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June 7, 2017

William F. Durham, Director
WVDEP, Division of Air Quality
601 57th Street SE
Charleston, WV 25304

**Re: Equitrans, LP – Copley Run Compressor Station
Facility ID No: 041-00009
Title V Permit R30-04100009-2012
Application for Renewal**

Dear Mr. Durham:

Equitrans, LP (Equitrans) is submitting this Title V permit renewal application for its natural gas compressor station located in Lewis County, West Virginia ("Copley Run Compressor Station). This station is currently operating under permit R30-041-00009-2012, issued December 11, 2012. The current permit expires on December 11, 2017 with a renewal application due date of June 11, 2017.

This permit application is being filed to renew the Title V permit at the Copley Run Compressor Station. The Title V Permit Application Forms and required supporting documents in accordance with the instructions for Title V permit application forms are enclosed as outlined below:

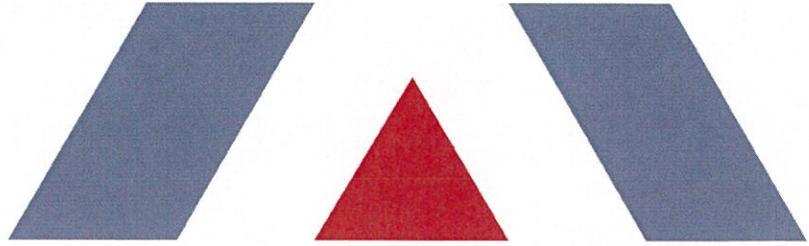
- Section 1 – Introduction
- Section 2 - Sample Emission Source Calculations
- Section 3 - Regulatory Discussion
- Section 4 - Title V Application Forms
- Attachment A - Area Map
- Attachment B - Plot Plan
- Attachment C - Process Flow Diagram
- Attachment D - Equipment Tables
- Attachment E - Emission Unit Forms
- Attachment F - Emission Calculations.

Please contact me at 412-395-3654 or via email at msowa@eqt.com if you have any questions regarding this application.

Sincerely,

A handwritten signature in blue ink that reads "Mark A. Sowa". The signature is written in a cursive style with a large, stylized initial 'M'.

Mark A. Sowa
Senior Environmental Coordinator



PROJECT REPORT
Equitrans LP > Copley Run Compressor Station

Title V Operating Permit Renewal Application

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May 2017

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- ATTACHMENT I: EMISSION CALCULATIONS

1. INTRODUCTION

Equitrans, LP (Equitrans), a subsidiary of EQT Corporation (EQT), operates a natural gas transmission facility in Weston, Lewis County, West Virginia referred to as the Copley Run Compressor Station #70 (Copley Station). The Copley Station is currently operating in accordance with West Virginia Department of Environmental Protection (WVDEP) Title V Operating Permit No. R30-04100009-2012 (issued on December 11, 2012 and revised August 30, 2016).

The current Title V permit expires on December 11, 2017. Equitrans is submitting this timely and complete Title V Operating Permit (TVOP) renewal application by the renewal submission deadline of June 11, 2017 (six months before the expiration of the current permit) in accordance with Series 30, Section 4.1.a.3 of the WVDEP Division of Air Quality (DAQ) Code of State Rules (C.S.R.) §45-30-4.1.a.3.

Presuming WVDEP finds this application administratively complete, Equitrans may continue to operate the Copley Station under the terms of the existing Title V permit until the renewed permit is issued, even if this issuance would occur after the current permit's expiration date.

1.1. FACILITY AND PROJECT DESCRIPTION

The Copley Run Station is a natural gas transmission facility covered under Standard Industrial Classification (SIC) Code 4922. The station has the potential to operate 24 hours per day, 7 days per week. The Copley Station compresses and dehydrates natural gas from nearby gathering and storage facilities and then transports the gas across the pipeline system.

The station currently consists of the following equipment:

- > One (1) Cooper Bessemer GMVH10 compressor engine, rated at 2,250 bhp and equipped with an oxidation catalyst;
- > One (1) Cooper Bessemer GMVH10 compressor engine, rated at 1,350 bhp and equipped with an oxidation catalyst;
- > Three (3) Cooper Bessemer GMVH10 compressor engine, each rated at 1,350 bhp and equipped with an oxidation catalyst;
- > One (1) natural gas fired heating boiler, rated at 1.63 MMBtu/hr ;
- > One (1) natural gas fired hot water heater, rated at 0.03 MMBtu/hr;
- > One (1) natural gas fired inline heater, rated at 2.1 MMBtu/hr ;
- > One (1) Cummins Generator, rated at 2.2 MMBtu/hr;
- > One (1) Kohler 150 kilowatt (KW) emergency generator ;
- > One (1) triethylene glycol (TEG) dehydration unit rated at 46 million standard cubic feet per day (MMSCFD) with associated reboiler (rated at 1.50 MMBtu/hr), controlled by an enclosed flare;
- > One (1) NATCO storage dehydration unit rated at 140 MMSCFD with associated reboiler (rated at 3.0 MMBtu/hr),
- > Six (6) miscellaneous storage tanks (rated 20,000 gallons or less).

A process flow diagram is included as Attachment C.

1.2. SOURCE STATUS

WVDEP must make stationary source determinations on a case-by-case basis using the guidance under the Clean Air Act (CAA) and EPA's and WVDEP's implementing regulations. The definition of stationary source in 40 CFR 51.166(b) includes the following:

“(6) Building, structure, facility, or installation means all of the pollutant emitting activities which belong to the

same industrial grouping, are located on or more contiguous or adjacent properties, and are under control of the same person (or persons under common control)."

Other additional pollutant emitting facilities should be aggregated with the Copley Station for air permitting purposes if and only if all three elements of the "stationary source" definition above are fulfilled. The Copley Station has been determined to be a separate stationary source with respect to permitting programs, including Title V and Prevention of Significant Deterioration, and has not been aggregated with other Equitrans assets.

The Copley Station's site-wide potential to emit currently exceeds the Title V major source thresholds for several pollutants. Refer to Section 3 for detailed discussion regarding applicable requirements and compliance demonstration methodology.

1.3. TITLE V APPLICATION ORGANIZATION

This West Virginia Initial Title V permit application is organized as follows:

- > Section 2: Sample Emission Source Calculations;
- > Section 3: Regulatory Discussion;
- > Section 4: Title V Application Form;
- > Attachment A: Area Map;
- > Attachment B: Plot Plan;
- > Attachment C: Process Flow Diagram;
- > Attachment D: Equipment Table;
- > Attachment E: Emission Unit Forms;
- > Attachment F: Schedule of Compliance Forms *(Not applicable)*;
- > Attachment G: Air Pollution Control Device Forms;
- > Attachment H: Compliance Assurance Monitoring Forms *(Not applicable)*;
- > Attachment I: Emission Calculations; and
- > Application Fee.

2. SAMPLE EMISSION SOURCE CALCULATIONS

The characteristics of air emissions from the Copley Station, along with the methodology for calculating emissions, are briefly described in this section of the application. Detailed emission calculations are presented in Attachment I of this application.

Emissions from the facility will result from combustion of natural gas in the compressor engines, heaters, combustion of gases in the enclosed flare, and reboilers. Emissions will also result from the storage of methanol and produced fluid, operation of the dehydrator units, and fugitive emissions from component leaks. The methods by which emissions from each of these source types are summarized below. There will be no emissions increase from the existing units at the facility.

- > **Compressor Engines:** Potential emissions of nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOC), formaldehyde, hazardous air pollutants (HAPs) are calculated using U.S. EPA's AP-42 factors for natural gas-fired two stroke lean burn engines.¹ Greenhouse gas emissions are calculated according to 40 CFR 98 Subpart C.²
- > **Heaters and Reboilers:** Potential emissions of criteria pollutants and HAPs are calculated using U.S. EPA's AP-42 factors for natural gas external combustion.³ These calculations assume a site-specific heat content of natural gas. Greenhouse gas emissions are calculated according to 40 CFR 98 Subpart C.
- > **TEG Dehydration Units:** Potential emissions of HAPs, VOC, and methane from the dehydration unit are calculated using GRI-GLYCalc. Emissions of other criteria pollutants are calculated for natural combustion in the flare are calculated using U.S. EPA's AP-42 factors for external combustion of natural gas. Permit limits were used to calculate facility-wide potential emissions.
- > **Fugitive Emissions:** Emissions from fugitive equipment leaks are calculated using published EPA emission factors and 40 CFR Part 98, Subpart W emission factors. Emissions from blowdown events are calculated using engineering estimates of the amount of gas vented during each event. Site specific gas analyses were used to speciate VOC, HAP, and GHG emissions.

¹ U.S. EPA, AP 42, Fifth Edition, Volume I, Chapter 3.2, *Natural Gas-Fired Reciprocating Engine*, July 2000.

² 40 CFR 98 Subpart C, *General Stationary Fuel combustion Sources*, Tables C-1 and C-2.

³ U.S. EPA, AP 42, Fifth Edition, Volume I, Chapter 1.4, *Natural Gas Combustion*, Supplement D, July 1998.

3. REGULATORY DISCUSSION

This section documents the applicability determinations made for Federal and State air quality regulations. In this section, applicability or non-applicability of the following regulatory programs is addressed:

- > Prevention of Significant Deterioration (PSD) permitting;
- > Non-attainment New Source Review (NNSR) permitting;
- > Title V of the 1990 Clean Air Act Amendments;
- > Compliance Assurance Monitoring (CAM);
- > New Source Performance Standards (NSPS);
- > National Emission Standards for Hazardous Air Pollutants (NESHAP); and
- > West Virginia State Implementation Plan (SIP) regulations.

This review is presented to supplement and/or add clarification to the information provided in the Title V operating permit application forms, which fulfill the requirement to include citations and descriptions of applicable statutory and administrative code requirements.

In addition to providing a summary of applicable requirements, this section of the application also provides non-applicability determinations for certain regulations, allowing the WVDEP to confirm that identified regulations are not applicable to the Copley Compressor Station. Note that explanations of non-applicability are limited to those regulations for which there may be some question of applicability specific to the operations at the station. Regulations that are categorically non-applicable are not discussed (e.g., NSPS Subpart J, Standards of Performance for Petroleum Refineries).

3.1. PSD AND NNSR SOURCE CLASSIFICATION

Federal construction permitting programs regulate new and modified sources of attainment pollutants under Prevention of Significant Deterioration and new and modified sources of non-attainment pollutants under Non-Attainment New Source Review. PSD regulations apply when a new source is constructed in which emissions exceed major source thresholds, an existing minor source undergoes a modification in which emission increases exceed PSD major source thresholds, or an existing major source undergoes a modification in which emission increases exceed PSD significant emission rates. The Copley Station is considered an existing major source with respect to PSD, and as such when undertaking modifications may be subject to NSR permit requirements. No new sources are being installed as part of this application and as such, PSD is not triggered.

NNSR regulations only apply in areas designated as non-attainment. The Copley Station is located in Lewis County, which is designated as attainment/unclassifiable for all criteria pollutants.⁴ Therefore, NNSR regulations do not apply to the Copley Station.

3.2. TITLE V OPERATING PERMIT PROGRAM

Title 40 of the Code of Federal Regulations Part 70 (40 CFR 70) establishes the federal Title V operating permit program. West Virginia has incorporated the provisions of this federal program in its Title V operating permit program in West Virginia Code of State Regulations (CSR) 45-30. The major source thresholds with respect to the West Virginia Title V operating permit program regulations are 10 tons per year (tpy) of a single HAP, 25 tpy of any

⁴ U.S. EPA Greenbook, http://www.epa.gov/airquality/greenbook/anayo_wv.html, as of January 30, 2015.

combination of HAP, and 100 tpy of all other regulated pollutants.⁵ The potential emissions of NO_x and CO will each exceed their respective major source thresholds for Title V. Therefore, the Copley Compressor Station is a major source with respect to the Title V Program. The Copley Station currently operates under Title V Permit No. R30-04100009-2012. This renewal application is being submitted to meet the requirements of the Title V program.

3.3. COMPLIANCE ASSURANCE MONITORING

Under 40 CFR 64, the Compliance Assurance Monitoring (CAM) regulations, facilities are required to prepare and submit monitoring plans for certain emissions units with the initial or renewal Title V operating permit application. CAM Plans are intended to provide an on-going and reasonable assurance of compliance with emission limits for sources that utilize active control devices. Equitrans addressed CAM applicability in the previous Title V renewal application submitted in 2012. The only changes since the renewal application was the installation of a new emergency generator (G003), which does not trigger a CAM review as emissions are below major source thresholds.

3.4. NEW SOURCE PERFORMANCE STANDARDS

New Source Performance Standards, located in 40 CFR 60, require new, modified, or reconstructed sources to control emissions to the level achievable by the best demonstrated technology as specified in the applicable provisions. Moreover, any source subject to an NSPS is also subject to the general provisions of NSPS Subpart A, except where expressly noted. The following is a summary of applicability and non-applicability determinations for NSPS regulations of relevance to the facility.

3.4.1. NSPS Subparts D, Da, Db, and Dc - Steam Generating Units

These subparts apply to steam generating units of various sizes, all greater than 10 MMBtu/hr. The Copley Station does not include any steam generating units with a heat input greater than 10 MMBtu/hr, therefore the requirements of these subparts do not apply.

3.4.2. NSPS Subparts LLL and KKK - Natural Gas Processing Plants

These subparts apply to affected facilities located at natural gas processing plants (e.g., sweetening units, fugitive components). The Copley Station does not meet the definition of a natural gas processing facility. Therefore, the requirements of these subparts do not apply.

3.4.3. NSPS Subparts IIII - Stationary Compression Ignition Internal Combustion Engines

This subpart applies to manufacturers, owners, and operators of stationary compression ignition internal combustion engines (CI ICE) that have been constructed, reconstructed, or modified after various dates, the earliest of which is July 11, 2005. The compressor engines (001-005) at the Copley Station are spark-ignition internal combustion engines. Therefore the requirements of this subpart do not apply.

3.4.4. NSPS Subpart JJJJ - Stationary Spark Ignition Internal Combustion Engines

New Source Performance Standards 40 CFR Part 60 Subpart JJJJ (NSPS JJJJ) affects owners and operators of stationary spark ignition internal combustion engines (SI ICE) that commence construction, reconstruction or modification after

⁵ On June 23, 2014, the U.S Supreme Court decision in the case of *Utility Air Regulatory Group v. EPA* effectively changed the permitting procedures for GHGs under the PSD and Title V programs.

June 12, 2006. Applicability dates are based on the manufacture date for new engines. The applicability dates for new engines range from July 1, 2007 to January 1, 2009, depending upon the engine horsepower and application. All of the compressor engines and one generator engine (G-002) at the Copley Station were manufactured prior to the applicability date of NSPS Subpart JJJJ. Therefore, these units will not be subject to this subpart.

The Kohler emergency generator (G-003) is a four stroke burn spark ignition manufactured after July 1, 2008 and will be subject to this subpart. The engine is certified to meet the emergency and non-emergency stationary emission standards in Table 1 of Subpart JJJJ. Equitrans will meet the compliance requirements in 60.4243(a)(1) and will maintain all applicable recordkeeping and reporting requirements in 60.4245(a)(1)-(3)

3.4.5. NSPS Subparts K, Ka, and Kb - Storage Vessels

These subparts apply to storage tanks of certain sizes constructed, reconstructed, or modified during various time periods. Subpart K applies to storage tanks constructed, reconstructed, or modified prior to 1978, and Subpart Ka applies to those constructed, reconstructed, or modified prior to 1984. Subpart Kb applies to volatile organic liquid (VOL) storage tanks constructed, reconstructed, or modified after July 23, 1984 with a capacity equal to or greater than 75 m³ (~19,813 gallons). The storage tanks at the Copley Station were constructed after this date, but do not have a capacity greater than 75 m³. Therefore, Subpart Kb will not apply to the storage tanks at the Copley Station.

3.4.6. NSPS Subparts OOOO and OOOOa – Crude Oil and Natural Gas Facilities

Subparts OOOO and OOOOa – *Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution*, applies to affected facilities that commenced construction, reconstruction, or modification after August 23, 2011 and before September 18, 2015 for OOOO and after September 18, 2015 for OOOOa. The equipment at the Copley Station will installed prior to the applicability dates of both rules. Therefore, NSPS OOOO and OOOOa are not applicable.

3.4.7. Non-Applicability of All Other NSPS

NSPS are developed for particular industrial source categories. Other than NSPS developed for natural gas processing plants (Subparts OOOO) and associated equipment (Subpart K-Kb), the applicability of a particular NSPS to the Copley Compressor Station can be readily ascertained based on the industrial source category covered. All other NSPS are categorically not applicable to the proposed project.

3.5. NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

Regulatory requirements for facilities subject to NESHAP standards, otherwise known as Maximum Available Control Technology (MACT) Standards for source categories, are contained in 40 CFR Part 63. 40 CFR Part 61 NESHAP standards are defined for specific pollutants while Part 63 NESHAPs are defined for source categories where allowable emission limits are established on the basis of a MACT determination for a particular major source. A major source of HAP is defined as having potential emissions in excess of 25 tpy for total HAP and/or potential emissions in excess of 10 tpy for any individual HAP. Part 63 NESHAPs apply to sources in specifically regulated industrial source categories (CAA Section 112(d)) or on a case-by-case basis (Section 112(g)) for facilities not regulated as a specific industrial source type.

The Copley Station is a major source of HAP emissions since its potential emission of formaldehyde (an individual HAP) exceeds the 10 tpy threshold. The potential applicability of specific MACT standards to the Copley Compressor Station is discussed below.

3.5.1. NESHAP Subpart HH - Oil and Natural Gas Production Facilities

This MACT standard contains requirements for both major and area sources of HAP. Dehy Unit #1 (004-001) at the Copley Run Station can process field gas from production gathering lines entering the site and the facility is

considered an area source of HAP as defined by 40 CFR §63.761. Therefore Dehy Unit #1 is subject to the requirements for area sources under Subpart HH when processing production field gas.

The benzene emissions from Dehy Unit #1 are less than 0.90 megagrams per year (1 tpy), therefore, the Copley Station is exempt from the requirements of NESHAP Subpart HH pursuant to 40 CFR §63.764(e)(1)(ii), except for the requirement to keep records of the actual average natural gas flow rate or actual average benzene emissions from the dehydrator, per 40 CFR §63.774(d)(1). Equitrans will continue to comply with the requirements of Subpart HH as outlined in the current permit.

3.5.2. NESHAP Subpart HHH - Natural Gas Transmission and Storage Facilities

This standard applies to such units at natural gas transmission and storage facilities that are major sources of HAP emissions located downstream of the point of custody transfer (after processing and/or treatment in the production sector), but upstream of the distribution sector. Subpart HHH defines a “major source” as having the same meaning as in §63.2, except that: (1) Emissions from any pipeline compressor station or pump station shall not be aggregated with emissions from other similar units, whether or not such units are in a contiguous area or under common control; and (2) Emissions from processes, operations, and equipment that are not part of the same facility, as defined in this section, shall not be aggregated.

The Copley Run Station stores and transmits natural gas prior to delivery to end users. The compressor engines 001-004 and 001-005 and the storage dehy are engaged in compressing natural gas into a transmission pipeline system or dehydrating natural gas exiting a storage field prior to entering a transmission pipeline system. HAP emissions from these emissions units are less than the major source thresholds, and as such, the Copley Station will be a minor (area) source of hazardous air pollutants. Therefore, the requirements of this subpart do not apply to the Copley Station.

3.5.3. NESHAP Subpart ZZZZ - Stationary Reciprocating Internal Combustion Engines

The Copley is a not a major source of hazardous air pollutants (HAPs) under the definition in 40 CFR §63.6675.

“Major Source, as used in this subpart, shall have the same meaning as in §63.2, except that:

- (1) Emissions from any oil or gas exploration or production well (with its associated equipment (as defined in this section)) and emissions from any pipeline compressor station or pump station shall not be aggregated with emissions from other similar units, to determine whether such emission points or stations are major sources, even when emission points are in a contiguous area or under common control;
- (2) For oil and gas production facilities, emissions from processes, operations, or equipment that are not part of the same oil and gas production facility, as defined in §63.1271 of subpart HHH of this part, shall not be aggregated;
- (3) For production field facilities, only HAP emissions from glycol dehydration units, storage vessel with the potential for flash emissions, combustion turbines and reciprocating internal combustion engines shall be aggregated for a major source determination; and
- (4) Emissions from processes, operations, and equipment that are not part of the same natural gas transmission and storage facility, as defined in §63.1271 of subpart HHH of this part, shall not be aggregated.”

Dehy Unit #2 (Storage Dehy) and Compressor engines # 001-004 and # 001-005 are part to of the natural gas transmission and storage facility as discussed in the subpart HHH section above. The PTE for the transmission and storage part of the facility at the site is less than the 10/25 tpy HAPs major source threshold and therefore engines #4 and #5 are regulated as area sources under this subpart.

June 12, 2006. Applicability dates are based on the manufacture date for new engines. The applicability dates for new engines range from July 1, 2007 to January 1, 2009, depending upon the engine horsepower and application. All of the compressor engines and one generator engine (G-002) at the Copley Station were manufactured prior to the applicability date of NSPS Subpart JJJJ. Therefore, these units will not be subject to this subpart.

The Kohler emergency generator (G-003) is a four stroke burn spark ignition manufactured after July 1, 2008 and will be subject to this subpart. The engine is certified to meet the emergency and non-emergency stationary emission standards in Table 1 of Subpart JJJJ. Equitrans will meet the compliance requirements in 60.4243(a)(1) and will maintain all applicable recordkeeping and reporting requirements in 60.4245(a)(1)-(3)

3.4.5. NSPS Subparts K, Ka, and Kb - Storage Vessels

These subparts apply to storage tanks of certain sizes constructed, reconstructed, or modified during various time periods. Subpart K applies to storage tanks constructed, reconstructed, or modified prior to 1978, and Subpart Ka applies to those constructed, reconstructed, or modified prior to 1984. Subpart Kb applies to volatile organic liquid (VOL) storage tanks constructed, reconstructed, or modified after July 23, 1984 with a capacity equal to or greater than 75 m³ (~19,813 gallons). The storage tanks at the Copley Station were constructed after this date, but do not have a capacity greater than 75 m³. Therefore, Subpart Kb will not apply to the storage tanks at the Copley Station.

3.4.6. NSPS Subparts OOOO and OOOOa – Crude Oil and Natural Gas Facilities

Subparts OOOO and OOOOa – *Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution*, applies to affected facilities that commenced construction, reconstruction, or modification after August 23, 2011 and before September 18, 2015 for OOOO and after September 18, 2015 for OOOOa. The equipment at the Copley Station will installed prior to the applicability dates of both rules. Therefore, NSPS OOOO and OOOOa are not applicable.

3.4.7. Non-Applicability of All Other NSPS

NSPS are developed for particular industrial source categories. Other than NSPS developed for natural gas processing plants (Subparts OOOO) and associated equipment (Subpart K-Kb), the applicability of a particular NSPS to the Copley Compressor Station can be readily ascertained based on the industrial source category covered. All other NSPS are categorically not applicable to the proposed project.

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The Copley Station is a major source of HAP emissions since its potential emission of formaldehyde (an individual HAP) exceeds the 10 tpy threshold. The potential applicability of specific MACT standards to the Copley Compressor Station is discussed below.

3.5.1. NESHAP Subpart HH - Oil and Natural Gas Production Facilities

This MACT standard contains requirements for both major and area sources of HAP. Dehy Unit #1 (004-001) at the Copley Run Station can process field gas from production gathering lines entering the site and the facility is

considered an area source of HAP as defined by 40 CFR §63.761. Therefore Dehy Unit #1 is subject to the requirements for area sources under Subpart HH when processing production field gas.

The benzene emissions from Dehy Unit #1 are less than 0.90 megagrams per year (1 tpy), therefore, the Copley Station is exempt from the requirements of NESHAP Subpart HH pursuant to 40 CFR §63.764(e)(1)(ii), except for the requirement to keep records of the actual average natural gas flow rate or actual average benzene emissions from the dehydrator, per 40 CFR §63.774(d)(1). Equitrans will continue to comply with the requirements of Subpart HH as outlined in the current permit.

3.5.2. NESHAP Subpart HHH - Natural Gas Transmission and Storage Facilities

This standard applies to such units at natural gas transmission and storage facilities that are major sources of HAP emissions located downstream of the point of custody transfer (after processing and/or treatment in the production sector), but upstream of the distribution sector. Subpart HHH defines a “major source” as having the same meaning as in §63.2, except that: (1) Emissions from any pipeline compressor station or pump station shall not be aggregated with emissions from other similar units, whether or not such units are in a contiguous area or under common control; and (2) Emissions from processes, operations, and equipment that are not part of the same facility, as defined in this section, shall not be aggregated.

The Copley Run Station stores and transmits natural gas prior to delivery to end users. The compressor engines 001-004 and 001-005 and the storage dehy are engaged in compressing natural gas into a transmission pipeline system or dehydrating natural gas exiting a storage field prior to entering a transmission pipeline system. HAP emissions from these emissions units are less than the major source thresholds, and as such, the Copley Station will be a minor (area) source of hazardous air pollutants. Therefore, the requirements of this subpart do not apply to the Copley Station.

3.5.3. NESHAP Subpart ZZZZ - Stationary Reciprocating Internal Combustion Engines

The Copley is a not a major source of hazardous air pollutants (HAPs) under the definition in 40 CFR §63.6675.

“Major Source, as used in this subpart, shall have the same meaning as in §63.2, except that:

(1) Emissions from any oil or gas exploration or production well (with its associated equipment (as defined in this section)) and emissions from any pipeline compressor station or pump station shall not be aggregated with emissions from other similar units, to determine whether such emission points or stations are major sources, even when emission points are in a contiguous area or under common control;

(2) For oil and gas production facilities, emissions from processes, operations, or equipment that are not part of the same oil and gas production facility, as defined in §63.1271 of subpart HHH of this part, shall not be aggregated;

(3) For production field facilities, only HAP emissions from glycol dehydration units, storage vessel with the potential for flash emissions, combustion turbines and reciprocating internal combustion engines shall be aggregated for a major source determination; and

(4) Emissions from processes, operations, and equipment that are not part of the same natural gas transmission and storage facility, as defined in §63.1271 of subpart HHH of this part, shall not be aggregated.”

Dehy Unit #004-02 (Storage Dehy) and Compressor engines # 001-004 and # 001-005 are part to of the natural gas transmission and storage facility as discussed in the subpart HHH section above. The PTE for the transmission and storage part of the facility at the site is less than the 10/25 tpy HAPs major source threshold and therefore engines #4 and #5 are regulated as area sources under this subpart.

The remainder of the equipment at the site (i.e. Dehy #004-01, Compressor engines # 001-001, # 001-002, #001-003, Emergency generators # G-002 and #G-003 and the storage tanks are part of the gathering system (i.e. production field facilities). The PTE for the gathering part of the facility is also less than the 10/25 tpy HAPs major source threshold therefore . Engines #1, #2 and #3 are also regulated as area sources under this subpart.

Under this rule, the compressor engines are subject to the requirements for existing, spark-ignition, nonemergency, 2-stroke, lean-burn RICE greater than 500 hp at an area source. Per 40 CFR §63.6625(h), Equitrans will minimize the amount of time the engines spend at idle and minimize the engines' startup period, not to exceed thirty (30) minutes. Equitrans will also adhere to the work practice standards in Table 2d of Subpart ZZZZ and maintain records that show these standards have been met, including changing the oil and filter and inspecting and replacing as necessary the spark plugs, hoses and belts every 4,320 hours of operation or annually, whichever comes first.

The generator engine (G-002) has similar requirements, with oil and filter changes and hose and belt inspections every 500 hours of operation or annually, whichever comes first, and inspecting spark plugs every 1,000 hours of operation or annually, whichever comes first.

The Kohler emergency generator engine at the Copley Run Station is a new area source emergency RICE less than 500 hp. New area source emergency stationary RICE less than 500 hp are required to meet the requirements of this MACT standard by meeting the applicable requirements of the applicable New Source Performance Standard in 40 CFR 60 (Subpart IIII for compression ignition engines and Subpart JJJJ for spark ignition engines). No Further requirements apply to such engines under NESHAP Subpart ZZZZ. The Kohler emergency generation will comply with Subpart ZZZZ by complying with 40 CFR 60 Subpart JJJJ as described in the previous section.

3.5.4. NESHAP Subpart DDDDD - Industrial, Commercial, and Institutional Boilers

This MACT standard applies to industrial, commercial, and institutional boilers of various sizes and fuel types at major sources of HAP. The major source Boiler MACT covers boilers and process heaters. As the dehy reboilers are part of an affected source under Subpart HHH, they are exempt from the requirements of Subpart DDDDD, per 63.7491(h). The heaters (003-01 to 003-03a) are considered boilers/process heaters under the rule; however, these units are exempt from the requirements of Subpart DDDDD, per 63.7491(d), since they meet the definition of hot water heater.

3.6. WEST VIRGINIA SIP REGULATIONS

The Copley Compressor Station is potentially subject to regulations contained in the West Virginia Code of State Regulations, Chapter 45 (Code of State Regulations). The Code of State Regulations fall under two main categories: those regulations that are generally applicable (e.g., permitting requirements), and those that have specific applicability (e.g., PM standards for manufacturing equipment).

3.6.1. 45 CSR 2: To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers

45 CSR 2 applies to fuel burning units, defined as equipment burning fuel "for the primary purpose of producing heat or power by indirect heat transfer". The reboilers and heaters are fuel burning units and therefore must comply with this regulation. Per 45 CSR 2-3, opacity of emissions from units shall not exceed 10 percent, based on a six-minute block average. Per 45 CSR 2-4, PM emissions from the units will not exceed a level measured in lb/hr of 0.09 multiplied by the heat design inputs in MMBtu/hr.

3.6.2. 45 CSR 4: To Prevent and Control the Discharge of Air Pollutants into the Air Which Causes or Contributes to an Objectionable Odor

According to 45 CSR 4-3:

No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public.

The Copley Compressor Station is generally subject to this requirement. However, due to the nature of the process at the station, production of objectionable odor from the compressor station during normal operation is unlikely.

3.6.3. 45 CSR 6: Control of Air Pollution from the Combustion of Refuse

45 CSR 6 applies to activities involving incineration of refuse, defined as “the destruction of combustible refuse by burning in a furnace designed for that purpose. For the purposes of this rule, the destruction of any combustible liquid or gaseous material by burning in a flare or flare stack, thermal oxidizer or thermal catalytic oxidizer stack shall be considered incineration.” The Dehy Flare is an incinerator and therefore must comply with this regulation. Per 45 CSR 6-4.3, opacity of emissions from these units shall not exceed 20 percent, except as provided by 4.4. PM emissions from this unit will not exceed the levels calculated in accordance with 6-4.1.

3.6.4. 45 CSR 10: To Prevent and Control Air Pollution from the Emission of Sulfur Oxides

This rule potentially applies to fuel burning units, including glycol dehydration unit reboilers and fuel gas heaters. Per 45 CSR 10-10.1, units rated less than 10 MMBtu/hr are exempt from the SO₂ emission limitations and testing, monitoring, recordkeeping, and reporting requirements of this rule. The reboilers and heaters at the Copley station are each rated less than 10 MMBtu/hr and as such are exempt from this rule.

3.6.5. 45 CSR 16: Standards of Performance for New Stationary Sources

45 CSR 16-1 incorporates the federal Clean Air Act (CAA) standards of performance for new stationary sources set forth in 40 CFR Part 60 by reference. As such, by complying with all applicable requirements of 40 CFR Part 60 at the Copley Compressor Station, Equitrans will be complying with 45 CSR 16.

3.6.6. 45 CSR 17: To Prevent and Control Particulate Matter Air Pollution from Materials Handling, Preparation, Storage and Other Sources of Fugitive Particulate Matter

According to 45 CSR 17-3.1:

No person shall cause, suffer, allow or permit fugitive particulate matter to be discharged beyond the boundary lines of the property lines of the property on which the discharge originates or at any public or residential location, which causes or contributes to statutory air pollution.

Due to the nature of the activities at the Copley Compressor Station, it is unlikely that fugitive particulate matter emissions will be emitted under normal operating conditions. However, Equitrans will take measures to ensure any fugitive particulate matter emissions will not cross the property boundary should any such emissions occur.

3.6.7. 45 CSR 21-28: Petroleum Liquid Storage in Fixed Roof Tanks

45 CSR 21-28 applies to any fixed roof petroleum liquid storage tank with a capacity greater than 40,000 gallons located in Putnam County, Kanawha County, Cabell County, Wayne County, and Wood County. The capacity of each storage tank at Copley is less than 40,000 gallons and the facility is not located in a listed county. Therefore, 45 CSR 21-28 does not apply to the storage tanks at this station.

3.6.8. 45 CSR 34: Emissions Standards for Hazardous Air Pollutants

45 CSR 34-1 incorporates the federal Clean Air Act (CAA) national emissions standards for hazardous air pollutants (NESHAPs) as set forth in 40 CFR Parts 61 and 63 by reference. As such, by complying with all applicable requirements of 40 CFR Parts 61 and 63 at the Copley Compressor Station, Equitrans will be complying with 45 CSR 34.

3.6.9. Non-Applicability of Other SIP Rules

A thorough examination of the West Virginia SIP rules with respect to applicability at the Copley Compressor Station reveals many SIP regulations that do not apply or impose additional requirements on operations. Such SIP rules include those specific to a particular type of industrial operation that is categorically not applicable to the Copley Compressor Station.

4. TITLE V APPLICATION FORMS

The WVDEP permit application forms contained in this application include all applicable Title V application forms including the required attachments.



WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF AIR QUALITY

601 57th Street SE
Charleston, WV 25304
Phone: (304) 926-0475

www.dep.wv.gov/daq

INITIAL/RENEWAL TITLE V PERMIT APPLICATION - GENERAL FORMS

Section 1: General Information

1. Name of Applicant (As registered with the WV Secretary of State's Office): Equitrans, LP
2. Facility Name or Location: Copley Run Compressor Station
3. DAQ Plant ID No.: 041-00009
4. Federal Employer ID No. (FEIN): 25-0724685
5. Permit Application Type: [X] Permit Renewal
6. Type of Business Entity: [X] Corporation
7. Is the Applicant the: [X] Both
8. Number of onsite employees: 1
9. Governmental Code: [X] Privately owned and operated; 0
10. Business Confidentiality Claims: [X] No

11. Mailing Address		
Street or P.O. Box: Route 4 Box 640		
City: Weston	State: WV	Zip: 26452
Telephone Number:	Fax Number: () -	

12. Facility Location		
Street:	City: Weston	County: Lewis
UTM Easting: 541.390 km	UTM Northing: 4,314.773 km	Zone: <input checked="" type="checkbox"/> 17 or <input type="checkbox"/> 18
Directions: From Charleston, WV take Interstate 79 North to Exit 91. Follow Rt 19 north to Copley Rd. Turn left on Copley Rd and the station is approximately ½ mile on the left.		
Portable Source? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Is facility located within a nonattainment area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes, for what air pollutants?	
Is facility located within 50 miles of another state? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes, name the affected state(s). Ohio Pennsylvania	
Is facility located within 100 km of a Class I Area ¹ ? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes, name the area(s). Otter Creek	
If no, do emissions impact a Class I Area ¹ ? <input type="checkbox"/> Yes <input type="checkbox"/> No		
¹ Class I areas include Dolly Sods and Otter Creek Wilderness Areas in West Virginia, and Shenandoah National Park and James River Face Wilderness Area in Virginia.		

13. Contact Information		
Responsible Official: Diana Charletta		Title: Sr. Vice President
Street or P.O. Box: 625 Liberty Avenue, Suite 1700		
City: Pittsburgh	State: PA	Zip: 15222
Telephone Number: () -	Fax Number: () -	
E-mail address: dcharletta@eqt.com		
Environmental Contact: Mark A. Sowa		Title: Sr. Environmental Coordinator
Street or P.O. Box: 625 Liberty Avenue, Suite 1700		
City: Pittsburgh	State: PA	Zip: 15222
Telephone Number: (412) 395-3654	Fax Number: () -	
E-mail address: msowa@eqt.com		
Application Preparer: Tom Muscenti		Title: Principal Consultant
Company: Trinity Consultants		
Street or P.O. Box: 4500 Brooktree Road, Suite 103		
City: Wexford	State: PA	Zip: 15090
Telephone Number: (724) 935-2611	Fax Number: () -	
E-mail address: tmuscenti@trinityconsultants.com		

14. Facility Description

List all processes, products, NAICS and SIC codes for normal operation, in order of priority. Also list any process, products, NAICS and SIC codes associated with any alternative operating scenarios if different from those listed for normal operation.

Process	Products	NAICS	SIC
Natural Gas Transmission Facility	Natural Gas	486210	4922
Natural Gas Gathering Facility	Natural Gas	211111	1311

Provide a general description of operations.

The Copley Run Compressor Station is a natural gas transmission facility that compresses natural gas from gathering wells and storage facilities and transports them to distribution pipelines. The facility consists of five (5) compressor engines, two (2) dehydration units with associated reboiler, three (3) natural gas fired heaters, and six (6) miscellaneous storage tank.

15. Provide an **Area Map** showing plant location as **ATTACHMENT A**.

16. Provide a **Plot Plan(s)**, e.g. scaled map(s) and/or sketch(es) showing the location of the property on which the stationary source(s) is located as **ATTACHMENT B**. For instructions, refer to "Plot Plan - Guidelines."

17. Provide a detailed **Process Flow Diagram(s)** showing each process or emissions unit as **ATTACHMENT C**. Process Flow Diagrams should show all emission units, control equipment, emission points, and their relationships.

Section 2: Applicable Requirements

18. Applicable Requirements Summary	
Instructions: Mark all applicable requirements.	
<input checked="" type="checkbox"/> SIP	<input type="checkbox"/> FIP
<input checked="" type="checkbox"/> Minor source NSR (45CSR13)	<input type="checkbox"/> PSD (45CSR14)
<input checked="" type="checkbox"/> NESHAP (45CSR34)	<input type="checkbox"/> Nonattainment NSR (45CSR19)
<input checked="" type="checkbox"/> Section 111 NSPS	<input checked="" type="checkbox"/> Section 112(d) MACT standards
<input type="checkbox"/> Section 112(g) Case-by-case MACT	<input type="checkbox"/> 112(r) RMP
<input type="checkbox"/> Section 112(i) Early reduction of HAP	<input type="checkbox"/> Consumer/commercial prod. reqts., section 183(e)
<input type="checkbox"/> Section 129 Standards/Reqts.	<input type="checkbox"/> Stratospheric ozone (Title VI)
<input type="checkbox"/> Tank vessel reqt., section 183(f)	<input type="checkbox"/> Emissions cap 45CSR§30-2.6.1
<input type="checkbox"/> NAAQS, increments or visibility (temp. sources)	<input type="checkbox"/> 45CSR27 State enforceable only rule
<input type="checkbox"/> 45CSR4 State enforceable only rule	<input type="checkbox"/> Acid Rain (Title IV, 45CSR33)
<input type="checkbox"/> Emissions Trading and Banking (45CSR28)	<input checked="" type="checkbox"/> Compliance Assurance Monitoring (40CFR64)
<input type="checkbox"/> CAIR NO _x Annual Trading Program (45CSR39)	<input type="checkbox"/> CAIR NO _x Ozone Season Trading Program (45CSR40)
<input type="checkbox"/> CAIR SO ₂ Trading Program (45CSR41)	

19. Non Applicability Determinations

List all requirements which the source has determined not applicable and for which a permit shield is requested. The listing shall also include the rule citation and the reason why the shield applies.

40 CFR part 60 Subpart Dc – The boilers at the Copley Run station are below 10 MMBtu/hr.

40 CFR part 60 Subpart GG – There are no turbines at Copley Run Station.

40 CFR part 60 Subparts K, Ka – All tanks at the Copley Run station are less than 40,000 gallons in capacity.

40 CFR part 60 Subpart KKK – Copley Run station is not engaged in the extraction of natural gas liquids from field gas or in the fractionation of mixed natural gas liquids to natural gas products.

40 CFR part 60 Subpart LLL – There are no sweetening units at Copley Run station.

40 CFR part 60 Subpart IIII – The engines at Copley Run Station are not stationary compression ignition (CI) internal combustion engines (ICE).

40 CFR part 63 Subpart HHH – According to §63.1270(a), 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 pollutants (HAP) emissions as defined in §63.1271. Subpart HHH defines a “major source” as having the same meaning as in §63.2, except that: (1) Emissions from any pipeline compressor station or pump station shall not be aggregated with emissions from other similar units, whether or not such units are in a contiguous area or under common control; and (2) Emissions from processes, operations, and equipment that are not part of the same facility, as defined in this section, shall not be aggregated.

The regulation also provides its definition of *Facility*, which is useful for interpreting the meaning of a Subpart HHH major source:

Facility means any grouping of equipment where natural gas is processed, compressed, or stored prior to entering a pipeline to a local distribution company or (if there is no local distribution company) to a final end user.

Examples of a facility for this source category are: an underground natural gas storage operation; or a natural gas compressor station that receives natural gas via pipeline, from an underground natural gas storage operation, or from a natural gas processing plant. The emission points associated with these phases include, but are not limited to, process vents. Processes that may have vents include, but are not limited to, dehydration and compressor station engines. Facility, for the purpose of a major source determination, means natural gas transmission and storage equipment that is located inside the boundaries of an individual surface site (as defined in this section) and is connected by ancillary equipment, such as gas flow lines or power lines. Equipment that is part of a facility will typically be located within close proximity to other equipment located at the same facility. Natural gas transmission and storage equipment or groupings of equipment located on different gas leases, mineral fee tracts, lease tracts, subsurface unit areas, surface fee tracts, or surface lease tracts shall not be considered part of the same facility.

The HAP emissions from engines C-004 and C-005 and the Storage Dehy with in-line heater should be utilized for major source determination under Subpart HHH. These sources are either engaged in compressing natural gas into a transmission pipeline system or dehydrating natural gas exiting a storage field prior to entering a transmission pipeline system. The potential to emit of any single HAP is less than 10 tpy and the aggregate HAPs are less than 25 tpy. Therefore, the natural gas transmission and storage facility at the Copley Run Compressor Station is not major for HAPs as defined in 40 C.F.R. §63.1270 and §63.2; consequently, Subpart HHH does not apply to the natural gas transmission and storage facility located at the Copley Run Compressor Station.

Permit Shield

19. Non Applicability Determinations (Continued) - Attach additional pages as necessary.

List all requirements which the source has determined not applicable and for which a permit shield is requested. The listing shall also include the rule citation and the reason why the shield applies.

45CSR27 - Natural gas is included as a petroleum product and contains less than 5% benzene by weight.

45CSR§27-2.4 exempts equipment “used in the production and distribution of petroleum products providing that such equipment does not produce or contact materials containing more than 5% benzene by weight.”

Permit Shield

20. Facility-Wide Applicable Requirements

List all facility-wide applicable requirements. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (Note: Title V permit condition numbers alone are not the underlying applicable requirements).

- 45CSR§6-3.1 Open Burning, R13 Permit Condition 3.1.1.
- 45CSR§6-3.2 Open Burning Exemptions R13 Permit Condition 3.1.2.
- 45CSR§61.145(b) and 45CSR§34 Asbestos, R13 Permit Condition 3.1.3.
- 45CSR§4-3.1 Odor, R13 Permit Condition 3.1.4.
- 45CSR§13-10.5 Permanent Shutdown, R13 Permit Condition 3.1.5.
- 45CSR§11-5.2 Standby Plan for Reducing Emissions, R13 Permit Condition 3.1.6.
- 45CSR§17-3-1 Particulate Matter Emissions

Permit Shield

For all facility-wide applicable requirements listed above, provide monitoring/testing / recordkeeping / reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number and/or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

- WV Code §22-5-4(a)(14-15) and 45CSR13 Stack Testing, R13 Permit Condition 3.3.
- Retention of Records, R13 Permit Condition 3.4.1.
- 45CSR§4 Odors, R13 Permit Condition 3.4.2.
- Reporting Requirements, R13 Permit Condition 3.5.

Are you in compliance with all facility-wide applicable requirements? Yes No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

20. Facility-Wide Applicable Requirements (Continued) - Attach additional pages as necessary.

List all facility-wide applicable requirements. For each applicable requirement, include the rule citation and/or permit with the condition number.

Permit Shield

For all facility-wide applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number and/or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Are you in compliance with all facility-wide applicable requirements? Yes No

If no, complete the Schedule of Compliance Form as ATTACHMENT F.

Section 3: Facility-Wide Emissions

23. Facility-Wide Emissions Summary [Tons per Year]	
Criteria Pollutants	Potential Emissions
Carbon Monoxide (CO)	167.03
Nitrogen Oxides (NO _x)	530.35
Lead (Pb)	<0.01
Particulate Matter (PM _{2.5}) ¹	12.81
Particulate Matter (PM ₁₀) ¹	12.81
Total Particulate Matter (TSP)	12.81
Sulfur Dioxide (SO ₂)	0.18
Volatile Organic Compounds (VOC)	59.41
Hazardous Air Pollutants ²	Potential Emissions
Formaldehyde (HCHO)	14.31
Total HAPs	31.84
Regulated Pollutants other than Criteria and HAP	Potential Emissions

¹PM_{2.5} and PM₁₀ are components of TSP.
²For HAPs that are also considered PM or VOCs, emissions should be included in both the HAPs section and the Criteria Pollutants section.

Section 4: Insignificant Activities

24. Insignificant Activities (Check all that apply)	
<input checked="" type="checkbox"/>	1. Air compressors and pneumatically operated equipment, including hand tools.
<input type="checkbox"/>	2. Air contaminant detectors or recorders, combustion controllers or shutoffs.
<input checked="" type="checkbox"/>	3. Any consumer product used in the same manner as in normal consumer use, provided the use results in a duration and frequency of exposure which are not greater than those experienced by consumer, and which may include, but not be limited to, personal use items; janitorial cleaning supplies, office supplies and supplies to maintain copying equipment.
<input checked="" type="checkbox"/>	4. Bathroom/toilet vent emissions.
<input checked="" type="checkbox"/>	5. Batteries and battery charging stations, except at battery manufacturing plants.
<input type="checkbox"/>	6. Bench-scale laboratory equipment used for physical or chemical analysis, but not lab fume hoods or vents. Many lab fume hoods or vents might qualify for treatment as insignificant (depending on the applicable SIP) or be grouped together for purposes of description.
<input type="checkbox"/>	7. Blacksmith forges.
<input checked="" type="checkbox"/>	8. Boiler water treatment operations, not including cooling towers.
<input checked="" type="checkbox"/>	9. Brazing, soldering or welding equipment used as an auxiliary to the principal equipment at the source.
<input type="checkbox"/>	10. CO ₂ lasers, used only on metals and other materials which do not emit HAP in the process.
<input checked="" type="checkbox"/>	11. Combustion emissions from propulsion of mobile sources, except for vessel emissions from Outer Continental Shelf sources.
<input checked="" type="checkbox"/>	12. Combustion units designed and used exclusively for comfort heating that use liquid petroleum gas or natural gas as fuel.
<input checked="" type="checkbox"/>	13. Comfort air conditioning or ventilation systems not used to remove air contaminants generated by or released from specific units of equipment.
<input type="checkbox"/>	14. Demineralized water tanks and demineralizer vents.
<input type="checkbox"/>	15. Drop hammers or hydraulic presses for forging or metalworking.
<input type="checkbox"/>	16. Electric or steam-heated drying ovens and autoclaves, but not the emissions from the articles or substances being processed in the ovens or autoclaves or the boilers delivering the steam.
<input type="checkbox"/>	17. Emergency (backup) electrical generators at residential locations.
<input type="checkbox"/>	18. Emergency road flares.
<input checked="" type="checkbox"/>	<p>19. Emission units which do not have any applicable requirements and which emit criteria pollutants (CO, NO_x, SO₂, VOC and PM) into the atmosphere at a rate of less than 1 pound per hour and less than 10,000 pounds per year aggregate total for each criteria pollutant from all emission units.</p> <p>Please specify all emission units for which this exemption applies along with the quantity of criteria pollutants emitted on an hourly and annual basis:</p> <p><u>1 – 4,000 gallon triethylene glycol storage tank</u></p> <p><u>1 – 20,000 gallon pipeline condensate storage tank</u></p> <p><u>1 – 2,000 gallon crude oil storage tank</u></p> <p><u>1 – 2,000 gallon methanol storage tank</u></p> <p><u>1 – 7,500 gallon used oil storage tank</u></p> <p><u>1 – 3,000 gallon ambitrol storage tank</u></p> <p><u>VOC emissions from leaking valves, compressors, and connectors.</u></p> <p><u>VOC emissions from 1 maintenance degreaser/cold cleaner</u></p> <p>_____</p> <p>_____</p>

24. Insignificant Activities (Check all that apply)

<input type="checkbox"/>	20. Emission units which do not have any applicable requirements and which emit hazardous air pollutants into the atmosphere at a rate of less than 0.1 pounds per hour and less than 1,000 pounds per year aggregate total for all HAPs from all emission sources. This limitation cannot be used for any source which emits dioxin/furans nor for toxic air pollutants as per 45CSR27. Please specify all emission units for which this exemption applies along with the quantity of hazardous air pollutants emitted on an hourly and annual basis: _____ _____ _____ _____ _____
<input type="checkbox"/>	21. Environmental chambers not using hazardous air pollutant (HAP) gases.
<input type="checkbox"/>	22. Equipment on the premises of industrial and manufacturing operations used solely for the purpose of preparing food for human consumption.
<input type="checkbox"/>	23. Equipment used exclusively to slaughter animals, but not including other equipment at slaughterhouses, such as rendering cookers, boilers, heating plants, incinerators, and electrical power generating equipment.
<input checked="" type="checkbox"/>	24. Equipment used for quality control/assurance or inspection purposes, including sampling equipment used to withdraw materials for analysis.
<input type="checkbox"/>	25. Equipment used for surface coating, painting, dipping or spray operations, except those that will emit VOC or HAP.
<input checked="" type="checkbox"/>	26. Fire suppression systems.
<input type="checkbox"/>	27. Firefighting equipment and the equipment used to train firefighters.
<input type="checkbox"/>	28. Flares used solely to indicate danger to the public.
<input checked="" type="checkbox"/>	29. Fugitive emission related to movement of passenger vehicle provided the emissions are not counted for applicability purposes and any required fugitive dust control plan or its equivalent is submitted.
<input type="checkbox"/>	30. Hand-held applicator equipment for hot melt adhesives with no VOC in the adhesive formulation.
<input checked="" type="checkbox"/>	31. Hand-held equipment for buffing, polishing, cutting, drilling, sawing, grinding, turning or machining wood, metal or plastic.
<input type="checkbox"/>	32. Humidity chambers.
<input type="checkbox"/>	33. Hydraulic and hydrostatic testing equipment.
<input type="checkbox"/>	34. Indoor or outdoor kerosene heaters.
<input checked="" type="checkbox"/>	35. Internal combustion engines used for landscaping purposes.
<input type="checkbox"/>	36. Laser trimmers using dust collection to prevent fugitive emissions.
<input type="checkbox"/>	37. Laundry activities, except for dry-cleaning and steam boilers.
<input type="checkbox"/>	38. Natural gas pressure regulator vents, excluding venting at oil and gas production facilities.
<input type="checkbox"/>	39. Oxygen scavenging (de-aeration) of water.
<input type="checkbox"/>	40. Ozone generators.

24. Insignificant Activities (Check all that apply)	
<input checked="" type="checkbox"/>	41. Plant maintenance and upkeep activities (e.g., grounds-keeping, general repairs, cleaning, painting, welding, plumbing, re-tarring roofs, installing insulation, and paving parking lots) provided these activities are not conducted as part of a manufacturing process, are not related to the source's primary business activity, and not otherwise triggering a permit modification. (Cleaning and painting activities qualify if they are not subject to VOC or HAP control requirements. Asphalt batch plant owners/operators must still get a permit if otherwise requested.)
<input checked="" type="checkbox"/>	42. Portable electrical generators that can be moved by hand from one location to another. "Moved by Hand" means that it can be moved without the assistance of any motorized or non-motorized vehicle, conveyance, or device.
<input type="checkbox"/>	43. Process water filtration systems and demineralizers.
<input checked="" type="checkbox"/>	44. Repair or maintenance shop activities not related to the source's primary business activity, not including emissions from surface coating or de-greasing (solvent metal cleaning) activities, and not otherwise triggering a permit modification.
<input checked="" type="checkbox"/>	45. Repairs or maintenance where no structural repairs are made and where no new air pollutant emitting facilities are installed or modified.
<input checked="" type="checkbox"/>	46. Routing calibration and maintenance of laboratory equipment or other analytical instruments.
<input type="checkbox"/>	47. Salt baths using nonvolatile salts that do not result in emissions of any regulated air pollutants. Shock chambers.
<input type="checkbox"/>	48. Shock chambers.
<input type="checkbox"/>	49. Solar simulators.
<input type="checkbox"/>	50. Space heaters operating by direct heat transfer.
<input type="checkbox"/>	51. Steam cleaning operations.
<input type="checkbox"/>	52. Steam leaks.
<input type="checkbox"/>	53. Steam sterilizers.
<input type="checkbox"/>	54. Steam vents and safety relief valves.
<input type="checkbox"/>	55. Storage tanks, reservoirs, and pumping and handling equipment of any size containing soaps, vegetable oil, grease, animal fat, and nonvolatile aqueous salt solutions, provided appropriate lids and covers are utilized.
<input checked="" type="checkbox"/>	56. Storage tanks, vessels, and containers holding or storing liquid substances that will not emit any VOC or HAP. Exemptions for storage tanks containing petroleum liquids or other volatile organic liquids should be based on size limits such as storage tank capacity and vapor pressure of liquids stored and are not appropriate for this list.
<input type="checkbox"/>	57. Such other sources or activities as the Director may determine.
<input type="checkbox"/>	58. Tobacco smoking rooms and areas.
<input type="checkbox"/>	59. Vents from continuous emissions monitors and other analyzers.

Section 5: Emission Units, Control Devices, and Emission Points

25. Equipment Table
Fill out the Title V Equipment Table and provide it as ATTACHMENT D .
26. Emission Units
For each emission unit listed in the Title V Equipment Table , fill out and provide an Emission Unit Form as ATTACHMENT E .
For each emission unit not in compliance with an applicable requirement, fill out a Schedule of Compliance Form as ATTACHMENT F .
27. Control Devices
For each control device listed in the Title V Equipment Table , fill out and provide an Air Pollution Control Device Form as ATTACHMENT G .
For any control device that is required on an emission unit in order to meet a standard or limitation for which the potential pre-control device emissions of an applicable regulated air pollutant is greater than or equal to the Title V Major Source Threshold Level, refer to the Compliance Assurance Monitoring (CAM) Form(s) for CAM applicability. Fill out and provide these forms, if applicable, for each Pollutant Specific Emission Unit (PSEU) as ATTACHMENT H .

Section 6: Certification of Information

28. Certification of Truth, Accuracy and Completeness and Certification of Compliance

*Note: This Certification must be signed by a responsible official. The **original**, signed in **blue ink**, must be submitted with the application. Applications without an **original** signed certification will be considered as incomplete.*

a. Certification of Truth, Accuracy and Completeness

I certify that I am a responsible official (as defined at 45CSR§30-2.38) and am accordingly authorized to make this submission on behalf of the owners or operators of the source described in this document and its attachments. I certify under penalty of law that I have personally examined and am familiar with the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine and/or imprisonment.

b. Compliance Certification

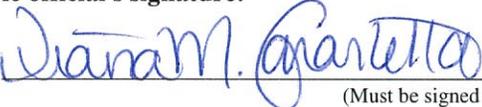
Except for requirements identified in the Title V Application for which compliance is not achieved, I, the undersigned hereby certify that, based on information and belief formed after reasonable inquiry, all air contaminant sources identified in this application are in compliance with all applicable requirements.

Responsible official (type or print)

Name: Diana Charletta

Title: Sr. Vice President

Responsible official's signature:

Signature:  Signature Date: 6/7/17
(Must be signed and dated in blue ink)

Note: Please check all applicable attachments included with this permit application:

<input checked="" type="checkbox"/>	ATTACHMENT A: Area Map
<input checked="" type="checkbox"/>	ATTACHMENT B: Plot Plan(s)
<input checked="" type="checkbox"/>	ATTACHMENT C: Process Flow Diagram(s)
<input checked="" type="checkbox"/>	ATTACHMENT D: Equipment Table
<input checked="" type="checkbox"/>	ATTACHMENT E: Emission Unit Form(s)
<input type="checkbox"/>	ATTACHMENT F: Schedule of Compliance Form(s) <i>(Not Applicable)</i>
<input checked="" type="checkbox"/>	ATTACHMENT G: Air Pollution Control Device Form(s)
<input type="checkbox"/>	ATTACHMENT H: Compliance Assurance Monitoring (CAM) Form(s) <i>(Not Applicable)</i>

All of the required forms and additional information can be found and downloaded from, the DEP website at www.dep.wv.gov/dag, requested by phone (304) 926-0475, and/or obtained through the mail.

ATTACHMENT A

Area Map

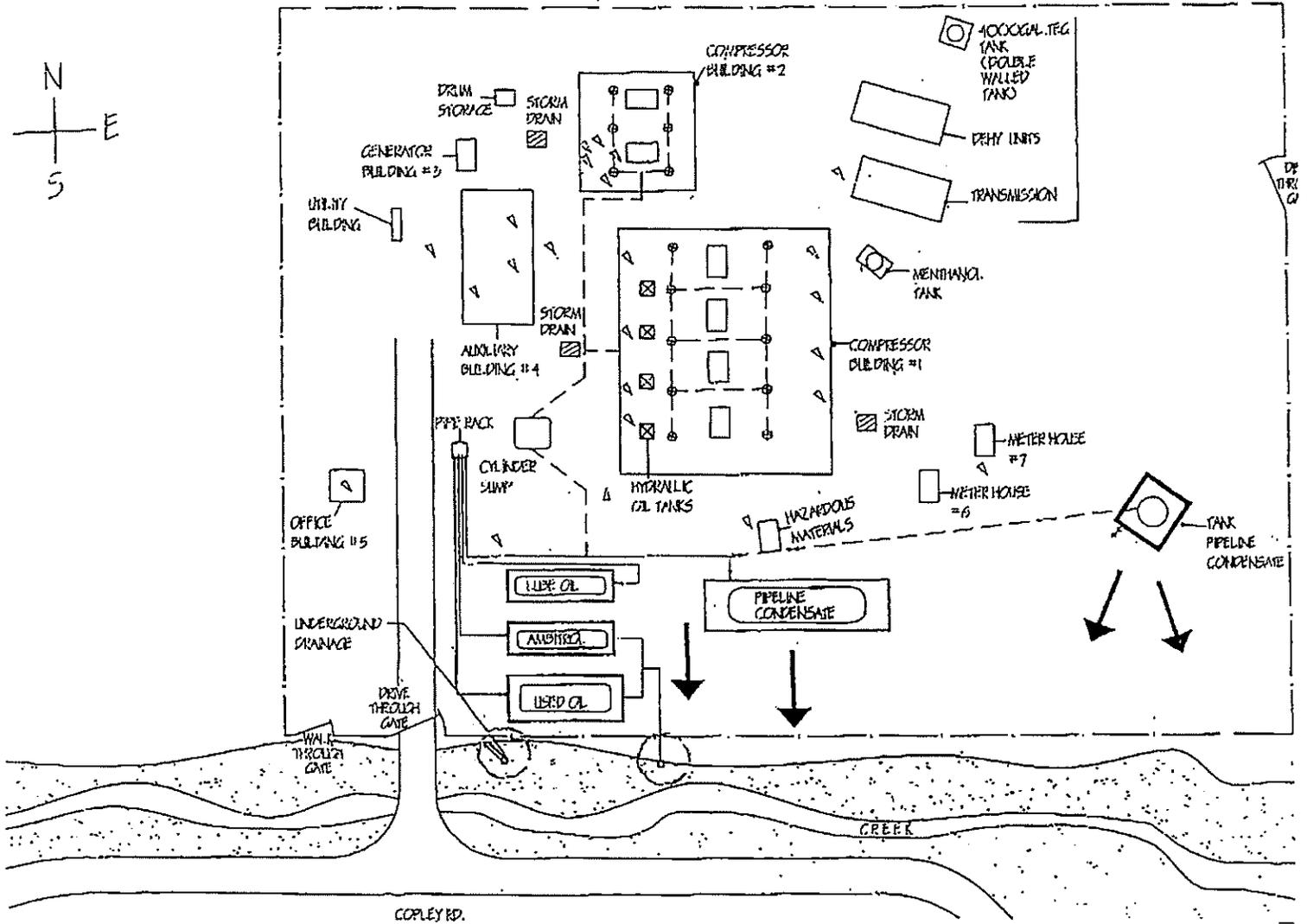
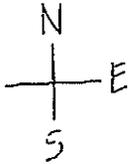
ATTACHMENT A - AREA MAP



UTM Northing (KM): 4,314.773
UTM Easting (KM): 541.390
Zone: 17 Elevation: ~1,178

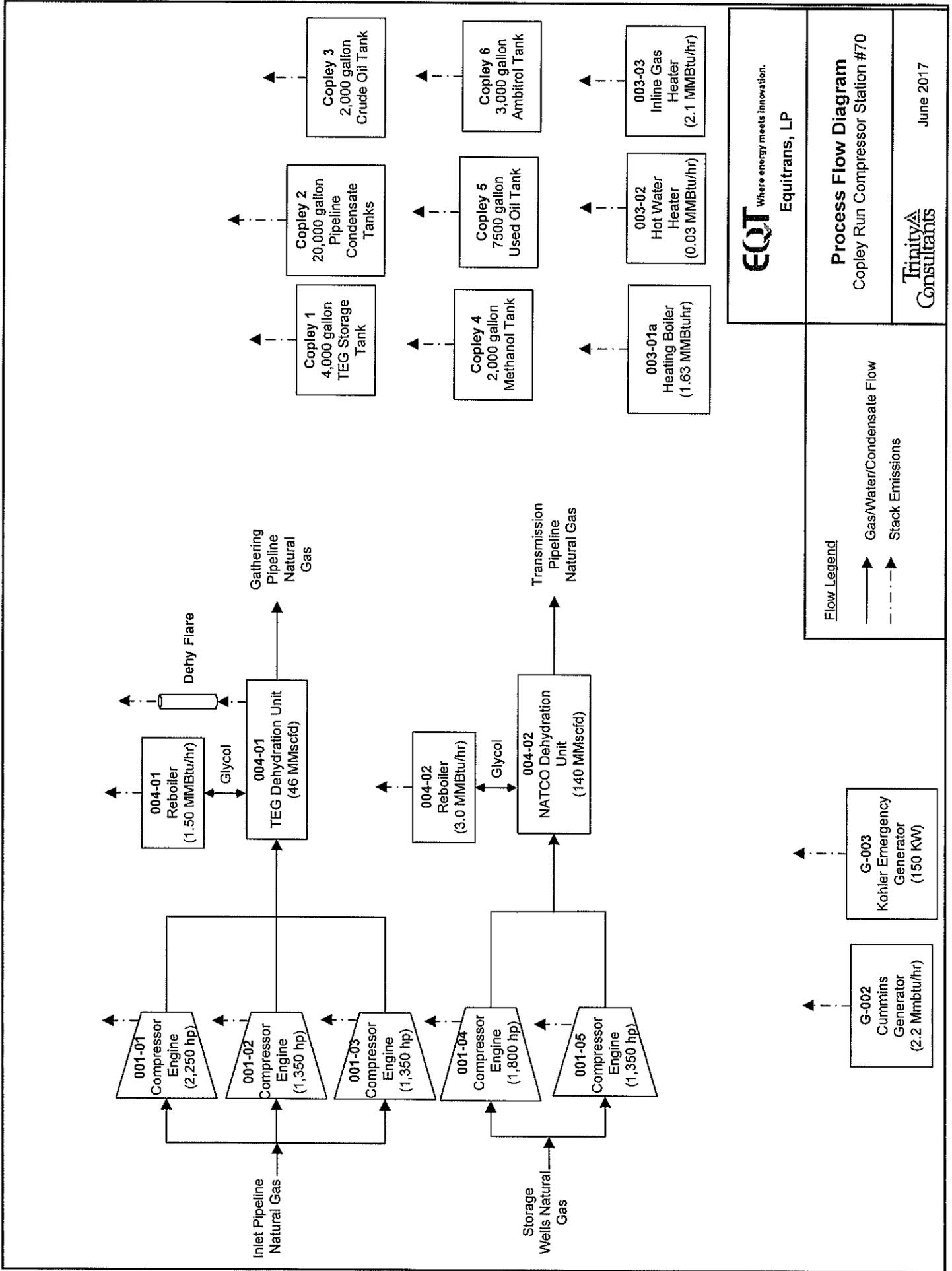
ATTACHMENT B

Plot Plan



ATTACHMENT C

Process Flow Diagram



EQT Where energy meets innovation.
Equitrans, LP

Process Flow Diagram
Copley Run Compressor Station #70

Trinity Consultants
June 2017

ATTACHMENT D - Title V Equipment Table
(includes all emission units at the facility except those designated as insignificant activities in Section 4, Item 24 of the General Forms)

Emission Point ID ¹	Control Device ¹	Emission Unit ID ¹	Emission Unit Description	Design Capacity	Year Installed/Modified
C-001	Oxidation Catalyst	001-01	Reciprocating Engine/Integral Compressor; Cooper Bessemer Model GMVH10; Serial #48769	2,250 hp	1981
C-002	Oxidation Catalyst	001-02	Reciprocating Engine/Integral Compressor; Cooper Bessemer Model GMVH10; Serial #48771	1,350 hp	1981
C-003	Oxidation Catalyst	001-03	Reciprocating Engine/Integral Compressor; Cooper Bessemer Model GMVH10; Serial #48772	1,350 hp	1981
C-004	Oxidation Catalyst	001-04	Reciprocating Engine/Integral Compressor; Cooper Bessemer Model GMVH10; Serial #48770	1,800 hp	1980
C-005	Oxidation Catalyst	001-05	Reciprocating Engine/Integral Compressor; Cooper Bessemer Model GMVH10; Serial #49126	1,350 hp	1993
G-002	None	G-002	Natural Gas Fired Electric Generator; Cummins Model GTA12; Serial #25183763	2.2 MMBtu/hr	1993
G-003	None	G-003	Kohler 150REZGC Generator	150 KW	2015
003-01a	None	003-01a	Natural Gas Fired Hot Water Boiler	1.63 MMBtu/hr	2015
003-02	None	003-02	Natural Gas Fired Hot Water Heater; WL Jackson Mfg. Co. Model G 030 05; Serial # 66552-1080	0.03 MMBtu/hr	1987
003-03	None	003-03	Inline Gas Heater w/NATCO 4 CI Burner	2.1 MMBtu/hr	1992
Dehy Flare	Dehy Flare	004-01	Triethylene Glycol dehydration unit; Natco Model 5 GR-3000-TX10; also consists of a flare and a natural gas fired reboiler (Dehy Boiler #1)	1.5 MMBtu/hr, 46 MMSCFD	1992
004-02	None	004-02	CE NATCO Dehy, Model GS 3100E w/3.0 MMBtu/hr reboiler (Storage dehy)	140 MMSCFD	1992
Dehy Flare	None	Dehy Flare	Flare Industries, Inc, Model 25' OAH X 48"	0.84 MMBtu/hr	1992
Copley 1	None	Copley 1	Triethylene Glycol horizontal fixed roof storage tank	4,000 gallon	1992
Copley 2	None	Copley 2	Pipeline Condensate horizontal fixed roof storage tank	20,000 gallon	1992
Copley 3	None	Copley 3	Crude Oil horizontal fixed roof storage tank	2,000 gallon	1992
Copley 4	None	Copley 4	Methanol horizontal fixed roof storage tank	2,000 gallon	1992
Copley 5	None	Copley 5	Used Oil horizontal fixed roof storage tank	7,500 gallon	1992
Copley 6	None	Copley 6	Ambitrol horizontal fixed roof storage tank	3,000 gallon	1992

¹For 45CSR13 permitted sources, the numbering system used for the emission points, control devices, and emission units should be consistent with the numbering system used in the 45CSR13 permit. For grandfathered sources, the numbering system should be consistent with registrations or emissions inventory previously submitted to DAQ. For emission points, control devices, and emissions units which have not been previously labeled, use the following 45CSR13 numbering system: 1S, 2S, 3S,... or other appropriate description for emission units; 1C, 2C, 3C,... or other appropriate designation for control devices; 1E, 2E, 3E, ... or other appropriate designation for emission points.

ATTACHMENT E

Emission Unit Forms

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number: 001-01	Emission unit name: Reciprocating Engine/Integral Compressor; Cooper Bessemer Model GMVH10; Serial #48769	List any control devices associated with this emission unit: N/A
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Provide a description of the emission unit (type, method of operation, design parameters, etc.):
One (1) natural gas fired 2,250 HP reciprocating internal combustion engine that drives a compressor for the compression of natural gas

Manufacturer: Cooper-Bessemer	Model number: GMVH10	Serial number: 48769
Construction date: 1981	Installation date: 1981	Modification date(s): N/A

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 2,250 HP

Maximum Hourly Throughput: 15,300 scf/hr	Maximum Annual Throughput: 134.03 MMscf/yr	Maximum Operating Schedule: 8,760 hours per year
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Fuel Usage Data (fill out all applicable fields)

Does this emission unit combust fuel? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes, is it? <input type="checkbox"/> Indirect Fired <input checked="" type="checkbox"/> Direct Fired
--	---

Maximum design heat input and/or maximum horsepower rating: 2,250 HP	Type and Btu/hr rating of burners: 16.52 MMBtu/hr
--	---

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.

Natural Gas – 15,300 scf/hr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	Negligible	Negligible	1080 BTU/scf

Emissions Data

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	6.38	27.94
Nitrogen Oxides (NO _x)	52.38	229.43
Lead (Pb)	N/A	N/A
Particulate Matter (PM _{2.5})	0.63	2.78

Particulate Matter (PM ₁₀)	0.63	2.78
Total Particulate Matter (TSP)	0.63	2.78
Sulfur Dioxide (SO ₂)	0.01	0.04
Volatile Organic Compounds (VOC)	1.98	8.69
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.91	4.00
Total HAP	1.32	5.76
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
Carbon Dioxide Equivalent (CO ₂ e)	1935	8475

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

Criteria Pollutants factors are based on AP-42 Section 3.2 Table 3.2-1. Greenhouse gas emission factors are based on 40 CFR Part 98, Subpart C, Tables C-1 and C-2 for natural gas combustion.

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

RICE MACT: 40 CFR 63 Subpart ZZZZ

Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (*Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.*)

RICE MACT: Equitrans will minimize the engine's time spent at idle and minimize the engines' startup to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes (40CFR§63.6625(h)). Equitrans will comply with applicable work practice standards: change oil and filter every 4,320 hours of operation or annually, whichever comes first; inspect spark plugs every 4,320 hours of operation or annually, whichever comes first; and inspect all hoses and belts every 4,320 hours of operation or annually, whichever comes first and replace as necessary (40CFR§6603 and Table 2d to Subpart ZZZZ of 40CFR63). Equitrans will also operate and maintain the engine in accordance with manufacturer's suggestions and maintain records showing that all work practices have been met (40 CFR63).

Are you in compliance with all applicable requirements for this emission unit? Yes No

If no, complete the Schedule of Compliance Form as ATTACHMENT F.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number: 001-02	Emission unit name: Reciprocating Engine/Integral Compressor; Cooper Bessemer Model GMVH6; Serial #48771	List any control devices associated with this emission unit: None
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Provide a description of the emission unit (type, method of operation, design parameters, etc.):
One (1) natural gas fired 1,350 HP reciprocating internal combustion engine that drives a compressor for the compression of natural gas

Manufacturer: Cooper-Bessemer	Model number: GMVH6	Serial number: 48771
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Construction date: 1981	Installation date: 1981	Modification date(s): N/A
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Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 1350 HP

Maximum Hourly Throughput: 9,180 scf/hr	Maximum Annual Throughput: 80.4 MMscsf/hr	Maximum Operating Schedule: 8,760 hours per year
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Fuel Usage Data (fill out all applicable fields)

Does this emission unit combust fuel? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes, is it? <input type="checkbox"/> Indirect Fired <input checked="" type="checkbox"/> Direct Fired
--	---

Maximum design heat input and/or maximum horsepower rating: 1350 HP	Type and Btu/hr rating of burners: 9.91 MMBtu/hr
---	--

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.

Natural Gas – 9,180 scf/hr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	Negligible	Negligible	1080 BTU/scf

Emissions Data

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	5.95	26.07
Nitrogen Oxides (NO _x)	5.95	26.07
Lead (Pb)	N/A	N/A
Particulate Matter (PM _{2.5})	0.38	1.67

Particulate Matter (PM ₁₀)	0.38	1.67
Total Particulate Matter (TSP)	0.38	1.67
Sulfur Dioxide (SO ₂)	0.01	0.03
Volatile Organic Compounds (VOC)	1.49	6.52
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.55	2.40
Total HAP	0.79	3.46
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
Carbon Dioxide Equivalent (CO ₂ e)	1161	5085
<p>List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).</p> <p>Criteria Pollutants factors are based on AP-42 Section 3.2 Table 3.2-1. Greenhouse gas emission factors are based on 40 CFR Part 98, Subpart C, Tables C-1 and C-2 for natural gas combustion.</p>		

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (Note: Title V permit condition numbers alone are not the underlying applicable requirements). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

RICE MACT: 40 CFR 63 Subpart ZZZZ

Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

RICE MACT: Equitrans will minimize the engine's time spent at idle and minimize the engines' startup to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes (40CFR§63.6625(h)). Equitrans will comply with applicable work practice standards: change oil and filter every 4,320 hours of operation or annually, whichever comes first; inspect spark plugs every 4,320 hours of operation or annually, whichever comes first; and inspect all hoses and belts every 4,320 hours of operation or annually, whichever comes first and replace as necessary (40CFR§6603 and Table 2d to Subpart ZZZZ of 40CFR63). Equitrans will also operate and maintain the engine in accordance with manufacturer's suggestions and maintain records showing that all work practices have been met (40 CFR63).

Are you in compliance with all applicable requirements for this emission unit? Yes No

If no, complete the Schedule of Compliance Form as ATTACHMENT F.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number: 001-03	Emission unit name: Reciprocating Engine/Integral Compressor; Cooper Bessemer Model GMVH; Serial #48772	List any control devices associated with this emission unit: None
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Provide a description of the emission unit (type, method of operation, design parameters, etc.):
One (1) natural gas fired 1,350 HP reciprocating internal combustion engine that drives a compressor for the compression of natural gas

Manufacturer: Cooper-Bessemer	Model number: GMVH6	Serial number: 48771
Construction date: 1981	Installation date: 1981	Modification date(s): N/A

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 1350 HP

Maximum Hourly Throughput: 9,180 scf/hr	Maximum Annual Throughput: 80.4 MMscsf/hr	Maximum Operating Schedule: 8,760 hours per year
---	---	--

Fuel Usage Data (fill out all applicable fields)

Does this emission unit combust fuel? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes, is it? <input type="checkbox"/> Indirect Fired <input checked="" type="checkbox"/> Direct Fired
--	---

Maximum design heat input and/or maximum horsepower rating: 1350 HP	Type and Btu/hr rating of burners: 9.91 MMBtu/hr
---	--

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.

Natural Gas – 9,180 scf/hr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	Negligible	Negligible	1080 BTU/scf

Emissions Data

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	5.95	26.07
Nitrogen Oxides (NO _x)	5.95	26.07
Lead (Pb)	N/A	N/A
Particulate Matter (PM _{2.5})	0.38	1.67

Particulate Matter (PM ₁₀)	0.38	1.67
Total Particulate Matter (TSP)	0.38	1.67
Sulfur Dioxide (SO ₂)	0.01	0.03
Volatile Organic Compounds (VOC)	1.49	6.52
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.55	2.40
Total HAP	0.79	3.46
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
Carbon Dioxide Equivalent (CO ₂ e)	1161	5085
<p>List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).</p> <p>Criteria Pollutants factors are based on AP-42 Section 3.2 Table 3.2-1. Greenhouse gas emission factors are based on 40 CFR Part 98, Subpart C, Tables C-1 and C-2 for natural gas combustion.</p>		

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (Note: Title V permit condition numbers alone are not the underlying applicable requirements). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

RICE MACT: 40 CFR 63 Subpart ZZZZ

Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

RICE MACT: Equitrans will minimize the engine's time spent at idle and minimize the engines' startup to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes (40CFR§63.6625(h)). Equitrans will comply with applicable work practice standards: change oil and filter every 4,320 hours of operation or annually, whichever comes first; inspect spark plugs every 4,320 hours of operation or annually, whichever comes first; and inspect all hoses and belts every 4,320 hours of operation or annually, whichever comes first and replace as necessary (40CFR§6603 and Table 2d to Subpart ZZZZ of 40CFR63). Equitrans will also operate and maintain the engine in accordance with manufacturer's suggestions and maintain records showing that all work practices have been met (40 CFR63).

Are you in compliance with all applicable requirements for this emission unit? Yes No

If no, complete the Schedule of Compliance Form as ATTACHMENT F.

ATTACHMENT E - Emission Unit Form

Emission Unit Description			
Emission unit ID number: 001-04	Emission unit name: Reciprocating Engine/Integral Compressor; Cooper Bessemer Model GMVH8; Serial #48770	List any control devices associated with this emission unit: N/A	
Provide a description of the emission unit (type, method of operation, design parameters, etc.): One (1) natural gas fired 1,800 HP reciprocating internal combustion engine that drives a compressor for the compression of natural gas			
Manufacturer: Cooper-Bessemer	Model number: GMVH8	Serial number: 48770	
Construction date: 1980	Installation date: 1980	Modification date(s): N/A	
Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 1800 HP			
Maximum Hourly Throughput: 12.24 Mscf/hr	Maximum Annual Throughput: 94.4 MMscf/yr	Maximum Operating Schedule: 8,760 hours per year	
Fuel Usage Data (fill out all applicable fields)			
Does this emission unit combust fuel? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		If yes, is it? <input type="checkbox"/> Indirect Fired <input checked="" type="checkbox"/> Direct Fired	
Maximum design heat input and/or maximum horsepower rating: 1800 HP		Type and Btu/hr rating of burners: NA	
List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each. Natural Gas -- 12.24 Mscf/hr			
Describe each fuel expected to be used during the term of the permit.			
Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	Negligible	Negligible	1080 BTU/scf
Emissions Data			
Criteria Pollutants	Potential Emissions		
	PPH	TPY	
Carbon Monoxide (CO)	5.10	22.35	
Nitrogen Oxides (NO _x)	41.90	183.54	
Lead (Pb)	N/A	N/A	

Particulate Matter (PM _{2.5})	0.51	2.22
Particulate Matter (PM ₁₀)	0.51	2.22
Total Particulate Matter (TSP)	0.51	2.22
Sulfur Dioxide (SO ₂)	0.01	0.03
Volatile Organic Compounds (VOC)	1.59	6.95
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.73	3.20
Total HAP	1.05	4.61
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
Carbon Dioxide Equivalent (CO _{2e})	1548	6,780
<p>List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).</p> <p>Criteria Pollutants factors are based on AP-42 Section 3.2 Table 3.2-1. Greenhouse gas emission factors are based on 40 CFR Part 98, Subpart C, Tables C-1 and C-2 for natural gas combustion.</p>		

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (Note: Title V permit condition numbers alone are not the underlying applicable requirements). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

RICE MACT: 40 CFR 63 Subpart ZZZZ

Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

RICE MACT: Equitrans will minimize the engine's time spent at idle and minimize the engines' startup to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes (40CFR§63.6625(h)). Equitrans will comply with applicable work practice standards: change oil and filter every 4,320 hours of operation or annually, whichever comes first; inspect spark plugs every 4,320 hours of operation or annually, whichever comes first; and inspect all hoses and belts every 4,320 hours of operation or annually, whichever comes first and replace as necessary (40CFR§6603 and Table 2d to Subpart ZZZZ of 40CFR63). Equitrans will also operate and maintain the engine in accordance with manufacturer's suggestions and maintain records showing that all work practices have been met (40 CFR63).

Are you in compliance with all applicable requirements for this emission unit? Yes No

If no, complete the Schedule of Compliance Form as ATTACHMENT F.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number: 001-005	Emission unit name: Reciprocating Engine/Integral Compressor; Cooper Bessemer Model GMVHR; Serial #49126	List any control devices associated with this emission unit: N/A
--	--	--

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
One (1) natural gas fired 1,350 HP reciprocating internal combustion engine that drives a compressor for the compression of natural gas.

Manufacturer: Cooper-Bessemer	Model number: GMVHR	Serial number: 49126
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Construction date: 1993	Installation date: 1993	Modification date(s): N/A
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Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 1350 HP

Maximum Hourly Throughput: 9.18 Mscf/hr	Maximum Annual Throughput: 70.8 MMscf/yr	Maximum Operating Schedule: 7,709 hours per year
---	--	--

Fuel Usage Data (fill out all applicable fields)

Does this emission unit combust fuel? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes, is it? <input type="checkbox"/> Indirect Fired <input checked="" type="checkbox"/> Direct Fired
--	---

Maximum design heat input and/or maximum horsepower rating: 1350 HP	Type and Btu/hr rating of burners: NA
---	---

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas - 9.18 Mscf/hr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	Negligible	Negligible	1080 BTU/scf

Emissions Data

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	5.95	22.94
Nitrogen Oxides (NO _x)	10.00	38.55
Lead (Pb)	N/A	N/A

Particulate Matter (PM _{2.5})	0.38	1.47
Particulate Matter (PM ₁₀)	0.38	1.47
Total Particulate Matter (TSP)	0.38	1.47
Sulfur Dioxide (SO ₂)	0.01	0.02
Volatile Organic Compounds (VOC)	1.49	5.74
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.55	2.11
Total HAP	0.79	3.04
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
Carbon Dioxide Equivalent (CO _{2e})	1161	4475
<p>List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).</p> <p>Criteria Pollutants factors are based on AP-42 Section 3.2 Table 3.2-1. Greenhouse gas emission factors are based on 40 CFR Part 98, Subpart C, Tables C-1 and C-2 for natural gas combustion.</p>		

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (Note: Title V permit condition numbers alone are not the underlying applicable requirements). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

RICE MACT: 40 CFR 63 Subpart ZZZZ
R13-2397C Condition 4.1.1
No Changes from current Title V Permit Conditions (R30-04100009-2012 (MM01))

Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

RICE MACT: Equitrans will minimize the engine's time spent at idle and minimize the engines' startup to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes (40CFR§63.6625(h)). Equitrans will comply with applicable work practice standards: change oil and filter every 4,320 hours of operation or annually, whichever comes first; inspect spark plugs every 4,320 hours of operation or annually, whichever comes first; and inspect all hoses and belts every 4,320 hours of operation or annually, whichever comes first and replace as necessary (40CFR§6603 and Table 2d to Subpart ZZZZ of 40CFR63). Equitrans will also operate and maintain the engine in accordance with manufacturer's suggestions and maintain records showing that all work practices have been met (40 CFR63).

Are you in compliance with all applicable requirements for this emission unit? Yes No

If no, complete the Schedule of Compliance Form as ATTACHMENT F.

ATTACHMENT E - Emission Unit Form

Emission Unit Description			
Emission unit ID number: G-002	Emission unit name: Natural Gas Fired Electric Generator; Cummins Model GTA12; Serial #25183763	List any control devices associated with this emission unit: None	
Provide a description of the emission unit (type, method of operation, design parameters, etc.): One (1) natural gas fired generator engine that drive an electrical generation unit			
Manufacturer: Cummins	Model number: GTA12	Serial number: 25183763	
Construction date: 1993	Installation date: 1993	Modification date(s): N/A	
Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 2.2 MMBtu/hr			
Maximum Hourly Throughput: 2,037 scf/hr	Maximum Annual Throughput: N/A	Maximum Operating Schedule: 8760	
Fuel Usage Data (fill out all applicable fields)			
Does this emission unit combust fuel? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		If yes, is it? <input type="checkbox"/> Indirect Fired <input checked="" type="checkbox"/> Direct Fired	
Maximum design heat input and/or maximum horsepower rating: 2.2 MMBtu/hr		Type and Btu/hr rating of burners: 2.2 MMBtu/hr	
List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each. Natural Gas – 2,037 scf/hr			
Describe each fuel expected to be used during the term of the permit.			
Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	Negligible	Negligible	1080 BTU/scf
Emissions Data			
Criteria Pollutants	Potential Emissions		
	PPH	TPY	
Carbon Monoxide (CO)	8.18	35.85	
Nitrogen Oxides (NO _x)	4.99	21.87	
Lead (Pb)	N/A	N/A	
Particulate Matter (PM _{2.5})	0.04	0.19	
Particulate Matter (PM ₁₀)	0.04	0.19	

Total Particulate Matter (TSP)	0.04	0.19
Sulfur Dioxide (SO ₂)	<0.01	0.01
Volatile Organic Compounds (VOC)	0.07	0.29
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	4.51E-02	0.1975
Total HAP	0.06	0.28
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
Carbon Dioxide Equivalent (CO ₂ e)	258	1128
<p>List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).</p> <p>Criteria Pollutants factors are based on AP-42 Section 3.2 Table 3.2-3. Greenhouse gas emission factors are based on 40 CFR Part 98, Subpart C, Tables C-1 and C-2 for natural gas combustion.</p>		

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or **construction permit** with the condition number. (Note: Title V permit condition numbers alone are not the underlying applicable requirements). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

RICE MACT: 40 CFR 63 Subpart ZZZZ

Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

RICE MACT: Equitrans will minimize the engine's time spent at idle and minimize the engines' startup to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes (40CFR§63.6625(h)). Equitrans will comply with applicable work practice standards: change oil and filter every 1,440 hours of operation or annually, whichever comes first; inspect spark plugs every 1,440 hours of operation or annually, whichever comes first; and inspect all hoses and belts every 1,440 hours of operation or annually, whichever comes first and replace as necessary (40CFR§6603 and Table 2d to Subpart ZZZZ of 40CFR63). Equitrans will also operate and maintain the engine in accordance with manufacturer's suggestions and maintain records showing that all work practices have been met (40 CFR63).

Are you in compliance with all applicable requirements for this emission unit? Yes No

If no, complete the Schedule of Compliance Form as ATTACHMENT F.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number: G-003	Emission unit name: Natural Gas Fired Electric Generator; Cummins Model GTA12; Serial #25183763	List any control devices associated with this emission unit: None
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Provide a description of the emission unit (type, method of operation, design parameters, etc.):
One (1) natural gas fired emergency generator engine that drive an electrical generation unit

Manufacturer: Kohler	Model number: 150REZG	Serial number:
Construction date: 2015	Installation date: 2015	Modification date(s): N/A

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 2.12 MMBtu/hr

Maximum Hourly Throughput: 1,965 scf/hr	Maximum Annual Throughput: N/A	Maximum Operating Schedule: 500
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Fuel Usage Data (fill out all applicable fields)

Does this emission unit combust fuel? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes, is it? <input type="checkbox"/> Indirect Fired <input checked="" type="checkbox"/> Direct Fired
--	---

Maximum design heat input and/or maximum horsepower rating: 2.12 MMBtu/hr	Type and Btu/hr rating of burners: 2.12 MMBtu/hr
---	--

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
1,965 scf/hr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	Negligible	Negligible	1080 BTU/scf

Emissions Data

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	4.24	1.06
Nitrogen Oxides (NO _x)	8.49	2.12
Lead (Pb)	N/A	N/A
Particulate Matter (PM _{2.5})	0.04	0.01
Particulate Matter (PM ₁₀)	0.04	0.01

Total Particulate Matter (TSP)	0.04	0.01
Sulfur Dioxide (SO ₂)	<0.01	<0.01
Volatile Organic Compounds (VOC)	2.12	0.53
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	4.35E-02	1.09E-02
Total HAP	0.06	0.02
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
Carbon Dioxide Equivalent (CO ₂ e)	249	62
<p>List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).</p> <p>Criteria Pollutants factors are based on AP-42 Section 3.2 Table 3.2-3. Greenhouse gas emission factors are based on 40 CFR Part 98, Subpart C, Tables C-1 and C-2 for natural gas combustion.</p>		

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (Note: Title V permit condition numbers alone are not the underlying applicable requirements). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

NSPS Subpart JJJJ and NESHAP Subpart ZZZZ

Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

NSPS Subpart JJJJ
Hours of Operation

Are you in compliance with all applicable requirements for this emission unit? Yes No

If no, complete the Schedule of Compliance Form as ATTACHMENT F.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number: 004-01	Emission unit name: Dehydration Unit	List any control devices associated with this emission unit: Dehy Flare
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Provide a description of the emission unit (type, method of operation, design parameters, etc.):
46 MMSCFD triethylene glycol dehydration unit with associated reboiler and flare for removing water and impurities from natural gas.

Manufacturer: Natco	Model number: 3000-TX10	Serial number: N/A
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Construction date: 1992	Installation date: 1992	Modification date(s): N/A
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Design Capacity (examples: furnaces - Reboiler Capacity – 1.50 MMBtu/hr)

Maximum Hourly Throughput: N/A	Maximum Annual Throughput: 46 MMSCFD	Maximum Operating Schedule: 8,760 hours
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Fuel Usage Data (fill out all applicable fields)

Does this emission unit combust fuel? ___Yes ___X___ No	If yes, is it? NA ___ Indirect Fired ___ Direct Fired
--	---

Maximum design heat input and/or maximum horsepower rating: N/A	Type and Btu/hr rating of burners: N/A
---	--

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.

N/A

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
NA			

Emissions Data

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.3	1.3
Nitrogen Oxides (NO _x)	0.1	0.4

Lead (Pb)	--	--
Particulate Matter (PM _{2.5})	0.004	0.019
Particulate Matter (PM ₁₀)	0.004	0.019
Total Particulate Matter (TSP)	--	--
Sulfur Dioxide (SO ₂)	<0.01	0.001
Volatile Organic Compounds (VOC)	1.6	7.2
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Benzene	0.1	0.3
Total HAP	0.7	3.0
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO ₂ e	185	812
<p>List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).</p> <p>GRI GlyCalc 4.0 AP-42 Permit Limits</p>		

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (Note: Title V permit condition numbers alone are not the underlying applicable requirements). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

R13-2397C Condition 4.1.3
No change from existing Title V permit (R30-04100009-2012 (MM01))

Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Title V Permit Conditions 6.2 and 8.2 Monitoring Requirements
Title V Permit Conditions 6.3 and 8.3 Testing Requirements
Title V Permit Conditions 6.4 and 8.4 Recordkeeping Requirements
Title V Permit Conditions 6.5 and 8.5 Reporting Requirements

Are you in compliance with all applicable requirements for this emission unit? Yes No

If no, complete the Schedule of Compliance Form as ATTACHMENT F.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number: 004-01	Emission unit name: Dehy Reboiler	List any control devices associated with this emission unit: None
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Provide a description of the emission unit (type, method of operation, design parameters, etc.):
One (1) natural gas fired reboiler (rated at 1.5 MMBtu/hr) associated with dehydration unit

Manufacturer:	Model number:	Serial number:
Construction date: 1992	Installation date: 1992	Modification date(s): N/A

Design Capacity (examples: furnaces - tons/hr, tanks - gallons):
1.50 MMBtu/hr

Maximum Hourly Throughput: 1.39E-03 MMscf/hr	Maximum Annual Throughput: 12.7 MMscf/year	Maximum Operating Schedule: 8,760 hours
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Fuel Usage Data (fill out all applicable fields)

Does this emission unit combust fuel? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes, is it? <input type="checkbox"/> Indirect Fired <input checked="" type="checkbox"/> Direct Fired
--	---

Maximum design heat input and/or maximum horsepower rating: 1.50 MMbtu/hr	Type and Btu/hr rating of burners: 1.50 MMbtu/hr
---	--

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.

Natural Gas – 1.39E-03 MMscf/hr.

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	Negl.	Negl.	1,080 BTU/scf

Emissions Data

Criteria Pollutants	Potential Emissions (<i>Each Unit</i>)	
	PPH	TPY
Carbon Monoxide (CO)	0.12	0.51
Nitrogen Oxides (NO _x)	0.14	0.61
Lead (Pb)	--	--
Particulate Matter (PM _{2.5})	0.01	0.05
Particulate Matter (PM ₁₀)	0.01	0.05
Total Particulate Matter (TSP)	0.01	0.05

Sulfur Dioxide (SO ₂)	<0.01	0.004
Volatile Organic Compounds (VOC)	0.01	0.03
Hazardous Air Pollutants	Potential Emissions (<i>Each Unit</i>)	
	PPH	TPY
Formaldehyde (HCHO)	1.04E-04	4.56E-04
Total HAP	2.62E-03	1.15E-02
Regulated Pollutants other than Criteria and HAP	Potential Emissions (<i>Each Unit</i>)	
	PPH	TPY
CO ₂ e	175	769

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

Criteria pollutant and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3. Greenhouse gas emission factors from 40 CFR Part 98 Tables C-1 and C-2.

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (Note: Title V permit condition numbers alone are not the underlying applicable requirements). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

No change from current Title V permit conditions

Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

No change from current Title V permit conditions

Are you in compliance with all applicable requirements for this emission unit? Yes No

If no, complete the Schedule of Compliance Form as ATTACHMENT F.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number: 004-02	Emission unit name: Dehydration Unit	List any control devices associated with this emission unit: N/A
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Provide a description of the emission unit (type, method of operation, design parameters, etc.):
140 MMSCFD triethylene glycol dehydration unit with associated reboiler.

Manufacturer: NATCO	Model number: GS-3100E	Serial number: N/A
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Construction date: 1992	Installation date: 1992	Modification date(s): N/A
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Design Capacity (examples: furnaces - Reboiler Capacity – 3.0 MMBtu/hr)

Maximum Hourly Throughput: N/A	Maximum Annual Throughput: 140 MMSCFD	Maximum Operating Schedule: 8,760 hours
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Fuel Usage Data (fill out all applicable fields)

Does this emission unit combust fuel? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes, is it? N/A <input type="checkbox"/> Indirect Fired <input type="checkbox"/> Direct Fired
--	--

Maximum design heat input and/or maximum horsepower rating: N/A	Type and Btu/hr rating of burners: N/A
---	--

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.

N/A

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
NA			

Emissions Data

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	--	--
Nitrogen Oxides (NO _x)	--	--

Lead (Pb)	--	--
Particulate Matter (PM _{2.5})	--	--
Particulate Matter (PM ₁₀)	--	--
Total Particulate Matter (TSP)	--	--
Sulfur Dioxide (SO ₂)	--	--
Volatile Organic Compounds (VOC)	3.4	15.1
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Benzene	0.11	0.5
Total HAP	1.8	8.1
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO _{2e}	12	54
<p>List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).</p> <p>GRI GlyCalc 4.0</p> <p>Permit Limits for reboiler</p>		

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or **construction permit** with the condition number. (Note: Title V permit condition numbers alone are not the underlying applicable requirements). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2397C Condition 4.1.3
No change from existing Title V permit (R30-04100009-2012 (MM01))

Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Title V Permit Conditions 6.2 Monitoring Requirements
Title V Permit Conditions 6.3 Testing Requirements
Title V Permit Conditions 6.4 Recordkeeping Requirements
Title V Permit Conditions 6.5 Reporting Requirements

Are you in compliance with all applicable requirements for this emission unit? Yes No

If no, complete the Schedule of Compliance Form as ATTACHMENT F.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number: 004-02	Emission unit name: Dehy Reboiler	List any control devices associated with this emission unit: None
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Provide a description of the emission unit (type, method of operation, design parameters, etc.):
One (1) natural gas fired reboiler (rated at 3.0 MMBtu/hr) associated with dehydration unit

Manufacturer:	Model number:	Serial number:
Construction date: 1992	Installation date: 1992	Modification date(s): N/A

Design Capacity (examples: furnaces - tons/hr, tanks - gallons):
3.0 MMBtu/hr

Maximum Hourly Throughput: 2.78E-03 MMscf/hr	Maximum Annual Throughput: 24.33 MMscf/year	Maximum Operating Schedule: 8,760 hours
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Fuel Usage Data (fill out all applicable fields)

Does this emission unit combust fuel? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes, is it? <input type="checkbox"/> Indirect Fired <input checked="" type="checkbox"/> Direct Fired
--	---

Maximum design heat input and/or maximum horsepower rating: 3.00 MMbtu/hr	Type and Btu/hr rating of burners: 3.00 MMbtu/hr
---	--

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.

Natural Gas – 2.78E-03 MMscf/hr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	Negl.	Negl.	1,080 BTU/scf

Emissions Data

Criteria Pollutants	Potential Emissions (<i>Each Unit</i>)	
	PPH	TPY
Carbon Monoxide (CO)	0.14	0.6
Nitrogen Oxides (NO _x)	0.28	1.22
Lead (Pb)	--	--
Particulate Matter (PM _{2.5})	0.02	0.09

Particulate Matter (PM ₁₀)	0.02	0.09
Total Particulate Matter (TSP)	0.02	0.09
Sulfur Dioxide (SO ₂)	<0.01	0.01
Volatile Organic Compounds (VOC)	3.4	15.1
Hazardous Air Pollutants	Potential Emissions (<i>Each Unit</i>)	
	PPH	TPY
Benzene	0.11	0.5
Total HAP	1.8	8.1
Regulated Pollutants other than Criteria and HAP	Potential Emissions (<i>Each Unit</i>)	
	PPH	TPY
CO _{2e}	351	1,537

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

Permit limits.

Criteria pollutant and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3. Greenhouse gas emission factors from 40 CFR Part 98 Tables C-1 and C-2.

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or **construction permit** with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

No change from current Title V permit conditions

Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (*Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.*)

No change from current Title V permit conditions

Are you in compliance with all applicable requirements for this emission unit? Yes No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number: 003-01a	Emission unit name: 003-01a	List any control devices associated with this emission unit: N/A
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Provide a description of the emission unit (type, method of operation, design parameters, etc.):
One (1) 1.63 MMBtu/hr natural gas fired hot water heater

Manufacturer: Ajax	Model number:	Serial number:
Construction date: 2015	Installation date: 2015	Modification date(s): N/A

Design Capacity (examples: furnaces - tons/hr, tanks - gallons):
1.63 MMBtu/hr

Maximum Hourly Throughput: 1.51E-03 MMscf/hr	Maximum Annual Throughput: 13.22 MMscf/yr	Maximum Operating Schedule: 8760 hours
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Fuel Usage Data (fill out all applicable fields)

Does this emission unit combust fuel? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes, is it? <input type="checkbox"/> Indirect Fired <input checked="" type="checkbox"/> Direct Fired
--	---

Maximum design heat input and/or maximum horsepower rating: 1.63 MMBtu/hr	Type and Btu/hr rating of burners: 1.63 MMBtu/hr
---	--

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas - 1.51E-03 MMscf/hr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	Negligible	Negligible	1080 BTU/scf

Emissions Data

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.127	0.555
Nitrogen Oxides (NO _x)	0.151	0.661

Lead (Pb)	N/A	N/A
Particulate Matter (PM _{2.5})	0.01	0.05
Particulate Matter (PM ₁₀)	0.01	0.05
Total Particulate Matter (TSP)	0.01	0.05
Sulfur Dioxide (SO ₂)	0.001	0.004
Volatile Organic Compounds (VOC)	0.01	0.04
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	1.13E-04	4.96E-04
Total HAP	2.85E-03	1.25E-02
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
Carbon Dioxide Equivalent (CO _{2e})	191	836
<p>List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).</p> <p>Criteria pollutants and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3. Greenhouse gas emission factors from 40 CFR Part 98 Tables C-1 and C-2.</p>		

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (Note: Title V permit condition numbers alone are not the underlying applicable requirements). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

N/A

Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

N/A

Are you in compliance with all applicable requirements for this emission unit? Yes No

If no, complete the Schedule of Compliance Form as ATTACHMENT F.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number: 003-02	Emission unit name: 003-02	List any control devices associated with this emission unit: N/A
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Provide a description of the emission unit (type, method of operation, design parameters, etc.):
One (1) 0.03 MMBtu/hr natural gas fired hot water heater

Manufacturer: WL Jackson Mfg. Co.	Model number: G 030 05	Serial number: 66552-1080
Construction date: 1987	Installation date: 1987	Modification date(s): N/A

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 0.03 MMBtu/hr

Maximum Hourly Throughput: 2.75E-05 MMscf/hr	Maximum Annual Throughput: 0.24 MMscf/yr	Maximum Operating Schedule: 8760 hours
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Fuel Usage Data (fill out all applicable fields)

Does this emission unit combust fuel? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes, is it? <input type="checkbox"/> Indirect Fired <input checked="" type="checkbox"/> Direct Fired
Maximum design heat input and/or maximum horsepower rating: 0.03 MMBtu/hr	Type and Btu/hr rating of burners: 0.03 MMBtu/hr

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas - 2.75E-05 MMscf/hr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	Negl	Negl.	1080 BTU/scf

Emissions Data

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.002	0.01
Nitrogen Oxides (NO _x)	0.003	0.01

Lead (Pb)	N/A	N/A
Particulate Matter (PM _{2.5})	0.0002	0.0009
Particulate Matter (PM ₁₀)	0.0002	0.0009
Total Particulate Matter (TSP)	0.0002	0.0009
Sulfur Dioxide (SO ₂)	<0.001	<0.001
Volatile Organic Compounds (VOC)	<0.001	<0.001
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Total HAP	5.25E-05	2.30E-04
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
Carbon Dioxide Equivalent (CO ₂ e)	4	15
<p>List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).</p> <p>Criteria pollutants and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3. Greenhouse gas emission factors from 40 CFR Part 98 Tables C-1 and C-2.</p>		

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or **construction permit** with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

N/A

Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (*Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.*)

N/A

Are you in compliance with all applicable requirements for this emission unit? Yes No

If no, complete the Schedule of Compliance Form as ATTACHMENT F.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number: 003-03	Emission unit name: 003-03	List any control devices associated with this emission unit: N/A
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Provide a description of the emission unit (type, method of operation, design parameters, etc.):
One (1) 2.1 MMBtu/hr natural gas fired Inline Gas Heater

Manufacturer: NATCO	Model number:	Serial number:
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Construction date: 1992	Installation date: 1992	Modification date(s): N/A
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Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 2.1 MMBtu/hr

Maximum Hourly Throughput: 1.94E-03 MMscf/hr	Maximum Annual Throughput: 17.03 MMscf/yr	Maximum Operating Schedule: 8760 hours
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Fuel Usage Data (fill out all applicable fields)

Does this emission unit combust fuel? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes, is it? <input type="checkbox"/> Indirect Fired <input checked="" type="checkbox"/> Direct Fired
--	---

Maximum design heat input and/or maximum horsepower rating: 2.1 MMBtu/hr	Type and Btu/hr rating of burners: 2.1 MMBtu/hr
--	---

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas - 1.94E-03 MMscf/hr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	Negl	Negl.	1080 BTU/scf

Emissions Data

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.163	0.715
Nitrogen Oxides (NO _x)	0.194	0.852

Lead (Pb)	N/A	N/A
Particulate Matter (PM _{2.5})	0.015	0.065
Particulate Matter (PM ₁₀)	0.015	0.065
Total Particulate Matter (TSP)	0.015	0.065
Sulfur Dioxide (SO ₂)	0.001	0.005
Volatile Organic Compounds (VOC)	0.01	0.05
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Total HAP	3.67E-03	1.61E-02
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
Carbon Dioxide Equivalent (CO ₂ e)	246	1,077
<p>List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).</p> <p>Criteria pollutants and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3. Greenhouse gas emission factors from 40 CFR Part 98 Tables C-1 and C-2.</p>		

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (Note: Title V permit condition numbers alone are not the underlying applicable requirements). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

N/A

Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

N/A

Are you in compliance with all applicable requirements for this emission unit? Yes No

If no, complete the Schedule of Compliance Form as ATTACHMENT F.

ATTACHMENT G

Air Pollution Control Device Forms

ATTACHMENT G - Air Pollution Control Device Form

Control device ID number: Dehy Flare	List all emission units associated with this control device. 004-001 (NATCO Dehy)	
Manufacturer: Flare Industries Inc.	Model number: 25' OAH	Installation date: 1992
Type of Air Pollution Control Device: ___ Baghouse/Fabric Filter ___ Venturi Scrubber ___ Multiclone ___ Carbon Bed Adsorber ___ Packed Tower Scrubber ___ Single Cyclone ___ Carbon Drum(s) ___ Other Wet Scrubber ___ Cyclone Bank ___ Catalytic Incinerator ___ Condenser ___ Settling Chamber ___ Thermal Incinerator <u> X </u> Flare ___ Other (describe) _____ ___ Wet Plate Electrostatic Precipitator ___ Dry Plate Electrostatic Precipitator		
List the pollutants for which this device is intended to control and the capture and control efficiencies.		
Pollutant	Capture Efficiency	Control Efficiency
VOC	100%	98%
HAPs	100%	98%
Explain the characteristic design parameters of this control device (flow rates, pressure drops, number of bags, size, temperatures, etc.). <p style="text-align: center;">Elevated flare which captures emissions from Dehy 004-01 regenerator vent and flash separator.</p>		
Is this device subject to the CAM requirements of 40 C.F.R. 64? ___ Yes <u> X </u> No If Yes, Complete ATTACHMENT H If No, Provide justification. Not initial renewal Title Application – CAM already incorporated into the current Title V permit.		
Describe the parameters monitored and/or methods used to indicate performance of this control device. <ul style="list-style-type: none"> • Perform visual emission inspections. • Monitor for the presence or absence of a flare pilot flame using a thermocouple or equivalent device. 		

ATTACHMENT I

Emission Calculations

**Equitrans - Copley Run Station
Facility-Wide Emissions Summary**

Process/Facility	Potential Emissions (lb/hr)					
	NO _x	CO	VOC	SO ₂	PM ¹	HAPs
Compressor Engine #1 (C-001)	52.38	6.38	1.98	0.01	0.80	1.32
Compressor Engine #2 (C-002)	5.95	5.95	1.49	0.01	0.48	0.79
Compressor Engine #3 (C-003)	5.95	5.95	1.49	0.01	0.48	0.79
Compressor Engine #4 (C-004)	41.90	5.10	1.59	0.01	0.64	1.05
Compressor Engine #5 (C-005)	10.00	5.95	1.49	0.01	0.48	0.79
#1 Dehy Reboiler (004-01)	0.14	0.12	0.01	0.00	0.01	0.00
#1 TEG Dehydrator & Flash Tank Routed to Flare (004-01)	0.10	0.30	1.60	0.00	0.00	0.70
#2 Dehy Reboiler - #2 TEG Dehydrator & Flash Tank (004-02)	0.28	0.14	3.40	0.00	0.02	1.80
Generator #2 (G-002)	4.99	8.18	0.07	0.00	0.04	0.06
Generator #3 (G-002)	4.24	8.49	2.12	0.00	0.04	0.06
Hot Water Boiler (003-01a)	0.15	0.13	0.01	0.00	0.01	0.00
Hot Water Heater (003-02)	0.00	0.00	0.00	0.00	0.00	0.00
Inline Gas Heater (003-03)	0.19	0.16	0.01	0.00	0.01	0.00
Fugitives (FUG)	-	-	0.14	-	-	0.01
Gas Venting (VENT)	-	-	0.26	-	-	0.01
Site Wide Emissions (lb/hr)	126.29	46.86	15.65	0.04	3.02	7.39

¹ PM = PM₁₀ = PM_{2.5}

Process/Facility	Potential Emissions (tpy)					
	NO _x	CO	VOC	SO ₂	PM ¹	HAPs
Compressor Engine #1 (C-001)	229.43	27.94	8.69	0.04	3.50	5.76
Compressor Engine #2 (C-002)	26.07	26.07	6.52	0.03	2.10	3.46
Compressor Engine #3 (C-003)	26.07	26.07	6.52	0.03	2.10	3.46
Compressor Engine #4 (C-004)	183.54	22.35	6.95	0.03	2.80	4.61
Compressor Engine #5 (C-005)	38.55	22.94	5.74	0.02	1.85	3.04
#1 Dehy Reboiler (004-01)	0.61	0.51	0.03	0.00	0.05	0.01
#1 TEG Dehydrator & Flash Tank Routed to Flare (004-01)	0.40	1.30	7.20	0.00	0.02	3.00
#2 Dehy Reboiler - #2 TEG Dehydrator & Flash Tank (004-02)	1.22	0.60	15.10	0.01	0.09	8.10
Generator #2 (G-002)	21.87	35.85	0.29	0.01	0.19	0.28
Generator #3 (G-003)	1.06	2.12	0.53	0.00	0.01	0.02
Hot Water Boiler (003-01a)	0.66	0.56	0.04	0.00	0.05	0.01
Hot Water Heater (003-02)	0.01	0.01	0.00	0.00	0.00	0.00
Inline Gas Heater (003-03)	0.85	0.72	0.05	0.01	0.06	0.02
Fugitives (FUG)	-	-	0.62	-	-	0.02
Gas Venting (VENT)	-	-	1.15	-	-	0.04
Site Wide Emissions (tpy)	530.35	167.03	59.41	0.18	12.81	31.84

¹ PM = PM₁₀ = PM_{2.5}

**Equitrans - Copley Run Station
Facility-Wide Emissions Summary**

Process/Facility	HAPs - Potential Emissions (lb/hr)					
	Benzene	Ethylbenzene	Toluene	Xylenes	n-Hexane	Formaldehyde
Compressor Engine #1 (C-001)	3.21E-02	1.78E-03	1.59E-02	4.43E-03	7.35E-03	9.12E-01
Compressor Engine #2 (C-002)	1.92E-02	1.07E-03	9.55E-03	2.66E-03	4.41E-03	5.47E-01
Compressor Engine #3 (C-003)	1.92E-02	1.07E-03	9.55E-03	2.66E-03	4.41E-03	5.47E-01
Compressor Engine #4 (C-004)	2.56E-02	1.43E-03	1.27E-02	3.54E-03	5.88E-03	7.30E-01
Compressor Engine #5 (C-005)	1.92E-02	1.07E-03	9.55E-03	2.66E-03	4.41E-03	5.47E-01
#1 Dehy Reboiler (004-01)	2.92E-06	-	4.72E-06	-	2.50E-03	1.04E-04
#1 TEG Dehydrator & Flash Tank Routed to Flare (004-01)	1.00E-01	2.09E-02	2.67E-02	2.59E-02	1.53E-02	-
#2 Dehy Reboiler (004-02)	5.83E-06	-	9.44E-06	-	5.00E-03	2.08E-04
#2 TEG Dehydrator & Flash Tank Recirculated to Reboiler (004-02)	1.10E-01	2.20E-04	2.20E-04	2.20E-04	2.20E-04	-
Generator #2 (G-002)	3.48E-03	5.46E-05	1.23E-03	4.29E-04	-	4.51E-02
Generator #3 (G-003)	3.35E-03	5.26E-05	1.18E-03	4.14E-04	-	4.35E-02
Hot Water Boiler (003-01a)	3.17E-06	-	5.13E-06	-	2.72E-03	1.13E-04
Hot Water Heater (003-02)	5.83E-08	-	9.44E-08	-	5.00E-05	2.08E-06
Inline Gas Heater (003-03)	4.08E-06	-	6.61E-06	-	3.50E-03	1.46E-04
Fugitives (FUG)	-	-	-	-	-	-
Gas Venting (VENT)	-	-	-	-	-	-
Site Wide Emissions (lb/hr)	0.33	0.03	0.09	0.04	0.06	3.37

Process/Facility	HAPs - Potential Emissions (tpy)					
	Benzene	Ethylbenzene	Toluene	Xylenes	n-Hexane	Formaldehyde
Compressor Engine #1 (C-001)	1.40E-01	7.82E-03	6.97E-02	1.94E-02	3.22E-02	4.00E+00
Compressor Engine #2 (C-002)	8.42E-02	4.69E-03	4.18E-02	1.16E-02	1.93E-02	2.40E+00
Compressor Engine #3 (C-003)	8.42E-02	4.69E-03	4.18E-02	1.16E-02	1.93E-02	2.40E+00
Compressor Engine #4 (C-004)	1.12E-01	6.25E-03	5.58E-02	1.55E-02	2.58E-02	3.20E+00
Compressor Engine #5 (C-005)	7.41E-02	4.13E-03	3.68E-02	1.02E-02	1.70E-02	2.11E+00
#1 Dehy Reboiler (004-01)	1.28E-05	-	2.07E-05	-	1.10E-02	4.56E-04
#1 TEG Dehydrator & Flash Tank Routed to Flare (004-01)	3.00E-01	9.15E-02	1.17E-01	1.13E-01	1.14E-01	-
#2 Dehy Reboiler (004-02)	2.56E-05	-	4.14E-05	-	2.19E-02	9.13E-04
#2 TEG Dehydrator & Flash Tank Recirculated to Reboiler (004-02)	5.00E-01	2.20E-04	2.20E-04	2.20E-04	2.20E-04	-
Generator #2 (G-002)	1.52E-02	2.39E-04	5.38E-03	1.88E-03	-	1.98E-01
Generator #3 (G-003)	8.38E-04	1.32E-05	2.96E-04	1.03E-04	-	1.09E-02
Hot Water Boiler (003-01a)	1.39E-05	-	2.25E-05	-	1.19E-02	4.96E-04
Hot Water Heater (003-02)	2.56E-07	-	4.14E-07	-	2.19E-04	9.13E-06
Inline Gas Heater (003-03)	1.79E-05	-	2.90E-05	-	1.53E-02	6.39E-04
Fugitives (FUG)	-	-	-	-	-	-
Gas Venting (VENT)	-	-	-	-	-	-
Site Wide Emissions (tpy)	1.31	0.12	0.37	0.18	0.29	14.31

**Equitrans - Copley Run Station
Facility-Wide Emissions Summary**

Process/Facility	GHG - Potential Emissions (lb/hr) ²			
	CO ₂	CH ₄	N ₂ O	CO ₂ e
Compressor Engine #1 (C-001)	1933	0.036	0.004	1935
Compressor Engine #2 (C-002)	1160	0.022	0.002	1161
Compressor Engine #3 (C-003)	1160	0.022	0.002	1161
Compressor Engine #4 (C-004)	1546	0.029	0.003	1548
Compressor Engine #5 (C-005)	1160	0.022	0.002	1161
#1 Dehy Reboiler (004-01)	175	0.000	0.000	175
#1 TEG Dehydrator & Flash Tank Routed to Flare (004-01)	68	4.692	0.001	185
#2 Dehy Reboiler (004-02)	351	0.000	0.001	351
#2 TEG Dehydrator & Flash Tank Recirculated to Reboiler (004-02)	0	0.496	0.000	12
Generator #2 (G-002)	257	0.005	0.000	258
Generator #3 (G-003)	248	0.005	0.000	249
Hot Water Boiler (003-01a)	191	0.004	0.000	191
Hot Water Heater (003-02)	4	0.000	0.000	4
Inline Gas Heater (003-03)	245.69	0.005	0.000	245.95
Fugitives (FUG)	0.05	1.41	0.00	35.23
Gas Venting (VENT)	0.01	0.14	0.00	3.52
Site Wide Emissions (lb/hr)	8,498	6.89	0.02	8,675

Process/Facility	GHG - Potential Emissions (tpy) ²			
	CO ₂	CH ₄	N ₂ O	CO ₂ e
Compressor Engine #1 (C-001)	8466	0.160	0.0160	8475
Compressor Engine #2 (C-002)	5080	0.096	0.0096	5085
Compressor Engine #3 (C-003)	5080	0.096	0.0096	5085
Compressor Engine #4 (C-004)	6773	0.128	0.0128	6780
Compressor Engine #5 (C-005)	4470	0.084	0.0084	4475
#1 Dehy Reboiler (004-01)	768	0.000	0.0014	769
#1 TEG Dehydrator & Flash Tank Routed to Flare (004-01)	297	20.553	0.0054	812
#2 Dehy Reboiler (004-02)	1536	0.000	0.0029	1537
#2 TEG Dehydrator & Flash Tank Recirculated to Reboiler (004-02)	0	2.173	0.0000	54
Generator #2 (G-002)	1127	0.021	0.0021	1128
Generator #3 (G-003)	62	0.001	0.0001	62
Hot Water Boiler (003-01a)	835	0.016	0.0016	836
Hot Water Heater (003-02)	15	0.000	0.0000	15
Inline Gas Heater (003-03)	1076	0.020	0.0020	1077
Fugitives (FUG)	0.23	6.16	0.00	154.30
Gas Venting (VENT)	0.03	0.62	0.00	15.44
Site Wide Emissions (tpy)	35,586	23.35	0.07	36,191

² Carbon equivalent emissions (CO₂e) are based on the following Global Warming Potentials (GWP) from 40 CFR Part 98, Table A-1:

Carbon Dioxide (CO₂): 1
Methane (CH₄): 25
Nitrous Oxide (N₂O): 298

**Generator #2
(G-002)**

Source Designation:	
Manufacturer:	Cummins
Model No.:	GTA12
Year Installed:	1993
Type of Engine:	Electric Generator
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,080
Rated Horsepower (bhp):	865
Heat Input (MMBtu/hr)	2.20
Specific Fuel Consumption (Btu/bhp-hr)	2,545
Maximum Fuel Consumption at 100% Load (MMscf/hr):	0.00204
Maximum Fuel Consumption at 100% Load (MMscf/yr):	17.8

Operational Details:

Potential Annual Hours of Operation (hr/yr):	8,760
Potential Fuel Consumption (MMBtu/yr):	19,272

Criteria and Manufacturer Specific Pollutant Emission Factors:

Pollutant	Emission Factors	Units
NO _x ^a	2.27E+00	lb/MMBtu
CO ^a	3.72E+00	lb/MMBtu
SO ₂ ^a	5.88E-04	lb/MMBtu
Total Particulate Matter (TSP) ^a	1.94E-02	lb/MMBtu
PM (Filterable) ^a	9.50E-03	lb/MMBtu
PM ₁₀ (Filterable + Condensable) ^a	1.94E-02	lb/MMBtu
PM _{2.5} (Filterable + Condensable) ^a	1.94E-02	lb/MMBtu
VOC ^a	2.96E-02	lb/MMBtu
CO ₂ ^b	5.31E+01	kg/MMBtu
CH ₄ ^b	1.00E-03	kg/MMBtu
N ₂ O ^b	1.00E-04	kg/MMBtu

Criteria and Manufacturer Specific Pollutant Emission Rates:

Pollutant	Potential Emissions	
	(lb/hr)^{c,d,e}	(tons/yr)^f
NO _x	4.99	21.87
CO	8.18	35.85
SO ₂	0.00	0.01
Total Particulate Matter (TSP)	0.04	0.19
PM (Filterable)	0.02	0.09
PM ₁₀ (Filterable + Condensable)	0.04	0.19
PM _{2.5} (Filterable + Condensable)	0.04	0.19
VOC	0.07	0.29
CO ₂	257.35	1127.18
CH ₄	0.00	0.02
N ₂ O	0.00	0.00

Hazardous Air Pollutant (HAP) Potential Emissions:

Pollutant	Emission Factor (lb/MMBtu) ^a	Potential Emissions (lb/hr) ^d	Potential Emissions (tons/yr) ^f
HAPs:			
Acetaldehyde	2.79E-03	6.14E-03	2.69E-02
Acrolein	2.63E-03	5.79E-03	2.53E-02
Benzene	1.58E-03	3.48E-03	1.52E-02
1,3-Butadiene	6.63E-04	1.46E-03	6.39E-03
Ethylbenzene	2.48E-05	5.46E-05	2.39E-04
Formaldehyde	2.05E-02	4.51E-02	1.98E-01
Toluene	5.58E-04	1.23E-03	5.38E-03
Xylene	1.95E-04	4.29E-04	1.88E-03
Polycyclic Organic Matter:			
Naphthalene	9.71E-05	2.14E-04	9.36E-04
PAH	1.41E-04	3.10E-04	1.36E-03
Total HAP		0.06	0.28

^a Emission factors from AP-42 Section 3.2, "Natural Gas Fired Reciprocating Engines," Tables 3.2-3, July 2000.

^b Greenhouse gas emission factors are from 40 CFR Part 98 for natural gas combustion

^c Emission Rate (lb/hr) = Rated Horsepower (bhp) × Emission Factor (g/bhp-hr) × 2.2046 (lb/kg) / 1000 (g/kg)

^d Emission Rate (lb/hr) = Rated Output (kW) × Emission Factor (lb/MWh) / 1000 (kW/MW).

^e Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr) × Emission Factor (kg/MMBtu) × 2.2046 (lb/kg)

^f Annual Emissions (tons/yr)_{Potential} = (lb/hr)_{Emissions} × (Maximum Allowable Operating Hours, 8,760 hr/yr) × (1 ton/2000 lb).

**Generator #3
(G-003)**

Source Designation:	
Manufacturer:	Kohler
Model No.:	150REZG
Year Installed:	2015
Type of Engine:	Electric Generator - 4SRB
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,080
Rated Horsepower (bhp):	193
Heat Input (MMBtu/hr)	2.12
Specific Fuel Consumption (Btu/bhp-hr)	10,996
Maximum Fuel Consumption at 100% Load (MMscf/hr):	0.00197
Maximum Fuel Consumption at 100% Load (MMscf/yr):	1.0

Operational Details:

Potential Annual Hours of Operation (hr/yr):	500
Potential Fuel Consumption (MMBtu/yr):	1,061

Criteria and Manufacturer Specific Pollutant Emission Factors:

Pollutant	Emission Factors	Units
NO _x ^a	2.00E+00	g/hp-hr
CO ^a	4.00E+00	g/hp-hr
SO ₂ ^a	5.88E-04	lb/MMBtu
Total Particulate Matter (TSP) ^a	1.94E-02	lb/MMBtu
PM (Filterable) ^a	9.50E-03	lb/MMBtu
PM ₁₀ (Filterable + Condensable) ^a	1.94E-02	lb/MMBtu
PM _{2.5} (Filterable + Condensable) ^a	1.94E-02	lb/MMBtu
VOC ^a	1.00E+00	g/hp-hr
CO ₂ ^b	5.31E+01	kg/MMBtu
CH ₄ ^b	1.00E-03	kg/MMBtu
N ₂ O ^b	1.00E-04	kg/MMBtu

**Generator #3
(G-003)**

Criteria and Manufacturer Specific Pollutant Emission Rates:

Pollutant	Potential Emissions	
	(lb/hr) ^{c,d,e}	(tons/yr) ^f
NO _x	4.24	1.06
CO	8.49	2.12
SO ₂	0.00	0.00
Total Particulate Matter (TSP)	0.04	0.01
PM (Filterable)	0.02	0.01
PM ₁₀ (Filterable + Condensable)	0.04	0.01
PM _{2.5} (Filterable + Condensable)	0.04	0.01
VOC	2.12	0.53
CO ₂	248.25	62.06
CH ₄	0.00	0.00
N ₂ O	0.00	0.00

Hazardous Air Pollutant (HAP) Potential Emissions:

Pollutant	Emission Factor (lb/MMBtu) ^a	Potential Emissions (lb/hr) ^d	Potential Emissions (tons/yr) ^f
HAPs:			
Acetaldehyde	2.79E-03	5.92E-03	1.48E-03
Acrolein	2.63E-03	5.58E-03	1.40E-03
Benzene	1.58E-03	3.35E-03	8.38E-04
1,3-Butadiene	6.63E-04	1.41E-03	3.52E-04
Ethylbenzene	2.48E-05	5.26E-05	1.32E-05
Formaldehyde	2.05E-02	4.35E-02	1.09E-02
Toluene	5.58E-04	1.18E-03	2.96E-04
Xylene	1.95E-04	4.14E-04	1.03E-04
Polycyclic Organic Matter:			
Naphthalene	9.71E-05	2.06E-04	5.15E-05
PAH	1.41E-04	2.99E-04	7.48E-05
Total HAP		0.06	0.02

^a Emission factors from AP-42 Section 3.2, "Natural Gas Fired Reciprocating Engines," Tables 3.2-3, July 2000.

^b Greenhouse gas emission factors are from 40 CFR Part 98 for natural gas combustion

^c Emission Rate (lb/hr) = Rated Horsepower (bhp) x Emission Factor (g/bhp-hr) x 2.2046 (lb/kg) / 1000 (g/kg)

^d Emission Rate (lb/hr) = Rated Output (kW) x Emission Factor (lb/MWh) / 1000 (kW/MW)

^e Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr) x Emission Factor (kg/MMBtu) x 2.2046 (lb/kg)

^f Annual Emissions (tons/yr)_{Potential} = (lb/hr)_{Emissions} x (Maximum Allowable Operating Hours, 8,760 hr/yr) x (1 ton/2000 lb).

**Compressor Engine
(C-001)**

Source Designation:	
Manufacturer:	Cooper-Bessemer
Model No.:	GMVH10
Serial No.:	48769
Stroke Cycle:	2-stroke
Type of Burn:	Lean
Year Installed/Date Manufactured	1981
Fuel Used:	Natural Gas
Fuel High Heating Value (HHV) (Btu/scf):	1,080
Rated Horsepower (bhp):	2,250
Specific Fuel Consumption (Btu/bhp-hr)	
Maximum Fuel Consumption at 100% Load (scf/hr):	15,300
Heat Input (MMBtu/hr)	16.52
Stack Designation:	C-001

Operational Details:

Potential Annual Hours of Operation (hr/yr):	8,760
Potential Fuel Consumption (MMscf/yr):	134.03

Criteria and Manufacturer Specific Pollutant Emission Factors:

Pollutant	Emission Factors ^a	Units
NO _x	3.17	lb/MMBtu
CO	3.86E-01	lb/MMBtu
SO ₂	5.88E-04	lb/MMBtu
PM ₁₀ (Filterable)	3.84E-02	lb/MMBtu
PM _{2.5} (Filterable)	3.84E-02	lb/MMBtu
PM Condensable	9.91E-03	lb/MMBtu
PM Total	4.83E-02	lb/MMBtu
VOC	0.12	lb/MMBtu
CO ₂	5.31E+01	kg/MMBtu
CH ₄	1.00E-03	kg/MMBtu
N ₂ O	1.00E-04	kg/MMBtu

Criteria and Manufacturer Specific Pollutant Emission Rates:

Pollutant	Potential Emissions	
	(lb/hr) ^b	(tons/yr) ^c
NO _x	52.38	229.43
CO	6.38	27.94
SO ₂	0.01	0.04
PM ₁₀ (Filterable)	0.63	2.78
PM _{2.5} (Filterable)	0.63	2.78
PM Condensable	0.16	0.72
PM Total	0.80	3.50
VOC	1.98	8.69
CO ₂	1,933	8,466
CH ₄	0.04	0.16
N ₂ O	0.00	0.02

Hazardous Air Pollutant (HAP) Potential Emissions:

Pollutant	Emission Factor (lb/MMBtu) ^a	Potential Emissions	
		(lb/hr) ^b	(tons/yr) ^c
HAPs:			
Acenaphthene	1.33E-06	2.20E-05	9.63E-05
Acenaphthylene	3.17E-06	5.24E-05	2.29E-04
Acetaldehyde	7.76E-03	1.28E-01	5.62E-01
Acrolein	7.78E-03	1.29E-01	5.63E-01
Benzene	1.94E-03	3.21E-02	1.40E-01
Benzo(b)fluoranthene	8.51E-09	1.41E-07	6.16E-07
Benzo(a)pyrene	5.68E-09	9.39E-08	4.11E-07
Benzo(g,h,i)perylene	2.48E-08	4.10E-07	1.79E-06
Biphenyl	3.95E-05	6.53E-04	2.86E-03
1,3-Butadiene	8.20E-04	1.35E-02	5.93E-02
Carbon Tetrachloride	6.07E-05	1.00E-03	4.39E-03
Chlorobenzene	4.44E-05	7.34E-04	3.21E-03
Chloroform	4.71E-05	7.78E-04	3.41E-03
Chrysene	6.72E-07	1.11E-05	4.86E-05
1,3-Dichloropropene	4.46E-05	7.37E-04	3.23E-03
Ethylbenzene	1.08E-04	1.78E-03	7.82E-03
Ethylene Dibromide	7.34E-05	1.21E-03	5.31E-03
Fluoranthene	3.61E-07	5.97E-06	2.61E-05
Fluorene	1.69E-06	2.79E-05	1.22E-04
Formaldehyde	5.52E-02	9.12E-01	4.00E+00
Methanol	2.48E-03	4.10E-02	1.79E-01
Methylene Chloride	1.47E-04	2.43E-03	1.06E-02
n-Hexane	4.45E-04	7.35E-03	3.22E-02
Phenanthrene	3.53E-06	5.83E-05	2.55E-04
Phenol	4.21E-05	6.96E-04	3.05E-03
Pyrene	5.84E-07	9.65E-06	4.23E-05
Styrene	5.48E-05	9.06E-04	3.97E-03
Toluene	9.63E-04	1.59E-02	6.97E-02
1,1,2,2-Tetrachloroethane	6.63E-05	1.10E-03	4.80E-03
Tetrachloroethane	6.63E-05	1.10E-03	4.80E-03
1,1,2-Trichloroethane	5.27E-05	8.71E-04	3.81E-03
2,2,4-Trimethylpentane	8.46E-04	1.40E-02	6.12E-02
Vinyl Chloride	2.47E-05	4.08E-04	1.79E-03
Xylene	2.68E-04	4.43E-03	1.94E-02
Polycyclic Organic Matter:			
Naphthalene	9.63E-05	1.59E-03	6.97E-03
2-Methylnaphthalene	2.14E-05	3.54E-04	1.55E-03
PAH	1.34E-04	2.21E-03	9.70E-03
Total HAP		1.32	5.76

^a NOx, VOC, CO, formaldehyde, SO₂, PM, and HAP emission factors from AP-42 Section 3.2, Table 3.2-1 "Uncontrolled Emission Factors for 2-Stroke Lean-Burn Engines," Supplement F, August 2000. Emission factors are based on manufacturer's data. Greenhouse gas emission factors are based on 40 CFR Part 98, Subpart C, Tables C-1 and C-2 for natural gas combustion.

^b Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr or bhp) × Emission Factor (lb/MMBtu or lb/bhp-hr).

^c Annual Emissions (tons/yr)_{Potential} = (lb/hr)_{Emissions} × (Maximum Allowable Operating Hours, 7,709 hr/yr) × (1 ton/2000 lb).

**Compressor Engines
(C-002, C-003)**

Source Designation:	
Manufacturer:	Cooper-Bessemer
Model No.:	GMVH6
Serial No.:	48771, 48772
Stroke Cycle:	2-Stroke
Type of Burn:	Lean
Year Installed/Date Manufactured	1981
Fuel Used:	Natural Gas
Fuel High Heating Value (HHV) (Btu/scf):	1,080
Rated Horsepower (bhp):	1,350
Maximum Fuel Consumption at 100% Load (scf/hr):	9,180
Heat Input (MMBtu/hr)	9.91
Stack Designation:	C-002, C-003

Operational Details:

Potential Annual Hours of Operation (hr/yr):	8,760
Potential Fuel Consumption (MMscf/yr):	80.42

Criteria and Manufacturer Specific Pollutant Emission Factors:

Pollutant	Emission Factors ^a	Units
NO _x	2.00	g/bhp-hr
CO	2.00	g/bhp-hr
SO ₂	5.88E-04	lb/MMBtu
PM ₁₀ (Filterable)	3.84E-02	lb/MMBtu
PM _{2.5} (Filterable)	3.84E-02	lb/MMBtu
PM Condensable	9.91E-03	lb/MMBtu
PM Total	4.83E-02	lb/MMBtu
VOC	0.50	g/bhp-hr
CO ₂	5.31E+01	kg/MMBtu
CH ₄	1.00E-03	kg/MMBtu
N ₂ O	1.00E-04	kg/MMBtu

Criteria and Manufacturer Specific Pollutant Emission Rates:

Pollutant	Potential Emissions	
	(lb/hr) ^b	(tons/yr) ^c
NO _x	5.95	26.07
CO	5.95	26.07
SO ₂	0.01	0.03
PM ₁₀ (Filterable)	0.38	1.67
PM _{2.5} (Filterable)	0.38	1.67
PM Condensable	0.10	0.43
PM Total	0.48	2.10
VOC	1.49	6.52
CO ₂	1,160	5,080
CH ₄	0.02	0.10
N ₂ O	0.00	0.01

Hazardous Air Pollutant (HAP) Potential Emissions:

Pollutant	Emission Factor (lb/MMBtu) ^a	Potential Emissions	
		(lb/hr) ^b	(tons/yr) ^c
HAPs:			
Acenaphthene	1.33E-06	1.32E-05	5.78E-05
Acenaphthylene	3.17E-06	3.14E-05	1.38E-04
Acetaldehyde	7.76E-03	7.69E-02	3.37E-01
Acrolein	7.78E-03	7.71E-02	3.38E-01
Benzene	1.94E-03	1.92E-02	8.42E-02
Benzo(b)fluoranthene	8.51E-09	8.44E-08	3.70E-07
Benzo(a)pyrene	5.68E-09	5.63E-08	2.47E-07
Benzo(g,h,i)perylene	2.48E-08	2.46E-07	1.08E-06
Biphenyl	3.95E-05	3.92E-04	1.72E-03
1,3-Butadiene	8.20E-04	8.13E-03	3.56E-02
Carbon Tetrachloride	6.07E-05	6.02E-04	2.64E-03
Chlorobenzene	4.44E-05	4.40E-04	1.93E-03
Chloroform	4.71E-05	4.67E-04	2.05E-03
Chrysene	6.72E-07	6.66E-06	2.92E-05
1,3-Dichloropropene	4.46E-05	4.42E-04	1.94E-03
Ethylbenzene	1.08E-04	1.07E-03	4.69E-03
Ethylene Dibromide	7.34E-05	7.28E-04	3.19E-03
Fluoranthene	3.61E-07	3.58E-06	1.57E-05
Fluorene	1.69E-06	1.68E-05	7.34E-05
Formaldehyde	5.52E-02	5.47E-01	2.40E+00
Methanol	2.48E-03	2.46E-02	1.08E-01
Methylene Chloride	1.47E-04	1.46E-03	6.38E-03
n-Hexane	4.45E-04	4.41E-03	1.93E-02
Phenanthrene	3.53E-06	3.50E-05	1.53E-04
Phenol	4.21E-05	4.17E-04	1.83E-03
Pyrene	5.84E-07	5.79E-06	2.54E-05
Styrene	5.48E-05	5.43E-04	2.38E-03
Toluene	9.63E-04	9.55E-03	4.18E-02
1,1,2,2-Tetrachloroethane	6.63E-05	6.57E-04	2.88E-03
Tetrachloroethane	6.63E-05	6.57E-04	2.88E-03
1,1,2-Trichloroethane	5.27E-05	5.22E-04	2.29E-03
2,2,4-Trimethylpentane	8.46E-04	8.39E-03	3.67E-02
Vinyl Chloride	2.47E-05	2.45E-04	1.07E-03
Xylene	2.68E-04	2.66E-03	1.16E-02
Polycyclic Organic Matter:			
Naphthalene	9.63E-05	9.55E-04	4.18E-03
2-Methylnaphthalene	2.14E-05	2.12E-04	9.29E-04
PAH	1.34E-04	1.33E-03	5.82E-03
Total HAP		0.79	3.46

^a Formaldehyde, SO₂, PM, and HAP emission factors from AP-42 Section 3.2, Table 3.2-1 "Uncontrolled Emission Factors for 2-Stroke Lean-Burn Engines," Supplement F, August 2000. NO_x, VOC, and CO emission factors are based on manufacturer's data. Greenhouse gas emission factors are based on 40 CFR Part 98, Subpart C, Tables C-1 and C-2 for natural gas combustion.

^b Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr or bhp) × Emission Rate Factor (lb/MMBtu or lb/bhp-hr).

^c Annual Emissions (tons/yr)_{Potential} = (lb/hr)_{Emissions} × (Maximum Allowable Operating Hours, 7,709 hr/yr) × (1 ton/2000 lb).

**Compressor Engine
(C-004)**

Source Designation:

Manufacturer:	Cooper-Bessemer
Model No.:	GMVH8
Serial No.:	48770
Stroke Cycle:	2-stroke
Type of Burn:	Lean
Year Installed/Date Manufactured	1980
Fuel Used:	Natural Gas
Fuel High Heating Value (HHV) (Btu/scf):	1,080
Rated Horsepower (bhp):	1,800
Maximum Fuel Consumption at 100% Load (scf/hr):	12,240
Heat Input (MMBtu/hr)	13.22
Stack Designation:	C-004

Operational Details:

Potential Annual Hours of Operation (hr/yr):	8,760
Potential Fuel Consumption (MMscf/yr):	107.22

Criteria and Manufacturer Specific Pollutant Emission Factors:

Pollutant	Emission Factors ^a	Units
NO _x	3.17	lb/MMBtu
CO	3.86E-01	lb/MMBtu
SO ₂	5.88E-04	lb/MMBtu
PM ₁₀ (Filterable)	3.84E-02	lb/MMBtu
PM _{2.5} (Filterable)	3.84E-02	lb/MMBtu
PM Condensable	9.91E-03	lb/MMBtu
PM Total	4.83E-02	lb/MMBtu
VOC	0.12	lb/MMBtu
CO ₂	5.31E+01	kg/MMBtu
CH ₄	1.00E-03	kg/MMBtu
N ₂ O	1.00E-04	kg/MMBtu

Criteria and Manufacturer Specific Pollutant Emission Rates:

Pollutant	Potential Emissions	
	(lb/hr) ^b	(tons/yr) ^c
NO _x	41.90	183.54
CO	5.10	22.35
SO ₂	0.01	0.03
PM ₁₀ (Filterable)	0.51	2.22
PM _{2.5} (Filterable)	0.51	2.22
PM Condensable	0.13	0.57
PM Total	0.64	2.80
VOC	1.59	6.95
CO ₂	1,546	6,773
CH ₄	0.03	0.13
N ₂ O	0.00	0.01

Hazardous Air Pollutant (HAP) Potential Emissions:

Pollutant	Emission Factor (lb/MMBtu) ^a	Potential Emissions	
		(lb/hr) ^b	(tons/yr) ^c
HAPs:			
Acenaphthene	1.33E-06	1.76E-05	7.70E-05
Acenaphthylene	3.17E-06	4.19E-05	1.84E-04
Acetaldehyde	7.76E-03	1.03E-01	4.49E-01
Acrolein	7.78E-03	1.03E-01	4.50E-01
Benzene	1.94E-03	2.56E-02	1.12E-01
Benzo(b)fluoranthene	8.51E-09	1.12E-07	4.93E-07
Benzo(a)pyrene	5.68E-09	7.51E-08	3.29E-07
Benzo(g,h,i)perylene	2.48E-08	3.28E-07	1.44E-06
Biphenyl	3.95E-05	5.22E-04	2.29E-03
1,3-Butadiene	8.20E-04	1.08E-02	4.75E-02
Carbon Tetrachloride	6.07E-05	8.02E-04	3.51E-03
Chlorobenzene	4.44E-05	5.87E-04	2.57E-03
Chloroform	4.71E-05	6.23E-04	2.73E-03
Chrysene	6.72E-07	8.88E-06	3.89E-05
1,3-Dichloropropene	4.46E-05	5.90E-04	2.58E-03
Ethylbenzene	1.08E-04	1.43E-03	6.25E-03
Ethylene Dibromide	7.34E-05	9.70E-04	4.25E-03
Fluoranthene	3.61E-07	4.77E-06	2.09E-05
Fluorene	1.69E-06	2.23E-05	9.79E-05
Formaldehyde	5.52E-02	7.30E-01	3.20E+00
Methanol	2.48E-03	3.28E-02	1.44E-01
Methylene Chloride	1.47E-04	1.94E-03	8.51E-03
n-Hexane	4.45E-04	5.88E-03	2.58E-02
Phenanthrene	3.53E-06	4.67E-05	2.04E-04
Phenol	4.21E-05	5.57E-04	2.44E-03
Pyrene	5.84E-07	7.72E-06	3.38E-05
Styrene	5.48E-05	7.24E-04	3.17E-03
Toluene	9.63E-04	1.27E-02	5.58E-02
1,1,2,2-Tetrachloroethane	6.63E-05	8.76E-04	3.84E-03
Tetrachloroethane	6.63E-05	8.76E-04	3.84E-03
1,1,2-Trichloroethane	5.27E-05	6.97E-04	3.05E-03
2,2,4-Trimethylpentane	8.46E-04	1.12E-02	4.90E-02
Vinyl Chloride	2.47E-05	3.27E-04	1.43E-03
Xylene	2.68E-04	3.54E-03	1.55E-02
Polycyclic Organic Matter:			
Naphthalene	9.63E-05	1.27E-03	5.58E-03
2-Methylnaphthalene	2.14E-05	2.83E-04	1.24E-03
PAH	1.34E-04	1.77E-03	7.76E-03
Total HAP		1.05	4.61

^a NO_x, VOC, CO, formaldehyde, SO₂, PM, and HAP emission factors from AP-42 Section 3.2, Table 3.2-1 "Uncontrolled Emission Factors for 2-Stroke Lean-Burn Engines," Supplement F, August 2000. Emission factors are based on manufacturer's data. Greenhouse gas emission factors are based on 40 CFR Part 98, Subpart C, Tables C-1 and C-2 for natural gas combustion.

^b Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr or bhp) × Emission Factor (lb/MMBtu or lb/bhp-hr).

^c Annual Emissions (tons/yr)_{Potential} = (lb/hr)_{Emissions} × (Maximum Allowable Operating Hours, 7,709 hr/yr) × (1 ton/2000 lb).

**Compressor Engine
(C-005)**

Source Designation:	
Manufacturer:	Cooper-Bessemer
Model No.:	GMVHR
Serial No.:	49126
Stroke Cycle:	2-stroke
Type of Burn:	Lean
Year Installed/Date Manufactured	1993
Fuel Used:	Natural Gas
Fuel High Heating Value (HHV) (Btu/scf):	1,080
Rated Horsepower (bhp):	1,350
Maximum Fuel Consumption at 100% Load (scf/hr):	9,180
Heat Input (MMBtu/hr)	9.91
Stack Designation:	C-005

Operational Details:

Potential Annual Hours of Operation (hr/yr):	7,709
Potential Fuel Consumption (MMscf/yr):	70.77

Criteria and Manufacturer Specific Pollutant Emission Factors:

Pollutant	Emission Factors^a	Units
CO	2.00	g/bhp-hr
SO ₂	5.88E-04	lb/MMBtu
PM ₁₀ (Filterable)	3.84E-02	lb/MMBtu
PM _{2.5} (Filterable)	3.84E-02	lb/MMBtu
PM Condensable	9.91E-03	lb/MMBtu
PM Total	4.83E-02	lb/MMBtu
VOC	0.50	g/bhp-hr
CO ₂	5.31E+01	kg/MMBtu
CH ₄	1.00E-03	kg/MMBtu
N ₂ O	1.00E-04	kg/MMBtu

Criteria and Manufacturer Specific Pollutant Emission Rates:

Pollutant	Potential Emissions	
	(lb/hr)^b	(tons/yr)^c
NO _x ^d	10.00	38.55
CO ^d	5.95	22.94
SO ₂	0.01	0.02
PM ₁₀ (Filterable)	0.38	1.47
PM _{2.5} (Filterable)	0.38	1.47
PM Condensable	0.10	0.38
PM Total	0.48	1.85
VOC (excludes formaldehyde) ^d	1.49	5.74
CO ₂	1,160	4,470
CH ₄	0.02	0.08
N ₂ O	0.00	0.01
CO ₂ e	1,161	4,475

Hazardous Air Pollutant (HAP) Potential Emissions:

Pollutant	Emission Factor (lb/MMBtu) ^a	Potential Emissions	
		(lb/hr) ^b	(tons/yr) ^c
HAPs:			
Acenaphthene	1.33E-06	1.32E-05	5.08E-05
Acenaphthylene	3.17E-06	3.14E-05	1.21E-04
Acetaldehyde	7.76E-03	7.69E-02	2.97E-01
Acrolein	7.78E-03	7.71E-02	2.97E-01
Benzene	1.94E-03	1.92E-02	7.41E-02
Benzo(b)fluoranthene	8.51E-09	8.44E-08	3.25E-07
Benzo(a)pyrene	5.68E-09	5.63E-08	2.17E-07
Benzo(g,h,i)perylene	2.48E-08	2.46E-07	9.48E-07
Biphenyl	3.95E-05	3.92E-04	1.51E-03
1,3-Butadiene	8.20E-04	8.13E-03	3.13E-02
Carbon Tetrachloride	6.07E-05	6.02E-04	2.32E-03
Chlorobenzene	4.44E-05	4.40E-04	1.70E-03
Chloroform	4.71E-05	4.67E-04	1.80E-03
Chrysene	6.72E-07	6.66E-06	2.57E-05
1,3-Dichloropropene	4.46E-05	4.42E-04	1.70E-03
Ethylbenzene	1.08E-04	1.07E-03	4.13E-03
Ethylene Dibromide	7.34E-05	7.28E-04	2.80E-03
Fluoranthene	3.61E-07	3.58E-06	1.38E-05
Fluorene	1.69E-06	1.68E-05	6.46E-05
Formaldehyde	5.52E-02	5.47E-01	2.11E+00
Methanol	2.48E-03	2.46E-02	9.48E-02
Methylene Chloride	1.47E-04	1.46E-03	5.62E-03
n-Hexane	4.45E-04	4.41E-03	1.70E-02
Phenanthrene	3.53E-06	3.50E-05	1.35E-04
Phenol	4.21E-05	4.17E-04	1.61E-03
Pyrene	5.84E-07	5.79E-06	2.23E-05
Styrene	5.48E-05	5.43E-04	2.09E-03
Toluene	9.63E-04	9.55E-03	3.68E-02
1,1,2,2-Tetrachloroethane	6.63E-05	6.57E-04	2.53E-03
Tetrachloroethane	6.63E-05	6.57E-04	2.53E-03
1,1,2-Trichloroethane	5.27E-05	5.22E-04	2.01E-03
2,2,4-Trimethylpentane	8.46E-04	8.39E-03	3.23E-02
Vinyl Chloride	2.47E-05	2.45E-04	9.44E-04
Xylene	2.68E-04	2.66E-03	1.02E-02
Polycyclic Organic Matter:			
Naphthalene	9.63E-05	9.55E-04	3.68E-03
2-Methylnaphthalene	2.14E-05	2.12E-04	8.18E-04
PAH	1.34E-04	1.33E-03	5.12E-03
Total HAP		0.79	3.04

^a Formaldehyde, SO₂, PM, and HAP emission factors from AP-42 Section 3.2, Table 3.2-1 "Uncontrolled Emission Factors for 2-Stroke Lean-Burn Engines," Supplement F, August 2000. Greenhouse gas emission factors are based on 40 CFR Part 98, Subpart C, Tables C-1 and C-2 for natural gas combustion.

^b Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr or bhp) × Emission Factor (lb/MMBtu or lb/bhp-hr).

^c Annual Emissions (tons/yr)_{Potential} = (lb/hr)_{Emissions} × (Maximum Allowable Operating Hours, 7,709 hr/yr) × (1 ton/2000 lb).

^d NO_x, VOC and CO emission rates are taken from manufacturer's data.

Dehy #1 Reboiler

Reboiler	
Year Installed	1992
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,080
Heat Input (MMBtu/hr)	1.50
Fuel Consumption (mmscf/hr):	1.39E-03
Potential Annual Hours of Operation (hr/yr):	8,760

Criteria and Manufacturer Specific Pollutant Emission Rates:

Pollutant	Emission Factor (lb/MMscf) ^a	Potential Emissions - AP-42 Emission Factors	
		(lb/hr) ^b	(tons/yr) ^c
NO _x	100	0.14	0.61
CO	84	0.12	0.51
SO ₂	0.6	0.00	0.004
PM	7.6	0.01	0.05
PM ₁₀	7.6	0.01	0.05
PM _{2.5}	7.6	0.01	0.05
VOC	5.5	0.01	0.03
CO ₂ ^d	126,262	175	768
N ₂ O ^d	0.2	3.3E-04	0.001

Hazardous Air Pollutant (HAP) Potential Emissions:

Pollutant	Emission Factor (lb/MMscf) ^a	Potential Emissions	
		(lb/hr) ^b	(tons/yr) ^c
HAPs:			
3-Methylchloranthrene	1.80E-06	2.50E-09	1.10E-08
7,12-Dimethylbenz(a)anthracene	1.60E-05	2.22E-08	9.73E-08
Acenaphthene	1.80E-06	2.50E-09	1.10E-08
Acenaphthylene	1.80E-06	2.50E-09	1.10E-08
Anthracene	2.40E-06	3.33E-09	1.46E-08
Benz(a)anthracene	1.80E-06	2.50E-09	1.10E-08
Benzene	2.10E-03	2.92E-06	1.28E-05
Benzo(a)pyrene	1.20E-06	1.67E-09	7.30E-09
Benzo(b)fluoranthene	1.80E-06	2.50E-09	1.10E-08
Benzo(g,h,i)perylene	1.20E-06	1.67E-09	7.30E-09
Benzo(k)fluoranthene	1.80E-06	2.50E-09	1.10E-08
Chrysene	1.80E-06	2.50E-09	1.10E-08
Dibenzo(a,h) anthracene	1.20E-06	1.67E-09	7.30E-09
Dichlorobenzene	1.20E-03	1.67E-06	7.30E-06
Fluoranthene	3.00E-06	4.17E-09	1.83E-08
Fluorene	2.80E-06	3.89E-09	1.70E-08
Formaldehyde	7.50E-02	1.04E-04	4.56E-04
Hexane	1.80E+00	2.50E-03	1.10E-02
Indo(1,2,3-cd)pyrene	1.80E-06	2.50E-09	1.10E-08
Phenanthrene	1.70E-05	2.36E-08	1.03E-07
Pyrene	5.00E-06	6.94E-09	3.04E-08
Toluene	3.40E-03	4.72E-06	2.07E-05
Arsenic	2.00E-04	2.78E-07	1.22E-06
Beryllium	1.20E-05	1.67E-08	7.30E-08
Cadmium	1.10E-03	1.53E-06	6.69E-06
Chromium	1.40E-03	1.94E-06	8.52E-06
Cobalt	8.40E-05	1.17E-07	5.11E-07
Lead	5.00E-04	6.94E-07	3.04E-06
Manganese	3.80E-04	5.28E-07	2.31E-06
Mercury	2.60E-04	3.61E-07	1.58E-06
Nickel	2.10E-03	2.92E-06	1.28E-05
Selenium	2.40E-05	3.33E-08	1.46E-07
Polycyclic Organic Matter:			
Methylnaphthalene (2-)	2.40E-05	3.33E-08	1.46E-07
Naphthalene	6.10E-04	8.47E-07	3.71E-06
Total HAP		2.62E-03	1.15E-02

^a Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3

^b Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf).

^c Annual Emissions (tons/yr)_{Potential} = (lb/hr)_{Emissions} × (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

^d GHG Emission factors from Tables C-1 and C-2, 40 CFR 98, Subpart C.

Glycol Dehydrator #1 (Storage) Emission Calculations (004-01)

GRI-GLYCalc Version 4.0 - CONTROLLED EMISSIONS SUMMARY				POTENTIAL TO EMIT***	
CONTROLLED REGENERATOR/FLASH GAS EMISSIONS					
Pollutant	(lbs/hr)	(lbs/day)	(tons/yr)	(lbs/hr)	(tons/yr)
Methane	0.0956	2.294	0.4187	0.11	0.46
Ethane	0.0124	0.298	0.0543	0.01	0.06
Propane	0.0059	0.142	0.0258	0.01	0.03
Isobutane	0.0020	0.048	0.0088	0.00	0.01
n-Butane	0.0035	0.084	0.0153	0.00	0.02
Isopentane	0.0015	0.036	0.0066	0.00	0.01
n-Pentane	0.0015	0.036	0.0066	0.00	0.01
Cyclopentane	0.0000	0.000	0.0000	0.00	0.00
n-Hexane	0.0010	0.024	0.0044	0.00	0.00
Cyclohexane	0.0011	0.026	0.0048	0.00	0.01
Other Hexanes	0.0015	0.036	0.0066	0.00	0.01
Heptanes	0.0032	0.077	0.0140	0.00	0.02
Methylcyclohexane	0.0000	0.000	0.0000	0.00	0.00
2,2,4-Trimethylpentane	0.0007	0.017	0.0031	0.00	0.00
Benzene	0.0169	0.406	0.0740	0.02	0.08
Toluene	0.0158	0.379	0.0692	0.02	0.08
Ethylbenzene	0.0141	0.338	0.0618	0.02	0.07
Xylenes	0.0188	0.451	0.0823	0.02	0.09
C8 + Heavier Hydrocarbons	0.1126	2.702	0.4932	0.12	0.54
Total Emissions	0.2032	4.877	0.8900	0.22	0.98
Total Hydrocarbon Emissions	0.2032	4.877	0.8900	0.22	0.98
Total VOC Emissions	0.1847	4.433	0.8090	0.20	0.89
Total HAP Emissions	0.0698	1.675	0.3057	0.08	0.34

* Based on GRI GlyCalc 4.0 run at emission scenario of maximum rated dry gas flowrate of 46 MMscf/day and average actual operating conditions of T and P of 100°F and 270 psig, respectively and worst-case gas analysis available for Copley Run Station (dated 11/28/2011). This dehy vents to a flare at 98% VOC/HAP control efficiency.

** Using 0.0005% for all NIL compounds reported on extended gas analysis.

*** This is for informational purposes only. Potential emissions for the unit are established in the existing Title V permit.

GRI-GLYCalc Version 4.0 - FLASH TANK EMISSIONS SUMMARY				POTENTIAL TO EMIT***	
FLASH TANK OFF GAS EMISSIONS					
Pollutant	(lbs/hr)	(lbs/day)	(tons/yr)	(lbs/hr)	(tons/yr)
Methane	4.1703	100.087	18.2659	4.59	20.09
Ethane	0.4353	10.447	1.9066	0.48	2.10
Propane	0.1561	3.746	0.6837	0.17	0.75
Isobutane	0.0453	1.087	0.1984	0.05	0.22
n-Butane	0.0700	1.680	0.3066	0.08	0.34
Isopentane	0.0289	0.694	0.1266	0.03	0.14
n-Pentane	0.0257	0.617	0.1126	0.03	0.12
Cyclopentane	0.0000	0.000	0.0000	0.00	0.00
n-Hexane	0.0129	0.310	0.0565	0.01	0.06
Cyclohexane	0.0044	0.106	0.0193	0.00	0.02
Other Hexanes	0.0227	0.545	0.0994	0.02	0.11
Heptanes	0.0252	0.605	0.1104	0.03	0.12
Methylcyclohexane	0.0000	0.000	0.0000	0.00	0.00
2,2,4-Trimethylpentane	0.0085	0.204	0.0372	0.01	0.04
Benzene	0.0124	0.298	0.0543	0.01	0.06
Toluene	0.0085	0.204	0.0372	0.01	0.04
Ethylbenzene	0.0049	0.118	0.0215	0.01	0.02
Xylenes	0.0047	0.113	0.0206	0.01	0.02
C8 + Heavier Hydrocarbons	0.6462	15.509	2.8304	0.71	3.11
Total Emissions	5.6820	136.368	24.8872	6.25	27.38
Total Hydrocarbon Emissions	5.6820	136.368	24.8872	6.25	27.38
Total VOC Emissions	1.0764	25.834	4.7146	1.18	5.19
Total HAP Emissions	0.0519	1.246	0.2273	0.06	0.25

* Based on GRI GlyCalc 4.0 run at emission scenario of maximum rated dry gas flowrate of 46 MMscf/day and average actual operating conditions of T and P of 100°F and 270 psig, respectively and worst-case gas analysis available for Copley Run Station (dated 11/28/2011).

** Using 0.0005% for all NIL compounds reported on extended gas analysis.

*** This is for informational purposes only. Potential emissions for the unit are established in the existing Title V permit.

Dehy #1 Flare Emission Calculations

REGENERATOR OVHDS STREAM CHARACTERISTICS						
Component	Vol %	lb/hr ¹	MJ/kg ²	Btu/lb ³	Wt %	Btu/lb
Water	99.600	313.000	0.000	-	0.985	-
Carbon Dioxide	0.097	0.743	0.000	-	0.002	-
Nitrogen	0.001	0.003	0.000	-	0.000	-
Methane	0.150	0.295	50.009	21,499	0.001	20
Ethane	0.014	0.074	47.794	20,547	0.000	5
Propane	0.009	0.070	46.357	19,929	0.000	4
Isobutane	0.002	0.025	45.613	19,609	0.000	2
n-Butane	0.005	0.047	45.752	19,669	0.000	3
Isopentane	0.002	0.020	45.241	19,449	0.000	1
n-Pentane	0.002	0.020	45.357	19,499	0.000	1
Cyclopentane	0.000	0.000	44.636	19,189	0.000	-
n-Hexane	0.001	0.015	44.752	19,239	0.000	1
Cyclohexane	0.001	0.017	43.450	18,679	0.000	1
Other Hexanes	0.001	0.021	44.752	19,239	0.000	1
Heptanes	0.001	0.019	44.566	19,159	0.000	1
Methylcyclohexane	0.000	0.000	43.380	18,649	0.000	-
2,2,4-Trimethylpentane	0.001	0.02	44.310	19,049	0.000	1
Benzene	0.024	0.323	40.170	17,269	0.001	18
Toluene	0.019	0.305	40.589	17,449	0.001	17
Ethylbenzene	0.016	0.293	40.938	17,599	0.001	16
Xylenes	0.024	0.442	40.961	17,609	0.001	24
C8 + Heavies	0.069	2.060	44.264	19,029	0.006	123
Total	100.0	317.810			1.000	240
Waste Gas Flow Rate ¹	317.810	lb/hr	240	Btu/lb	0.076	MMBtu/hr
Assist Gas Flow Rate					0.500	MMBtu/hr

1. From GRI-GLYCalc Version 4.0 Aggregate Calculations Report for Regenerator Overheads Stream.

2. Published values from http://en.wikipedia.org/wiki/Heat_of_combustion.

3. 1 MJ/kg = 429.9 Btu/lb.

Pollutant	AP-42 Ch. 1.4	
	Emission Factors ¹ (lb/MMBtu)	Potential Emissions (lb/hr)
NO _x	0.098	0.056
CO	0.082	0.047
PM/PM ₁₀ /PM _{2.5}	0.007	0.004
SO ₂	0.001	3.4E-04
VOC	**GLYCalc**	0.203
HAPs	**GLYCalc**	0.077
CO ₂	117.6	67.789
N ₂ O	0.002	0.001

1. Emission factors from AP-42 Ch. 1.4 for natural gas combustion were used as they were determined to be most representative of the process. Ch. 5.3 (Natural Gas Processing) was consulted, however, factors contained there are appropriate for amine gas sweetening processes, which is not the case at the Copley Run Station. Also, Ch. 13.5 (Industrial Flares) was consulted, but since the flare at Copley Run Station is not an elevated flare, these factors were also determined to be inappropriate.

**Glycol Dehydrator #2 (Transmission) Emission Calculations
(004-02)**

GRI-GLYCalc Version 4.0 - CONTROLLED EMISSIONS SUMMARY				POTENTIAL TO EMIT***	
CONTROLLED REGENERATOR/FLASH GAS EMISSIONS					
Pollutant	(lbs/hr)	(lbs/day)	(tons/yr)	(lbs/hr)	(tons/yr)
Methane	0.0338	0.812	0.1482	0.04	0.16
Ethane	0.0620	1.488	0.2715	0.07	0.30
Propane	0.1025	2.459	0.4488	0.11	0.49
Isobutane	0.0329	0.789	0.1440	0.04	0.16
n-Butane	0.0890	2.136	0.3899	0.10	0.00
Isopentane	<0.0001	<0.001	<0.0001	0.00	0.00
n-Pentane	<0.0001	<0.001	<0.0001	0.00	0.00
Cyclopentane	<0.0001	<0.001	<0.0001	0.00	0.00
n-Hexane	<0.0001	<0.001	<0.0001	0.00	0.00
Cyclohexane	<0.0001	<0.001	<0.0001	0.00	0.00
Other Hexanes	<0.0001	<0.001	<0.0001	0.00	0.00
Heptanes	<0.0001	<0.001	<0.0001	0.00	0.00
Methylcyclohexane	<0.0001	<0.001	<0.0001	0.00	0.00
2,2,4-Trimethylpentane	<0.0001	<0.001	<0.0001	0.00	0.00
Benzene	<0.0001	<0.001	<0.0001	0.00	0.00
Toluene	<0.0001	<0.001	<0.0001	0.00	0.00
Ethylbenzene	<0.0001	<0.001	<0.0001	0.00	0.00
Xylenes	<0.0001	<0.001	<0.0001	0.00	0.00
C8 + Heavier Hydrocarbons	<0.0001	0.001	0.0001	0.00	0.00
Total Emissions	0.3202	7.686	1.4027	0.35	1.54
Total Hydrocarbon Emissions	0.3202	7.686	1.4027	0.35	1.54
Total VOC Emissions	0.2244	5.386	0.9830	0.25	1.08
Total HAP Emissions	<0.0001	<0.001	<0.0001	1.10E-04	1.10E-04

*Based on GRI GlyCalc 4.0 run at emission scenario of maximum rated dry gas flowrate of 140 MMscf/day and average actual operating conditions of T and P of 84°F and 516 psig, respectively and long-chain gas analysis for Copley Run Station (dated 12/4/2014).

**Using 0.0005% for all NIL compounds reported on extended gas analysis.

*** Potential to emit is calculated by adding 10% to GRI GlyCalc results. The 10% compliance margin will help account for variation in the extended gas analysis

GRI-GLYCalc Version 4.0 - FLASH TANK EMISSIONS SUMMARY				POTENTIAL TO EMIT***	
FLASH TANK OFF GAS EMISSIONS					
Pollutant	(lbs/hr)	(lbs/day)	(tons/yr)	(lbs/hr)	(tons/yr)
Methane	0.4171	10.010	1.8269	0.46	2.01
Ethane	0.2843	6.824	1.2453	0.31	1.37
Propane	0.2167	5.200	0.9491	0.24	1.04
Isobutane	0.0546	1.311	0.2392	0.06	0.26
n-Butane	0.1211	2.907	0.5305	0.13	0.58
Isopentane	<0.0001	<0.001	<0.0001	0.00	0.00
n-Pentane	<0.0001	<0.001	<0.0001	0.00	0.00
Cyclopentane	<0.0001	<0.001	<0.0001	0.00	0.00
n-Hexane	<0.0001	<0.001	<0.0001	0.00	0.00
Cyclohexane	<0.0001	<0.001	<0.0001	0.00	0.00
Other Hexanes	<0.0001	<0.001	<0.0001	0.00	0.00
Heptanes	<0.0001	<0.001	<0.0001	0.00	0.00
Methylcyclohexane	<0.0001	<0.001	<0.0001	0.00	0.00
2,2,4-Trimethylpentane	<0.0001	<0.001	<0.0001	0.00	0.00
Benzene	<0.0001	<0.001	<0.0001	0.00	0.00
Toluene	<0.0001	<0.001	<0.0001	0.00	0.00
Ethylbenzene	<0.0001	<0.001	<0.0001	0.00	0.00
Xylenes	<0.0001	<0.001	<0.0001	0.00	0.00
C8 + Heavier Hydrocarbons	0.0001	0.001	0.0002	0.00	0.00
Total Emissions	1.0939	26.254	4.7914	1.20	5.27
Total Hydrocarbon Emissions	1.0939	26.254	4.7914	1.20	5.27
Total VOC Emissions	0.3925	9.420	1.7192	0.43	1.89
Total HAP Emissions	<0.0001	<0.001	<0.0001	1.10E-04	1.10E-04

*Based on GRI GlyCalc 4.0 run at emission scenario of maximum rated dry gas flowrate of 140 MMscf/day and average actual operating conditions of T and P of 84°F and 516 psig, respectively and long-chain gas analysis for Copley Run Station (dated 12/4/2014).

**Using 0.0005% for all NIL compounds reported on extended gas analysis.

*** Potential to emit is calculated by adding 10% to GRI GlyCalc results. The 10% compliance margin will help account for variation in the extended gas analysis

Dehy #2 Reboiler

Reboiler	
Manufacturer:	
Year Installed	1992
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,080
Heat Input (MMBtu/hr)	3.00
Fuel Consumption (mmscf/hr):	2.78E-03
Potential Annual Hours of Operation (hr/yr):	8,760

Criteria and Manufacturer Specific Pollutant Emission Rates:

Pollutant	Emission Factor (lb/MMscf) ^a	Potential Emissions - AP-42 Emission Factors	
		(lb/hr) ^b	(tons/yr) ^c
NO _x	100	0.28	1.22
CO	Permit Limit	0.14	0.61
SO ₂	0.6	0.00	0.01
PM	7.6	0.02	0.09
PM ₁₀	7.6	0.02	0.09
PM _{2.5}	7.6	0.02	0.09
VOC	5.5	0.02	0.07
CO ₂ ^d	126,262	350.73	1536.19
N ₂ O ^d	0.2	0.00	0.00

Hazardous Air Pollutant (HAP) Potential Emissions:

Pollutant	Emission Factor (lb/MMscf) ^a	Potential Emissions	
		(lb/hr) ^b	(tons/yr) ^c
<u>HAPs:</u>			
3-Methylchloranthrene	1.80E-06	5.00E-09	2.19E-08
7,12-Dimethylbenz(a)anthracene	1.60E-05	4.44E-08	1.95E-07
Acenaphthene	1.80E-06	5.00E-09	2.19E-08
Acenaphthylene	1.80E-06	5.00E-09	2.19E-08
Anthracene	2.40E-06	6.67E-09	2.92E-08
Benz(a)anthracene	1.80E-06	5.00E-09	2.19E-08
Benzene	2.10E-03	5.83E-06	2.56E-05
Benzo(a)pyrene	1.20E-06	3.33E-09	1.46E-08
Benzo(b)fluoranthene	1.80E-06	5.00E-09	2.19E-08
Benzo(g,h,i)perylene	1.20E-06	3.33E-09	1.46E-08
Benzo(k)fluoranthene	1.80E-06	5.00E-09	2.19E-08
Chrysene	1.80E-06	5.00E-09	2.19E-08
Dibenzo(a,h)anthracene	1.20E-06	3.33E-09	1.46E-08
Dichlorobenzene	1.20E-03	3.33E-06	1.46E-05
Fluoranthene	3.00E-06	8.33E-09	3.65E-08
Fluorene	2.80E-06	7.78E-09	3.41E-08
Formaldehyde	7.50E-02	2.08E-04	9.13E-04
Hexane	1.80E+00	5.00E-03	2.19E-02
Indo(1,2,3-cd)pyrene	1.80E-06	5.00E-09	2.19E-08
Phenanthrene	1.70E-05	4.72E-08	2.07E-07
Pyrene	5.00E-06	1.39E-08	6.08E-08
Toluene	3.40E-03	9.44E-06	4.14E-05
Arsenic	2.00E-04	5.56E-07	2.43E-06
Beryllium	1.20E-05	3.33E-08	1.46E-07
Cadmium	1.10E-03	3.06E-06	1.34E-05
Chromium	1.40E-03	3.89E-06	1.70E-05
Cobalt	8.40E-05	2.33E-07	1.02E-06
Lead	5.00E-04	1.39E-06	6.08E-06
Manganese	3.80E-04	1.06E-06	4.62E-06
Mercury	2.60E-04	7.22E-07	3.16E-06
Nickel	2.10E-03	5.83E-06	2.56E-05
Selenium	2.40E-05	6.67E-08	2.92E-07
<u>Polycyclic Organic Matter:</u>			
Methylnaphthalene (2-)	2.40E-05	6.67E-08	2.92E-07
Naphthalene	6.10E-04	1.69E-06	7.42E-06
Total HAP		0.01	0.02

^a Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3

^b Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf).

^c Annual Emissions (tons/yr)_{Potential} = (lb/hr)_{Emissions} × (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

^d GHG Emission factors from Tables C-1 and C-2, 40 CFR 98, Subpart C.

**Hot Water Heater
(003-01a)**

Source Designation:	
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,080
Heat Input (MMBtu/hr)	1.63
Fuel Consumption (mmscf/hr):	1.51E-03
Potential Annual Hours of Operation (hr/yr):	8,760

Criteria and Manufacturer Specific Pollutant Emission Rates:

Pollutant	Emission Factor (lb/MMscf)^a	Potential Emissions	
		(lb/hr)^b	(tons/yr)^c
NO _x	100	0.151	0.661
CO	84	0.127	0.555
SO ₂	0.6	0.001	0.004
PM Total	7.6	0.0115	0.0502
PM Condensable	5.7	0.009	0.038
PM ₁₀ (Filterable)	1.9	0.003	0.013
PM _{2.5} (Filterable)	1.9	0.003	0.013
VOC	5.5	0.01	0.04
CO ₂ ^d (Natural Gas Firing)	126,357	191	835
CH ₄ ^d (Natural Gas Firing)	2.4	0.0036	0.0157
N ₂ O ^d (Natural Gas Firing)	0.24	0.00036	0.00157

Hazardous Air Pollutant (HAP) Potential Emissions:

Pollutant	Emission Factor (lb/MMscf) ^a	Potential Emissions	
		(lb/hr) ^b	(tons/yr) ^c
HAPs:			
3-Methylchloranthrene	1.80E-06	2.72E-09	1.19E-08
7,12-Dimethylbenz(a)anthracene	1.60E-05	2.41E-08	1.06E-07
Acenaphthene	1.80E-06	2.72E-09	1.19E-08
Acenaphthylene	1.80E-06	2.72E-09	1.19E-08
Anthracene	2.40E-06	3.62E-09	1.59E-08
Benz(a)anthracene	1.80E-06	2.72E-09	1.19E-08
Benzene	2.10E-03	3.17E-06	1.39E-05
Benzo(a)pyrene	1.20E-06	1.81E-09	7.93E-09
Benzo(b)fluoranthene	1.80E-06	2.72E-09	1.19E-08
Benzo(g,h,i)perylene	1.20E-06	1.81E-09	7.93E-09
Benzo(k)fluoranthene	1.80E-06	2.72E-09	1.19E-08
Chrysene	1.80E-06	2.72E-09	1.19E-08
Dibenzo(a,h) anthracene	1.20E-06	1.81E-09	7.93E-09
Dichlorobenzene	1.20E-03	1.81E-06	7.93E-06
Fluoranthene	3.00E-06	4.53E-09	1.98E-08
Fluorene	2.80E-06	4.23E-09	1.85E-08
Formaldehyde	7.50E-02	1.13E-04	4.96E-04
Hexane	1.80E+00	2.72E-03	1.19E-02
Indo(1,2,3-cd)pyrene	1.80E-06	2.72E-09	1.19E-08
Phenanthrene	1.70E-05	2.57E-08	1.12E-07
Pyrene	5.00E-06	7.55E-09	3.31E-08
Toluene	3.40E-03	5.13E-06	2.25E-05
Arsenic	2.00E-04	3.02E-07	1.32E-06
Beryllium	1.20E-05	1.81E-08	7.93E-08
Cadmium	1.10E-03	1.66E-06	7.27E-06
Chromium	1.40E-03	2.11E-06	9.25E-06
Cobalt	8.40E-05	1.27E-07	5.55E-07
Lead	5.00E-04	7.55E-07	3.31E-06
Manganese	3.80E-04	5.74E-07	2.51E-06
Mercury	2.60E-04	3.92E-07	1.72E-06
Nickel	2.10E-03	3.17E-06	1.39E-05
Selenium	2.40E-05	3.62E-08	1.59E-07
Polycyclic Organic Matter:			
Methylnaphthalene (2-)	2.40E-05	3.62E-08	1.59E-07
Naphthalene	6.10E-04	9.21E-07	4.03E-06
Total HAP		2.85E-03	1.25E-02

^a Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3

^b Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf).

^c Annual Emissions (tons/yr)_{Potential} = (lb/hr)_{Emissions} × (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

^d GHG Emission factors from Tables C-1 and C-2, 40 CFR 98, Subpart C.

**Natural Gas Hot Water Heater
(003-02)**

Source Designation:	
Manufacturer:	WL Jackson Mfg. Co.
Model:	G 030 05
Serial Number:	66552-1080
Year Installed:	1987
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,080
Heat Input (MMBtu/hr)	0.03
Fuel Consumption (mmscf/hr):	2.78E-05
Potential Annual Hours of Operation (hr/yr):	8,760

Criteria and Manufacturer Specific Pollutant Emission Rates:

Pollutant	Emission Factor (lb/MMscf) ^a	Potential Emissions	
		(lb/hr) ^b	(tons/yr) ^c
NO _x	100	0.003	0.012
CO	84	0.002	0.010
SO ₂	0.6	0.0000	0.0001
PM Total	7.6	0.0002	0.0009
PM Condensable	5.7	0.000	0.001
PM ₁₀ (Filterable)	1.9	0.000	0.000
PM _{2.5} (Filterable)	1.9	0.000	0.000
VOC	5.5	0.000	0.001
CO ₂ ^d (Natural Gas Firing)	126,262	4	15
CH ₄ ^d (Natural Gas Firing)	2.4	0.0001	0.0003
N ₂ O ^d (Natural Gas Firing)	0.24	0.00001	0.00003

Hazardous Air Pollutant (HAP) Potential Emissions:

Pollutant	Emission Factor (lb/MMscf) ^a	Potential Emissions	
		(lb/hr) ^b	(tons/yr) ^c
HAPs:			
3-Methylchloranthrene	1.80E-06	5.00E-11	2.19E-10
7,12-Dimethylbenz(a)anthracene	1.60E-05	4.44E-10	1.95E-09
Acenaphthene	1.80E-06	5.00E-11	2.19E-10
Acenaphthylene	1.80E-06	5.00E-11	2.19E-10
Anthracene	2.40E-06	6.67E-11	2.92E-10
Benz(a)anthracene	1.80E-06	5.00E-11	2.19E-10
Benzene	2.10E-03	5.83E-08	2.56E-07
Benzo(a)pyrene	1.20E-06	3.33E-11	1.46E-10
Benzo(b)fluoranthene	1.80E-06	5.00E-11	2.19E-10
Benzo(g,h,i)perylene	1.20E-06	3.33E-11	1.46E-10
Benzo(k)fluoranthene	1.80E-06	5.00E-11	2.19E-10
Chrysene	1.80E-06	5.00E-11	2.19E-10
Dibenzo(a,h) anthracene	1.20E-06	3.33E-11	1.46E-10
Dichlorobenzene	1.20E-03	3.33E-08	1.46E-07
Fluoranthene	3.00E-06	8.33E-11	3.65E-10
Fluorene	2.80E-06	7.78E-11	3.41E-10
Formaldehyde	7.50E-02	2.08E-06	9.13E-06
Hexane	1.80E+00	5.00E-05	2.19E-04
Indo(1,2,3-cd)pyrene	1.80E-06	5.00E-11	2.19E-10
Phenanthrene	1.70E-05	4.72E-10	2.07E-09
Pyrene	5.00E-06	1.39E-10	6.08E-10
Toluene	3.40E-03	9.44E-08	4.14E-07
Arsenic	2.00E-04	5.56E-09	2.43E-08
Beryllium	1.20E-05	3.33E-10	1.46E-09
Cadmium	1.10E-03	3.06E-08	1.34E-07
Chromium	1.40E-03	3.89E-08	1.70E-07
Cobalt	8.40E-05	2.33E-09	1.02E-08
Lead	5.00E-04	1.39E-08	6.08E-08
Manganese	3.80E-04	1.06E-08	4.62E-08
Mercury	2.60E-04	7.22E-09	3.16E-08
Nickel	2.10E-03	5.83E-08	2.56E-07
Selenium	2.40E-05	6.67E-10	2.92E-09
Polycyclic Organic Matter:			
Methylnaphthalene (2-)	2.40E-05	6.67E-10	2.92E-09
Naphthalene	6.10E-04	1.69E-08	7.42E-08
Total HAP		5.25E-05	2.30E-04

^a Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3

^b Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf).

^c Annual Emissions (tons/yr)_{Potential} = (lb/hr)_{Emissions} × (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

^d GHG Emission factors from Tables C-1 and C-2, 40 CFR 98, Subpart C.

**Inline Gas Heater
(003-03)**

Source Designation:	
Manufacturer:	NATCO
Year Installed	1992
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,080
Heat Input (MMBtu/hr)	2.10
Fuel Consumption (mmscf/hr):	1.94E-03
Potential Annual Hours of Operation (hr/yr):	8,760

Criteria and Manufacturer Specific Pollutant Emission Rates:

Pollutant	Emission Factor (lb/MMscf)^a	Potential Emissions	
		(lb/hr)^b	(tons/yr)^c
NO _x	100	0.194	0.852
CO	84	0.163	0.715
SO ₂	0.6	0.0012	0.0051
PM Total	7.6	0.0148	0.0647
PM Condensable	5.7	0.011	0.049
PM ₁₀ (Filterable)	1.9	0.004	0.016
PM _{2.5} (Filterable)	1.9	0.004	0.016
VOC	5.5	0.011	0.047
CO ₂ ^d (Natural Gas Firing)	126,357	246	1076
CH ₄ ^d (Natural Gas Firing)	2.4	0.0046	0.0203
N ₂ O ^d (Natural Gas Firing)	0.24	0.00046	0.00203

Hazardous Air Pollutant (HAP) Potential Emissions:

Pollutant	Emission Factor (lb/MMscf) ^a	Potential Emissions	
		(lb/hr) ^b	(tons/yr) ^c
HAPs:			
3-Methylchloranthrene	1.80E-06	3.50E-09	1.53E-08
7,12-Dimethylbenz(a)anthracene	1.60E-05	3.11E-08	1.36E-07
Acenaphthene	1.80E-06	3.50E-09	1.53E-08
Acenaphthylene	1.80E-06	3.50E-09	1.53E-08
Anthracene	2.40E-06	4.67E-09	2.04E-08
Benz(a)anthracene	1.80E-06	3.50E-09	1.53E-08
Benzene	2.10E-03	4.08E-06	1.79E-05
Benzo(a)pyrene	1.20E-06	2.33E-09	1.02E-08
Benzo(b)fluoranthene	1.80E-06	3.50E-09	1.53E-08
Benzo(g,h,i)perylene	1.20E-06	2.33E-09	1.02E-08
Benzo(k)fluoranthene	1.80E-06	3.50E-09	1.53E-08
Chrysene	1.80E-06	3.50E-09	1.53E-08
Dibenzo(a,h)anthracene	1.20E-06	2.33E-09	1.02E-08
Dichlorobenzene	1.20E-03	2.33E-06	1.02E-05
Fluoranthene	3.00E-06	5.83E-09	2.56E-08
Fluorene	2.80E-06	5.44E-09	2.38E-08
Formaldehyde	7.50E-02	1.46E-04	6.39E-04
Hexane	1.80E+00	3.50E-03	1.53E-02
Indo(1,2,3-cd)pyrene	1.80E-06	3.50E-09	1.53E-08
Phenanthrene	1.70E-05	3.31E-08	1.45E-07
Pyrene	5.00E-06	9.72E-09	4.26E-08
Toluene	3.40E-03	6.61E-06	2.90E-05
Arsenic	2.00E-04	3.89E-07	1.70E-06
Beryllium	1.20E-05	2.33E-08	1.02E-07
Cadmium	1.10E-03	2.14E-06	9.37E-06
Chromium	1.40E-03	2.72E-06	1.19E-05
Cobalt	8.40E-05	1.63E-07	7.15E-07
Lead	5.00E-04	9.72E-07	4.26E-06
Manganese	3.80E-04	7.39E-07	3.24E-06
Mercury	2.60E-04	5.06E-07	2.21E-06
Nickel	2.10E-03	4.08E-06	1.79E-05
Selenium	2.40E-05	4.67E-08	2.04E-07
Polycyclic Organic Matter:			
Methylnaphthalene (2-)	2.40E-05	4.67E-08	2.04E-07
Naphthalene	6.10E-04	1.19E-06	5.20E-06
Total HAP		3.67E-03	1.61E-02

^a Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3

^b Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf).

^c Annual Emissions (tons/yr)^{Potential} = (lb/hr)_{Emissions} × (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

^d GHG Emission factors from Tables C-1 and C-2, 40 CFR 98, Subpart C.

Fugitives (FUG)

Fugitive Component Information:

Component Type	Component Count	Gas Leak Emission Factor		Average Gas Leak Rate	Max Gas Leak Rate	VOC Emissions	HAP Emissions
		(lb/hr/component)	Factor/Source	(lb/hr)	(tpy)	(tpy)	(tpy)
Connectors	2,835	4.41E-04	EPA Protocol, Table 2-4	1.25	6.57	9.41E-02	3.61E-03
Flanges	273	8.60E-04	EPA Protocol, Table 2-4	0.23	1.23	1.76E-02	6.77E-04
Open-Ended Lines	90	4.41E-03	EPA Protocol, Table 2-4	0.40	2.09	2.99E-02	1.15E-03
Pump Seals	0	5.29E-03	EPA Protocol, Table 2-4	0.00	0.00	0.00E+00	0.00E+00
Valves	545	9.92E-03	EPA Protocol, Table 2-4	5.41	28.42	4.07E-01	1.56E-02
Other	50	1.94E-02	EPA Protocol, Table 2-4	0.97	5.10	7.30E-02	2.80E-03
Total				8.26	43.40	0.62	0.02

Notes:

- "Other" equipment types include compressor seals, relief valves, diaphragms, drains, meters, etc
- Conservatively assumed that maximum leak rate is 20% greater than measured average leak rate for the purposes of establishing PTE
- VOC and HAP emissions are based on fractions of these pollutants in the site-specific gas analysis

Constituent	Weight %
VOC	1.43
HAP	0.05

GHG Fugitive Emissions from Component Leaks:

Component Type	Component Count	GHG Emission Factor		CH ₄ Emissions	CO ₂ Emissions	CO ₂ e Emissions
		(scf/hr/component)	Factor/Source	(tpy)	(tpy)	(tpy)
Connectors	2,835	0.004	40 CFR 98, Table W-1A	2.02	0.08	50.52
Flanges	273	0.004	40 CFR 98, Table W-1A	0.19	0.01	4.86
Open-Ended Lines	90	0.061	40 CFR 98, Table W-1A	0.98	0.04	24.46
Pump Seals	0	13.3	40 CFR 98, Table W-1A	0.00	0.00	0.00
Valves	545	0.03	40 CFR 98, Table W-1A	2.62	0.10	65.56
Other	50	0.04	40 CFR 98, Table W-1A	0.36	0.01	8.91
Total				6.16	0.23	154.30

Notes:

- The component count is conservatively estimated based on the design of the facility.
- Emissions are calculated in accordance with Equations W-35 and W-36 in Subpart W of 40 CFR 98
- GHG (CO₂e) is carbon dioxide equivalent, which is the summation of CO₂ (GWP = 1) + CH₄ (GWP = 25) + N₂O (GWP = 298)
- CH₄ and CO₂ emissions are based on fractions of these pollutants in the site-specific gas analysis

Constituent	Mole %
CH ₄	0.96
CO ₂	0.01

Fugitive Component Emissions Data:

Pollutant	Atmospheric Emissions		Emissions Estimation Method
	lbs/hr	tpy	
VOC	0.14	0.62	EPA Protocol, Table 2-4 & Site-Specific Gas Analysis
HAPs	5.45E-03	2.39E-02	EPA Protocol, Table 2-4 & Site-Specific Gas Analysis
GHG (CO ₂ e)	35.23	154.30	40 CFR 98, Table W-1A & Site-Specific Gas Analysis

**Gas Venting
(VENT)**

Total Emissions from Gas Venting Sources:

Source	VOC Emissions (tpy)	HAP Emissions (tpy)	CH ₄ Emissions (tpy)	CO ₂ Emissions (tpy)	CO ₂ e Emissions (tpy)
Total Miscellaneous Gas Venting	1.15	0.04	0.62	0.03	15.44
Total	1.15	0.04	0.62	0.03	15.44

Notes:

- Emissions values above are the total for the facility (see detailed breakdown below)

Emissions from Gas Venting Blowdown:

Venting Type	Number of Events	Gas Volume (scf/event)	VOC Emissions (tpy)	HAP Emissions (tpy)	CH ₄ Emissions (tpy)	CO ₂ Emissions (tpy)	CO ₂ e Emissions (tpy)
Station ESD	1	1,000,000	0.32	0.01	0.20	0.01	5.09
Rod Packing Leaks	---	2,014,800	0.64	0.02	0.41	0.02	10.25
Compressor Blowdowns	30	19,100	0.18	0.01	0.00	0.00	0.10
Compressor Starts	30	479	0.00	0.00	0.00	0.00	0.00
Total			1.15	0.04	0.62	0.03	15.44

Notes:

- VOC and HAP emissions are based on sum of the fractions of the pollutants in the site-specific gas analysis in those classifications, and are calculated in accordance with standard conversion methodology and factors
- CH₄ and CO₂ emissions are based on fractions of these pollutants in the site-specific gas analysis, and are calculated in accordance with Equations W-35 and W-36 in Subpart W of 40 CFR 98
- GHG (CO₂e) is carbon dioxide equivalent, which is the summation of CO₂ (GWP = 1) + CH₄ (GWP = 25) + N₂O (GWP = 298)
- The gas volume per event is estimated based on facility design. The number of events is conservative.
- The number of compressor blowdowns assumes 6 blowdowns per compressor per year.
- Assumes one unplanned ESD event per year

Rod Packing Venting:

Number of Compressors	Number of Throws per Compressor	Leak Factor (scf/hr/throw)	Total Volume NG Emitted (scf/yr)
5	4	11.5	2,014,800

Notes:

- Emission factors from http://www.epa.gov/gasstar/documents/ll_rodpack.pdf

Extended Gas Analysis

11/28/2011

	Concentration (Vol %)	MW	Molar Weight	Average Weight Fraction	Natural Gas Stream Speciation (Wt. %)
Carbon Dioxide	1.3330%	44.01	0.59	0.03	3.48
Nitrogen	0.5460%	28.01	0.15	0.01	0.91
Methane	95.9730%	16.04	15.39	0.91	91.25
Ethane	1.7080%	30.07	0.51	0.03	3.04
Propane	0.2720%	44.10	0.12	0.01	0.71
Isobutane	0.0440%	58.12	0.03	0.00	0.15
n-Butane	0.0570%	58.12	0.03	0.00	0.20
Isopentane	0.0170%	72.15	0.01	0.00	0.07
n-Pentane	0.0130%	72.15	0.01	0.00	0.06
Cyclopentane	0.0000%	70.10	0.00	0.00	0.00
n-Hexane*	0.0040%	86.18	0.00	0.00	0.02
Cyclohexane	0.0010%	84.16	0.00	0.00	0.00
Other Hexanes	0.0080%	86.18	0.01	0.00	0.04
Heptanes	0.0050%	100.21	0.01	0.00	0.03
Methylcyclohexane	0.0010%	98.19	0.00	0.00	0.01
2,2,4-Trimethylpentane*	0.0020%	114.23	0.00	0.00	0.01
Benzene*	0.0020%	78.11	0.00	0.00	0.01
Toluene*	0.0010%	92.14	0.00	0.00	0.01
Ethylbenzene*	0.0005%	106.17	0.00	0.00	0.00
Xylenes*	0.0005%	106.16	0.00	0.00	0.00
C8 + Heavies	0.0160%	114.23	0.02	0.00	0.11
Totals	100.0%		16.87	1.00	100.00

* HAPs

TOC (Total)	98.13%				95.72
VOC (Total)	0.44%				1.43
HAP (Total)	0.01%				0.05