / Permit Limit)

Calculations: $1.00 \text{ gram/bhp-hr} * 840 \text{ bhp} * 0.002205 \text{ lb/gram} = 1.85 \text{ lb/hr}$

$1.85 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 8.11 \text{ ton/yr}$

VOC Emissions

Emission factor: 1.00 gram/bhp-hr (BACT Determination / Permit Limit)

Calculations: $1.00 \text{ gram/bhp-hr} * 840 \text{ bhp} * 0.002205 \text{ lb/gram} = 1.85 \text{ lb/hr}$

$1.85 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 8.11 \text{ ton/yr}$

CO Emissions

Emission factor: 1.00 gram/bhp-hr (BACT Determination / Permit Limit)

Calculations: $1.00 \text{ gram/bhp-hr} * 840 \text{ bhp} * 0.002205 \text{ lb/gram} = 1.85 \text{ lb/hr}$

$1.85 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 8.11 \text{ ton/yr}$

SO₂ Emission

Emission factor: 5.88E-04 lb/MMBtu (AP-42, Table 3.2-3, 7/00) Fuel

Consumption: 7.69 MMBtu/hr (Maximum Design) Calculations: 7.69

MMBtu/hr * 5.88E-04 lb/MMBtu = 0.0045 lb/hr

$0.0045 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.02 \text{ ton/yr}$

Unit 8: 265 bhp Compressor Engine

Brake Horsepower: 265 bhp

Hours of operation: 8760 hr/yr

PM₁₀/PM_{2.5} Emissions (filterable & condensable)

Emission Factor: 1.94E-02 lb/MMBtu (AP-42, Table 3.2-3, 7/00) Fuel

Consumption: 2.2 MMBtu/hr (Maximum Design) Calculations: 2.2

MMBtu/hr * 1.94E-02 lb/MMBtu = 0.043 lb/hr

$0.043 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.19 \text{ ton/yr}$

NO_x Emissions

Emission factor: 1.00 gram/bhp-hr (BACT Determination / Manufacturer)

Calculations: $1.00 \text{ gram/bhp-hr} * 265 \text{ bhp} * 0.002205 \text{ lb/gram} = 0.58 \text{ lb/hr}$

$0.58 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 2.56 \text{ ton/yr}$

VOC Emissions

Emission factor: 1.00 gram/bhp-hr (BACT Determination / Manufacturer)

Calculations: $1.00 \text{ gram/bhp-hr} * 265 \text{ bhp} * 0.002205 \text{ lb/gram} = 0.58 \text{ lb/hr}$

$0.58 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 2.56 \text{ ton/yr}$

CO Emissions

Emission factor: 0.5 gram/bhp-hr (BACT Determination / Manufacturer)

Calculations: $0.5 \text{ gram/bhp-hr} * 265 \text{ bhp} * 0.002205 \text{ lb/gram} = 0.29 \text{ lb/hr}$

$0.29 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 1.28 \text{ ton/yr}$

SO₂ Emission

Emission factor: 5.88E-04 lb/MMBtu (AP-42, Table 3.2-3, 7/00) Fuel
Consumption: 2.2 MMBtu/hr (Maximum Design)
Calculations: $2.2 \text{ MMBtu/hr} * 5.88\text{E-}04 \text{ lb/MMBtu} = 0.001 \text{ lb/hr}$
 $0.001 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.01 \text{ ton/yr}$

44.82 MMBtu/hr Hot Oil Heater H-1

Hours of operation: 8760 hr/yr
Fuel Heating Value: 1200 MMBtu/MMSCF (Company Information) Fuel
Consumption: 44.82 MMBtu/hr (Maximum Design)

PM₁₀/PM_{2.5} Emissions (front and back half)

Emission Factor: 7.6 lb/MMSCF (AP-42, Table 1.4-2, 7/98)
Calculations: $7.6 \text{ lb/MMSCF} * 44.82 \text{ MMBtu/hr} / 1200 \text{ MMBtu/MMSCF} = 0.28 \text{ lb/hr}$
 $0.28 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 1.24 \text{ ton/yr}$

NO_x Emissions

Emission factor: 0.112 lb/MMBtu (BACT Limit / Permit Limit)
Calculations: $0.112 \text{ lb/MMBtu} * 44.82 \text{ MMBtu/hr} = 5.02 \text{ lb/hr}$
 $5.02 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 21.99 \text{ ton/yr}$

VOC Emissions

Emission Factor: 5.5 lb/MMSCF (AP-42, Table 1.4-2, 7/98)
Calculations: $5.5 \text{ lb/MMSCF} * 44.82 \text{ MMBtu/hr} / 1200 \text{ MMBtu/MMSCF} = 0.21 \text{ lb/hr}$
 $0.21 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.90 \text{ ton/yr}$

CO Emissions

Emission factor: 0.045 lb/MMBtu (BACT Limit / Permit Limit)
Calculations: $0.045 \text{ lb/MMBtu} * 44.82 \text{ MMBtu/hr} = 2.02 \text{ lb/hr}$
 $2.02 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 8.83 \text{ ton/yr}$

SO₂ Emissions

Emission Factor: 0.6 lb/MMSCF (AP-42, Table 1.4-2, 7/98)
Calculations: $0.6 \text{ lb/MMSCF} * 44.82 \text{ MMBtu/hr} / 1200 \text{ MMBtu/MMSCF} = 0.02 \text{ lb/hr}$
 $0.02 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.10 \text{ ton/yr}$

OR:

Fuel Heating Value: 1400 MMBtu/MMSCF (Company Information) Fuel
Consumption: 44.82 MMBtu/hr (Maximum Design)

PM₁₀/PM_{2.5} Emissions

Emission Factor: 7.6 lb/MMSCF (AP-42, Table 1.4-2, 7/98)
Calculations: $7.6 \text{ lb/MMSCF} * 44.82 \text{ MMBtu/hr} / 1400 \text{ MMBtu/MMSCF} = 0.24 \text{ lb/hr}$
 $0.24 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 1.07 \text{ ton/yr}$

NO_x Emissions

Emission factor: 0.112 lb/MMBtu (BACT Limit / Permit Limit)
Calculations: $0.112 \text{ lb/MMBtu} * 44.82 \text{ MMBtu/hr} = 5.02 \text{ lb/hr}$
 $5.02 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 21.99 \text{ ton/yr}$

VOC Emissions

Emission Factor: 5.5 lb/MMSCF (AP-42, Table 1.4-2, 7/98)
Calculations: 5.5 lb/MMSCF * 44.82 MMBtu/hr / 1400 MMBtu/MMSCF = 0.18 lb/hr
0.18 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 0.77 ton/yr

CO Emissions

Emission factor: 0.045 lb/MMBtu (BACT Limit / Permit Limit)
Calculations: 0.045 lb/MMBtu * 44.82 MMBtu/hr = 2.02 lb/hr
2.02 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 8.83 ton/yr

SO₂ Emissions

Emission Factor: 0.6 lb/MMSCF (AP-42, Table 1.4-2, 7/98)
Calculations: 0.6 lb/MMSCF * 44.82 MMBtu/hr / 1400 MMBtu/MMSCF = 0.02 lb/hr
0.02 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 0.084 ton/yr

Dehydration Unit #1 (11 MMSCFD) Dehydrator Still Vent

Hours of operation: 8760 hr/yr VOC

Emissions

Emission Factor: 1.032 lb/hr (GRI GlyCalc, Version 4.0 analysis by Bison, on behalf of HPH – gas sample dated 12/03/2013)
Calculations (uncontrolled): 1.032 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 4.52 ton/yr
Calculations (controlled): 4.52 ton/yr * 98% eff (*flash tank and flare*) = 0.0904 ton/yr (BACT limit)

Dehydration Unit #2 (9 MMSCFD) Dehydrator Still Vent

Hours of operation: 8760 hr/yr VOC

Emissions

Emission Factor: 6.0948 lb/hr (GRI GlyCalc, Version 4.0 analysis by Bison, on behalf of HPH – gas sample dated 02/19/2009)
Calculations: 6.0948 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 26.70 ton/yr

Fugitive Emissions

VOC Emissions

Basis for Emission Factors: EPA Protocol for Equipment Leak Emission Estimates, November 1995 (EPA-453/R-95-017)

Inlet/Fuel Gas Stream

Hours of operation: 8760 hr/yr
VOC Fraction: 43.25% for (a) and (b) – VOC weight percent is C3+ VOC
Fraction: 100.0% for (c) - VOC weight percent is C3+

- (a) Plant fugitives: Valves (30), Relief valves (16), Flanges (50), and Connectors (45) = 2.94 ton/yr
- (b) New piping around fractionation area, stabilizer area, and Scon area: Valves (334), Relief valves (7), Flanges (347), and Connectors (0) = 16.41 ton/yr

(c) New piping for new 84,000 gallon tank area:

Valves (11), Relief valves (0), Flanges (18), and Connectors (0) = 0.55 ton/yr Subtotal:

$$2.94 \text{ ton/yr} + 16.41 \text{ ton/yr} = 19.35 \text{ ton/yr hydrocarbons (HC)}$$
$$(19.35 \text{ ton/yr} * 0.4325) + (0.55 \text{ ton/yr} * 1.00) = 8.37 + 0.55 = 8.92 \text{ ton/yr VOC}$$

Condensate Stream

Hours of operation: 8760 hr/yr

VOC Fraction: 0.98 – VOC weight percent is C3+

Plant fugitives:

Valves (5), Relief valves (2), Flanges (10), and Connectors (10) = 0.36 ton/yr

Subtotal: 0.36 ton/yr * 0.98 = 0.35 ton/yr

Total: 8.92 tpy + 0.35 tpy = 9.27 tpy

Truck Loading: Submerged Fill: (Dedicated Normal Service) with VRU Control

Formula 1 of Section 5.2 of EPA's "Compilation of Air Pollutant Emission Factors – AP-42 (1/95)"

$$L_L = 12.46(SPM_v/T)$$

L_L = loading loss; pounds per 1000 gallons loaded S =

saturation factor = 0.60 (AP-42, Table 5-2.1)

P = true vapor pressure of liquid loaded; pounds per square inch absolute (AP-42, Table 7.1-2) M_v =

molecular weight of vapors; pound per pound-mole (AP-42, Table 7.1-2)

T = temperature of bulk liquid loaded; degrees Rankin (degrees Fahrenheit + 460)

Inputs

T = 70 degrees Fahrenheit = 530 degrees Rankin S =

Submerged loading dedicated normal service P = Gasoline

RVP 13 (=8.31 psia @ 70°F)

$$L_L = 12.46 * ((0.60 * 8.31 * 62)/530) = 7.27 \text{ lb}/10^3 \text{ gal}$$

VRU - Controlled loading efficiency 70% (based on least efficient truck – Permit Application)

$$L_{Lcor} = (1-70/100) * 7.26/10^3 = 2.178 \text{ lb}/10^3 \text{ gal}$$

$$4,775 \text{ bbl/day} * 42 \text{ gal/bbl} * 365 \text{ days/yr} = 73.20 \text{ MM gal/yr}$$

$$73.20 \text{ MM gal/yr} * 2.178 \text{ lb}/10^3 \text{ gal} = 159,431 \text{ lb/yr}$$

$$159,431 \text{ lb/yr} * 0.0005 \text{ ton/lb} = 79.72 \text{ ton/yr (fugitive emissions)}$$

400 bbl Condensate Storage Tanks (2 Tanks)

Hours of operation: 8760 hr/yr VOC

Emissions Working & Breathing Loss:

Emission Factor: 1714.34 lb/yr (EPA Tanks, Version 4.0 - Permit Application)

Calculations: 1714.34 lb/yr * 0.0005 ton/lb = 0.86 ton/yr

VOC Emissions Flashing Loss:

Emissions: 6.70 ton/yr (Vasquez-Beggs Solution Gas/Oil Ratio Correlation Method–Permit Application)

500 Gallon Diesel Storage Tank (1 Tank)

Hours of operation: 8760 hr/yr

VOC Emissions - Working and Breathing Losses

Emission Factor: 0.32 lb/yr (EPA Tanks, Version 4.0 - Permit Application)
Calculations: $0.32 \text{ lb/yr} * 0.0005 \text{ ton/lb} = 0.000160 \text{ ton/yr}$

1135 bhp Emergency/Backup Diesel Generator (1 Generator)

Brake Horsepower: 1135 bhp
Max. Fuel Combustion Rate: 58.50 gal/hr (Permit Application) Hours of operation: 500 hr/yr (Permit Limit)

PM₁₀ Emissions

Emission factor: 0.30 gram/bhp-hr (BACT Determination / Manufacturer's Data / Permit Limit)
Calculations: $0.30 \text{ gram/bhp-hr} * 1135 \text{ bhp} * 0.002205 \text{ lb/gram} = 0.75 \text{ lb/hr}$
 $0.75 \text{ lb/hr} * 500 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.19 \text{ ton/yr}$

PM_{2.5} Emissions

Fuel Heating Value: 0.137 MMBtu/gal (AP-42, Appendix A, pg. A-5, 9/85 (reformatted 1/95) Emission factor: 0.0479 lb/MMBtu (AP-42, Table 3.4-2, 10/96)
Calculations: $0.137 \text{ MMBtu/gal} * 58.50 \text{ gal/hr} * 0.0479 \text{ lb/MMBtu} * 500 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.10 \text{ ton/yr}$

NO_x Emissions

Emission factor: 12.7 gram/bhp-hr (BACT Determination / Manufacturer's Data / Permit Limit)
Calculations: $12.7 \text{ gram/bhp-hr} * 1135 \text{ bhp} * 0.002205 \text{ lb/gram} = 31.78 \text{ lb/hr}$
 $31.78 \text{ lb/hr} * 500 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 7.95 \text{ ton/yr}$

VOC Emissions

Emission factor: 0.5 gram/bhp-hr (BACT Determination / Manufacturer's Data / Permit Limit)
Calculations: $0.5 \text{ gram/bhp-hr} * 1135 \text{ bhp} * 0.002205 \text{ lb/gram} = 1.25 \text{ lb/hr}$
 $1.25 \text{ lb/hr} * 500 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.31 \text{ ton/yr}$

CO Emissions

Emission factor: 4.9 gram/bhp-hour (BACT Determination / Manufacturer's Data / Permit Limit)
Calculations: $4.9 \text{ gram/bhp-hour} * 1135 \text{ bhp} * 0.002205 \text{ lb/gram} = 12.26 \text{ lb/hr}$
 $12.26 \text{ lb/hr} * 500 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 3.07 \text{ ton/yr}$

SO₂ Emission

Emission factor: 0.13 gram/bhp-hour (BACT Determination / Manufacturer's Data / Permit Limit)
Calculations: $0.13 \text{ gram/bhp-hour} * 1135 \text{ bhp} * 0.002205 \text{ lb/gram} = 0.33 \text{ lb/hr}$
 $0.33 \text{ lb/hr} * 500 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.08 \text{ ton/yr}$

Emergency Flare

Pilot

Pilot: 0.5 MMBTU/hr (Maximum fuel combustion rate – Permit Application) Fuel
Heating Value: 1200 MMBtu/MMSCF (Company Information)
Hours of Operation: 8760 hr/yr

PM₁₀/PM_{2.5} Emissions

Emission Factor: 7.6 lb/MMSCF (AP-42, Table 1.4-2, 7/98)
Calculations: $7.6 \text{ lb/MMSCF} * 0.50 \text{ MMBtu/hr} / 1200 \text{ MMBtu/MMSCF} = 0.003 \text{ lb/hr}$
 $0.003 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.014 \text{ ton/yr}$

NO_x Emissions

Emission factor: 100 lb/MMSCF (AP-42, Table 1.4-1, 7/98)
Calculations: $100 \text{ lb/MMSCF} * 0.50 \text{ MMBtu/hr} / 1200 \text{ MMBtu/MMSCF} = 0.042 \text{ lb/hr}$
 $0.042 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.18 \text{ ton/yr}$

VOC Emissions

Emission Factor: 5.5 lb/MMSCF (AP-42, Table 1.4-2, 7/98)
Calculations: $5.5 \text{ lb/MMSCF} * 0.50 \text{ MMBtu/hr} / 1200 \text{ MMBtu/MMSCF} = 0.002 \text{ lb/hr}$
 $0.002 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.01 \text{ ton/yr}$

CO Emissions

Emission factor: 84 lb/MMSCF (AP-42, Table 1.4-1, 7/98)
Calculations: $84 \text{ lb/MMSCF} * 0.50 \text{ MMBtu/hr} / 1200 \text{ MMBtu/MMSCF} = 0.035 \text{ lb/hr}$
 $0.035 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.15 \text{ ton/yr}$

SO₂ Emissions

Emission Factor: 0.6 lb/MMSCF (AP-42, Table 1.4-2, 7/98) Calculations: $0.6 \text{ lb/MMSCF} * 0.50$
 $\text{MMBtu/hr} / 1200 \text{ MMBtu/MMSCF} = 0.0003 \text{ lb/hr}$
 $0.0003 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.001 \text{ ton/yr}$

Emergency Gas Combustion

Plant Gas: 35 MMSCF/year – RESTRICTION
Fuel Heating Value: 1200 MMBtu/MMSCF (Company Information)

PM₁₀/PM_{2.5} Emissions

Emission Factor: 7.6 lb/MMSCF (AP-42, Table 1.4-2, 7/98)
Calculations: $7.6 \text{ lb/MMSCF} * 35 \text{ MMSCF/yr} / 2000 \text{ lb/ton} = 0.133$

NO_x Emissions

Emission factor: 0.068 lb/MMBtu (AP-42, Table 13.5-1, 1/95)
Calculations: $0.068 \text{ lb/MMBtu} * 1200 \text{ MMBtu/MMSCF} * 35 \text{ MMSCF/yr} / 2000 \text{ lb/ton} = 1.43 \text{ ton/yr}$

VOC Emissions - as total hydrocarbons (HC)

Emission Factor: 0.14 lb HC/MMBtu (AP-42, Table 13.5-1, 1/95)
Calculations: $0.14 \text{ lb HC/MMBtu} * 1200 \text{ MMBtu/MMSCF} * 35 \text{ MMSCF/yr} / 2000 \text{ lb/ton} = 2.94 \text{ ton/yr}$

CO Emissions

Emission factor: 0.37 lb/MMBtu (AP-42, Table 13.5-1, 1/95)
Calculations: $0.37 \text{ lb/MMBtu} * 1200 \text{ MMBtu/MMSCF} * 35 \text{ MMSCF/yr} / 2000 \text{ lb/ton} = 7.77 \text{ ton/yr}$

SO₂ Emissions

Emission Factor: 0.6 lb/MMSCF (AP-42, Table 1.4-2, 7/98)
Calculations: $0.6 \text{ lb/MMSCF} * 35 \text{ MMSCF/yr} / 2000 \text{ lb/ton} = 0.01 \text{ ton/yr}$

V. Existing Air Quality

The facility is located in the NE ¼ of the NW ¼ of Section 3, Township 23 North, Range 58 East in Richland County, Montana. The air quality of this area is classified as either better than National Standards or unclassifiable/attainment for the National Ambient Air Quality Standards (NAAQS) for criteria pollutants.

VI. Ambient Air Impact Analysis

Based on the information provided and the conditions established in MAQP #3331-10, the Department determined that there will be no impacts from this permitting action. The Department believes that it will not cause or contribute to a violation of any set ambient air quality standard.

VII. Taking or Damaging Implication Analysis

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

YES	NO	
X		1. Does the action pertain to land or water management or environmental regulation affecting private real property or water rights?
	X	2. Does the action result in either a permanent or indefinite physical occupation of private property?
	X	3. Does the action deny a fundamental attribute of ownership? (ex.: right to exclude others, disposal of property)
	X	4. Does the action deprive the owner of all economically viable uses of the property?
	X	5. Does the action require a property owner to dedicate a portion of property or to grant an easement? [If no, go to (6)].
		5a. Is there a reasonable, specific connection between the government requirement and legitimate state interests?
		5b. Is the government requirement roughly proportional to the impact of the proposed use of the property?
	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.

VIII. Environmental Assessment

The current permit 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: Loni Patterson

Date: August 9, 2016