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July 31, 2017

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

**Re: Equitrans, LP - Burnsville Compressor Station  
Facility ID No: 007-00006  
Title V Permit R30-00700006-2013  
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 Braxton County, West Virginia ("Burnsville Compressor Station"). This station is currently operating under permit R30-007-00006-2013, issued February 4, 2013. The current permit expires on February 4, 2018 with a renewal application due date of August 4, 2017.

This permit application is being filed to renew the Title V permit at the Burnsville 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 Form;
- Attachment A: Area Map;
- Attachment B: Plot Plan;
- Attachment C: Process Flow Diagram;
- Attachment D: Equipment Table;
- Attachment E: Emission Unit Forms;
- Attachment G: Air Pollution Control Device Forms;
- Attachment I: Emissions Calculations

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

Sincerely,

Mark A. Sowa  
Senior Environmental Coordinator



**PROJECT REPORT**  
**Equitrans, LP > Burnsville Compressor Station**

**Title V Operating Permit Renewal Application**

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July 2017

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**APPLICATION FEE**

# 1. INTRODUCTION

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Equitrans, LP (Equitrans), a subsidiary of EQT Corporation (EQT), operates a natural gas transmission facility in Burnsville, Braxton County, West Virginia referred to as the Burnsville #71 Compressor Station (Burnsville Station). The Burnsville Station is currently operating in accordance with West Virginia Department of Environmental Protection (WVDEP) Title V Operating Permit No. R30-00700006-2013 (issued on February 4, 2013, with a minor modification issued January 30, 2017).

The current Title V permit expires on February 4, 2018. Equitrans is submitting this timely and complete Title V Operating Permit (TVOP) renewal application by the renewal submission deadline of August 4, 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 Burnsville 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 Burnsville 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 Burnsville Station compresses and dehydrates natural gas and transports downstream along the pipeline system.

The station currently consists of the following equipment:

- > Two (2) compressor engines rated at 1,350 hp (each)<sup>1</sup>;
- > One (1) 302 hp emergency generator engine<sup>2</sup>;
- > One (1) 251 hp generator engine;
- > One (1) 34 million standard cubic feet per day (MMSCFD) triethylene glycol (TEG) dehydration unit equipped with associated reboiler (rated at 1.06 MMBtu/hr) and flare (rated at 1.02 MMBtu/hr)<sup>3</sup>;
- > One (1) natural gas heating boiler (rated at 1.26 MMBtu/hr); and
- > Six (6) miscellaneous storage tanks (12,000 gallons or less, each).

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*

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<sup>1</sup> The White Superior 600 HP Compressor engine was decommissioned in 2015.

<sup>2</sup> This unit is currently permitted under general permit G60-C060A.

<sup>3</sup> Updates were made to the flare under R13-3252.

*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 Burnsville Station for air permitting purposes if and only if all three elements of the "stationary source" definition above are fulfilled. The Burnsville 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 Burnsville 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: Emissions Calculations; and
- > Application Fee.

## 2. SAMPLE EMISSION SOURCE CALCULATIONS

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The characteristics of air emissions from the Burnsville 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 engines, heater and reboiler. Emissions will also result from operation of the dehydrator, 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<sub>x</sub>), carbon monoxide (CO), volatile organic compounds (VOC), formaldehyde, and hazardous air pollutants (HAPs) are calculated using U.S. EPA's AP-42 factors for natural gas-fired two stroke lean burn engines.<sup>4</sup> Greenhouse gas (GHG) emissions are calculated according to 40 CFR 98 Subpart C.<sup>5</sup>
- > **Kohler Generator Engine:** Potential emissions of NO<sub>x</sub>, CO, VOC were calculated using permit limits. All other criteria pollutants and hazardous air pollutants (HAPs) are calculated using the USEPA's AP-42 emission factors for natural gas-fired four stroke rich burn engines. GHG emissions are calculated according to 40 CFR 98 Subpart C.
- > **Cummins Generator Engine:** Potential emissions of NO<sub>x</sub>, CO, VOC, formaldehyde, and HAPs are calculated using U.S. EPA's AP-42 factors for natural gas-fired two stroke lean burn engines. GHG emissions are calculated according to 40 CFR 98 Subpart C.
- > **Heating Boiler, Flare and Reboiler:** Potential emissions of criteria pollutants and HAPs are calculated using U.S. EPA's AP-42 factors for natural gas external combustion.<sup>6</sup> These calculations assume a site-specific heat content of natural gas. GHG emissions are calculated according to 40 CFR 98 Subpart C.
- > **TEG Dehydration Unit:** Potential emissions of HAPs, VOC, and GHGs from the dehydration unit are calculated using GRI-GLYCalc v4.0.
- > **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.

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<sup>4</sup> U.S. EPA, AP 42, Fifth Edition, Volume I, Chapter 3.2, *Natural Gas-Fired Reciprocating Engine*, July 2000.

<sup>5</sup> 40 CFR 98 Subpart C, *General Stationary Fuel combustion Sources*, Tables C-1 and C-2.

<sup>6</sup> U.S. EPA, AP 42, Fifth Edition, Volume I, Chapter 1.4, *Natural Gas Combustion*, Supplement D, July 1998.

## 3. REGULATORY DISCUSSION

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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 Burnsville 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 Burnsville 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 Burnsville Station is located in Braxton County, which is designated as attainment/unclassifiable for all criteria pollutants.<sup>7</sup> Therefore, NNSR regulations do not apply to the Burnsville 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

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<sup>7</sup> U.S. EPA Greenbook, [http://www.epa.gov/airquality/greenbook/gnayo\\_wv.html](http://www.epa.gov/airquality/greenbook/gnayo_wv.html), as of January 30, 2015.

combination of HAP, and 100 tpy of all other regulated pollutants.<sup>9</sup> The potential emissions of NO<sub>x</sub> exceed the respective major source thresholds for Title V. Therefore, the Burnsville Station is a major source with respect to the Title V Program. The Burnsville Station currently operates under Title V Permit No. R30-00700006-2013. 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. There have been no changes since the last renewal application which would trigger a CAM review.

### **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 Burnsville 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 Burnsville 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 Cooper Bessemer compressor engines at the Burnsville 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 June 12, 2006. Applicability dates are based on the manufacture date for new engines. The applicability dates for new

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<sup>9</sup> 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.

engines range from July 1, 2007 to January 1, 2009, depending upon the engine horsepower and application. The Cooper Bessemer compressor engines (C-002 to C-003) and the Cummins generator engine (G-001) at the Burnsville 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 engine is a 4-stroke rich burn, spark ignition engine manufactured after July 1, 2008, and as such 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 m<sup>3</sup> (~19,813 gallons). The storage tanks at the Burnsville Station were constructed after this date, but do not have a capacity greater than 75 m<sup>3</sup>. Therefore, Subpart Kb will not apply to the storage tanks at the Burnsville 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 Burnsville Station were 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 OOOOa) and associated equipment (Subpart K-Kb), the applicability of a particular NSPS to the Burnsville 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 Burnsville Station is an area source of HAP emissions since its potential emission of HAP are less than the 10/25 tpy major threshold. The potential applicability of specific MACT standards to the Burnsville Station is discussed below.

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

This MACT standard contains requirements for dehydration units, located at natural gas production facilities. The benzene emissions from the existing glycol dehydrator vents are less than 0.90 megagrams per year (1 tpy) each,

therefore, the Burnsville Compressor 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 MACT subpart applies to facilities which are major sources of HAP that transport or store natural gas prior to entering the transmission pipeline to end users as defined by 40 CFR §63.1271. Specifically, each dehydration unit at these facilities is subject to this subpart. The Burnsville Station dehy is classified as part of a gathering station and not a transmission or storage facility. Therefore, the requirements of this subpart do not apply.

### **3.5.3. NESHAP Subpart ZZZZ - Stationary Reciprocating Internal Combustion Engines**

This MACT subpart applies to stationary reciprocating combustion engines (RICE) at major and area sources of HAP. The Burnsville Station is a minor source of HAP. The compressor engines and the Cummins generator at the Burnsville Station were installed in 1984 and have not been reconstructed or modified. The Cooper Bessemer compressors (C-002 to C-003) are classified as 2-stroke, lean-burn, non-emergency units with ratings of 1,350 hp each and as such, they are subject to the requirements for existing, 2-stroke, lean-burn, non-emergency, spark ignition (SI) units at an area source. The Cummins generator (G-001), rated for 251 hp, is classified as a 4-stroke, rich burn, non-emergency SI units at an area source. The generator is subject to the requirements for existing, non-emergency, SI units less than 500 horsepower at area sources.

Per 40 CFR §63.6625(h), Equitrans will minimize the engines' 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. Equitrans will also comply with the work practice standards in 40 CFR §63.6603 and maintain records to show these standards have been met. Work practice standards include changing the oil and filter<sup>9</sup>, inspecting spark plugs (and replacing as necessary) and inspecting all hoses and belts (and replacing as necessary) at intervals specified in Table 2d of Subpart ZZZZ.

Stationary RICE at facilities that are area sources of HAP are considered new if they are ordered after June 12, 2006. New area source stationary RICE 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 generator engine (G-002A) at the Burnsville Station is a new area source RICE and will comply with Subpart ZZZZ by complying with 40 CFR 60, Subpart JJJJ as described in the previous section

### **3.5.4. NESHAP Subpart JJJJJJ - Industrial, Commercial, and Institutional Boilers**

This MACT standard applies to industrial, commercial, and institutional boilers of various sizes and fuel types at area sources. The reboiler and heater boiler at the Burnsville Station are natural gas-fired and are specifically exempt from this subpart. Therefore, no sources at the Burnsville Station are subject to any requirements under 40 CFR 63 Subpart JJJJJJ.

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<sup>9</sup> Equitrans also has the option of implementing an oil analysis program per §63.6625(j) in lieu of replacing the oil at each interval.

## 3.6. WEST VIRGINIA SIP REGULATIONS

The Burnsville 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 reboiler and heating boiler 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 Burnsville 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 dehydrator flare is an incinerator and therefore must comply with this regulation. Per 45 CSR 6-4.3, opacity of emissions from this unit 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 heating boiler. Per 45 CSR 10-10.1, units rated less than 10 MMBtu/hr are exempt from the SO<sub>2</sub> emission limitations and testing, monitoring, recordkeeping, and reporting requirements of this rule. The reboiler and heating boiler at the Burnsville 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 Burnsville 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 Burnsville 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 Burnsville 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 Burnsville 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 Burnsville 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 Burnsville Station.

## 4. TITLE V APPLICATION FORMS

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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**

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**INITIAL/RENEWAL TITLE V PERMIT APPLICATION - GENERAL FORMS**

**Section 1: General Information**

<b>1. Name of Applicant (As registered with the WV Secretary of State's Office):</b> Equitrans, LP	<b>2. Facility Name or Location:</b> Burnsville #71 Compressor Station
<b>3. DAQ Plant ID No.:</b> 3-54-007-00006	<b>4. Federal Employer ID No. (FEIN):</b> 25-1776875
<b>5. Permit Application Type:</b> <input type="checkbox"/> Initial Permit (Initial Title V)                      When did operations commence? <input checked="" type="checkbox"/> Permit Renewal    What is the expiration date of the existing permit? February 4, 2018 <input type="checkbox"/> Update to Initial/Renewal Permit Application	
<b>6. Type of Business Entity:</b> <input checked="" type="checkbox"/> Corporation <input type="checkbox"/> Governmental Agency <input type="checkbox"/> LLC <input type="checkbox"/> Partnership <input type="checkbox"/> Limited Partnership	<b>7. Is the Applicant the:</b> <input type="checkbox"/> Owner <input type="checkbox"/> Operator <input checked="" type="checkbox"/> Both  If the Applicant is not both the owner and operator, please provide the name and address of the other party. _____ _____ _____
<b>8. Number of onsite employees:</b> 0	
<b>9. Governmental Code:</b> <input checked="" type="checkbox"/> Privately owned and operated; 0 <input type="checkbox"/> County government owned and operated; 3 <input type="checkbox"/> Federally owned and operated; 1 <input type="checkbox"/> Municipality government owned and operated; 4 <input type="checkbox"/> State government owned and operated; 2 <input type="checkbox"/> District government owned and operated; 5	
<b>10. Business Confidentiality Claims</b>  Does this application include confidential information (per 45CSR31)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  If yes, identify each segment of information on each page that is submitted as confidential, and provide justification for each segment claimed confidential, including the criteria under 45CSR§31-4.1, and in accordance with the DAQ's "PRECAUTIONARY NOTICE-CLAIMS OF CONFIDENTIALITY" guidance.	

<b>11. Mailing Address</b>		
Street or P.O. Box: P.O. Box 191		
City: Burnsville	State: WV	Zip: 26335
Telephone Number: (304) 853-2736	Fax Number: (304) 889-2908	

<b>12. Facility Location</b>		
Street: 243 Kanawha Avenue	City: Burnsville	County: Braxton
UTM Easting: 529.55 km	UTM Northing: 4,301.60 km	Zone: <input checked="" type="checkbox"/> 17 or <input type="checkbox"/> 18
<b>Directions:</b> From Charleston, WV take Interstate 79 North to the Burnsville Exit. Go to the Exxon station and turn left. Turn left at the next intersection. Stay on this road, as it passes the grade school and goes under the interstate. Cross the railroad tracks and go down the bank. Station is on the right.		
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	
Is facility located within 100 km of a Class I Area <sup>1</sup> ? <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 <sup>1</sup> ? <input type="checkbox"/> Yes <input type="checkbox"/> No		
<sup>1</sup> 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.		

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

**Provide a general description of operations.**

The Burnsville Compressor Station is a natural gas compressor station that compresses and dehydrates natural gas and transports it downstream along the pipeline system. The facility consists of two (2) compressor engines, two (2) generator engines, one (1) TEG dehydration unit with associated reboiler and flare, one (1) natural gas fired heating boiler and six (6) miscellaneous storage tanks.

- 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**

<b>18. Applicable Requirements Summary</b>	
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 type="checkbox"/> Compliance Assurance Monitoring (40CFR64)
<input type="checkbox"/> CAIR NO <sub>x</sub> Annual Trading Program (45CSR39)	<input type="checkbox"/> CAIR NO <sub>x</sub> Ozone Season Trading Program (45CSR40)
<input type="checkbox"/> CAIR SO <sub>2</sub> 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 Burnsville station are below 10 MMBtu/hr.

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

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

40 CFR part 60 Subpart KKK – Burnsville 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 Burnsville Station.

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

40 CFR part 63 Subpart HHH – National Emission Standards for Hazardous Air Pollutants From Natural Gas Transmission and Storage Facilities. The Burnsville Compressor Station is not subject to Subpart HHH since the Burnsville's gas custody transfer is at an extraction facility and not to a natural gas transmission facility.

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.**

45 CSR 21: The Burnsville Compressor Station is not located in Cabell, Kanawha, Putnam, Wayne, nor Wood counties.

45 CSR 27 - Natural gas is included as a petroleum product and contains less than 5% benzene by weight.

45 CSR §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, R30 Permit Condition 3.1.1.
- 45CSR§6-3.2 Open Burning Exemptions R30 Permit Condition 3.1.2.
- 45CSR§61.145(b) and 45CSR§34 Asbestos, R30 Permit Condition 3.1.3.
- 45CSR§4-3.1 Odor, R30 Permit Condition 3.1.4.
- 45CSR§11-5.2 Standby Plan for Reducing Emissions, R30 Permit Condition 3.1.5.
- 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, R30 Permit Condition 3.3.
- Retention of Records, R30 Permit Condition 3.4.2
- 45CSR§4 Odors, R30 Permit Condition 3.4.3.
- Reporting Requirements, R30 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.**

21. Active Permits/Consent Orders		
Permit or Consent Order Number	Date of Issuance MM/DD/YYYY	List any Permit Determinations that Affect the Permit <i>(if any)</i>
R30-00700006-2013	04/02/2013	Minor Modification 1/30/2017
G60-C060A	08/12/2015	NA
R13-3252	08/08/2016	NA
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**Section 3: Facility-Wide Emissions**

<b>23. Facility-Wide Emissions Summary [Tons per Year]</b>	
<b>Criteria Pollutants</b>	<b>Potential Emissions</b>
Carbon Monoxide (CO)	79.71
Nitrogen Oxides (NO <sub>x</sub> )	287.65
Lead (Pb)	--
Particulate Matter (PM <sub>2.5</sub> ) <sup>1</sup>	4.69
Particulate Matter (PM <sub>10</sub> ) <sup>1</sup>	4.69
Total Particulate Matter (TSP)	4.69
Sulfur Dioxide (SO <sub>2</sub> )	0.10
Volatile Organic Compounds (VOC)	31.28
<b>Hazardous Air Pollutants<sup>2</sup></b>	<b>Potential Emissions</b>
Formaldehyde (HCHO)	4.69
Total HAPs	10.40
<b>Regulated Pollutants other than Criteria and HAP</b>	<b>Potential Emissions</b>

<sup>1</sup>PM<sub>2.5</sub> and PM<sub>10</sub> are components of TSP.  
<sup>2</sup>For 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**

<b>24. Insignificant Activities (Check all that apply)</b>	
<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 <sub>2</sub> 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<sub>x</sub>, SO<sub>2</sub>, 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 – 10,000 gallon waste fluid storage tank</u></p> <p><u>1 – 12,000 gallon lube oil storage tank</u></p> <p><u>1 – 3,000 gallon triethylene glycol storage tank</u></p> <p><u>1 – 3,000 gallon ethylene glycol storage tank</u></p> <p><u>1 – 2,000 gallon used oil storage tank</u></p> <p><u>1 – 1,000 gallon maintenance oil storage tank</u></p> <p><u>VOC emissions from leaking valves, compressors, and connectors.</u></p>

24. Insignificant Activities (Check all that apply)	
<input type="checkbox"/>	<p>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.</p> <p>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:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
<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 checked="" 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.

<b>24. Insignificant Activities (Check all that apply)</b>	
<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 checked="" type="checkbox"/>	59. Vents from continuous emissions monitors and other analyzers.

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

<b>25. Equipment Table</b>
Fill out the <b>Title V Equipment Table</b> and provide it as <b>ATTACHMENT D</b> .
<b>26. Emission Units</b>
For each emission unit listed in the <b>Title V Equipment Table</b> , fill out and provide an <b>Emission Unit Form</b> as <b>ATTACHMENT E</b> .
For each emission unit not in compliance with an applicable requirement, fill out a <b>Schedule of Compliance Form</b> as <b>ATTACHMENT F</b> .
<b>27. Control Devices</b>
For each control device listed in the <b>Title V Equipment Table</b> , fill out and provide an <b>Air Pollution Control Device Form</b> as <b>ATTACHMENT G</b> .
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 <b>Compliance Assurance Monitoring (CAM) Form(s)</b> for CAM applicability. Fill out and provide these forms, if applicable, for each <b>Pollutant Specific Emission Unit (PSEU)</b> as <b>ATTACHMENT H</b> .

**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: Clifford W. Baker

Title: Sr. Vice President

**Responsible official's signature:**

Signature: 

Signature Date: 7-27-17

(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/daq](http://www.dep.wv.gov/daq), requested by phone (304) 926-0475, and/or obtained through the mail.**

# ATTACHMENT A

## Area Map

## ATTACHMENT A

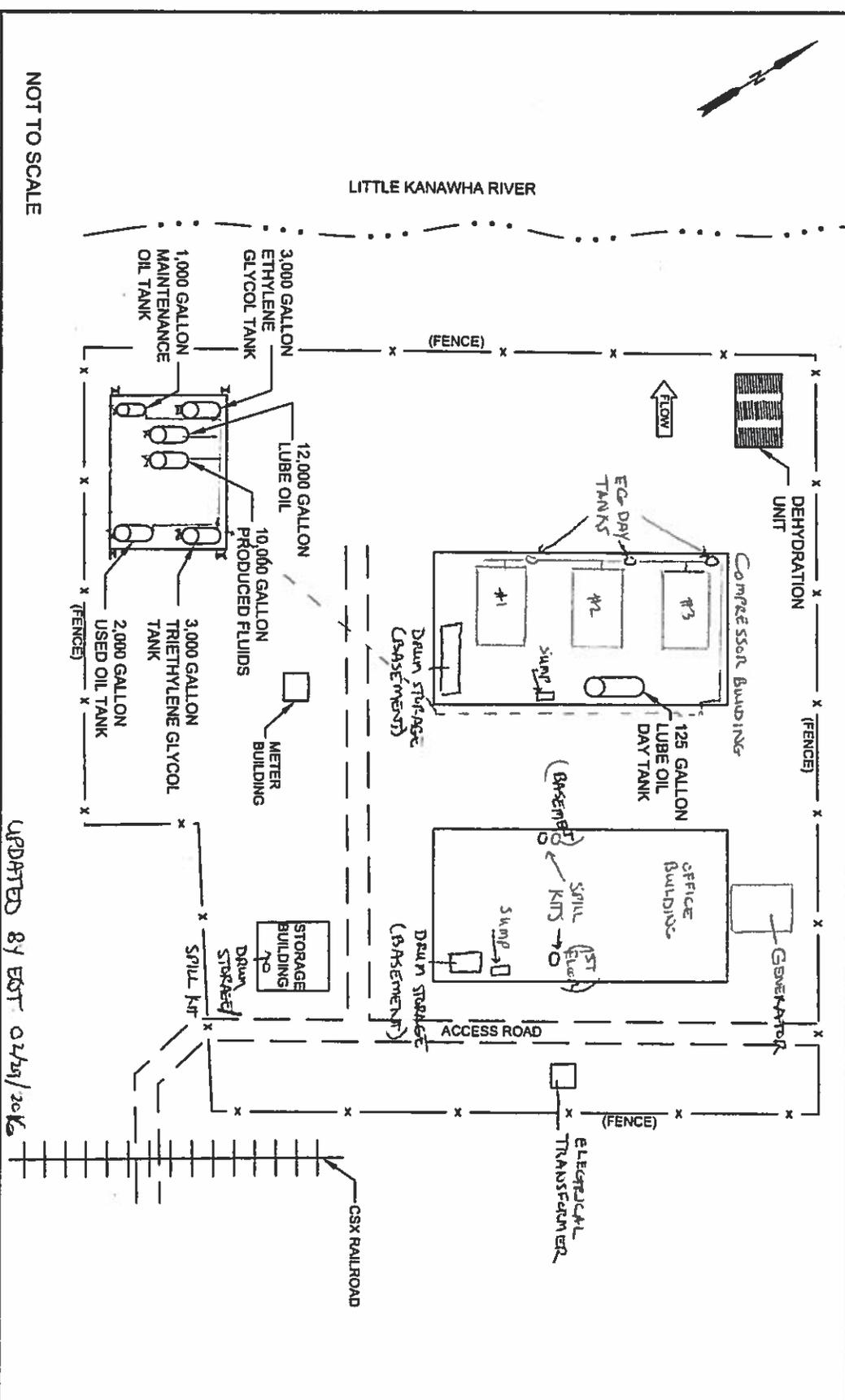


Figure 1 - Map of Burnsville Compressor Station Location

UTM Northing (KM)	4,301.60
UTM Easting (KM)	529.55
Elevation (m)	231

# ATTACHMENT B

## Plot Plan



NOT TO SCALE

UPDATED BY EST 07/25/2016

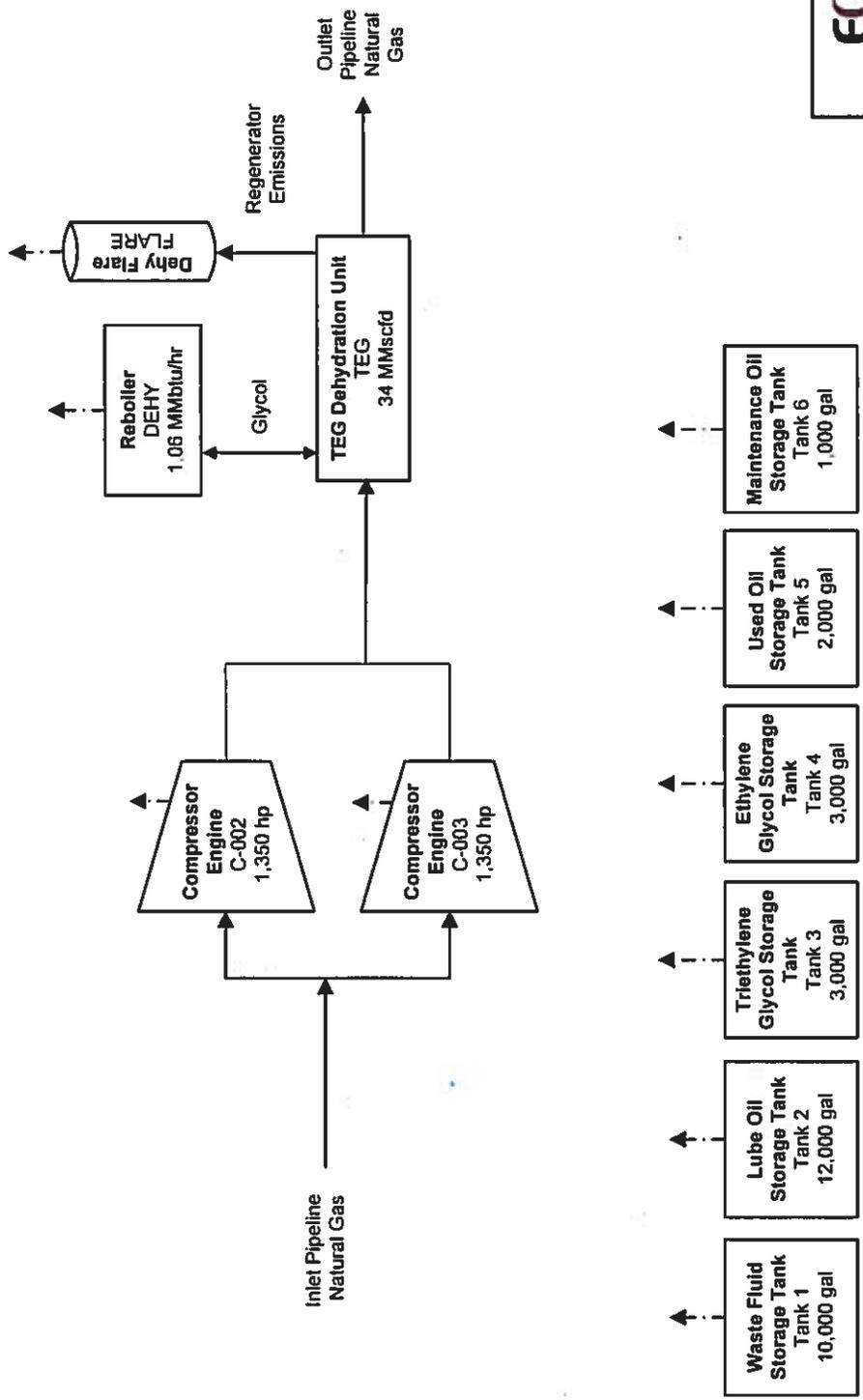
CADD FILE:  
Burnsville Compressor Station.dwg  
DRAWN BY: DWM  
CHECKED BY: JAS  
DATE: 06-11-2012  
SCALE: N.T.S.

BURNSVILLE COMPRESSOR STATION  
EQUITRANS, L.P.  
NORTHERN WEST VIRGINIA DISTRICT  
JOB NO: 04-11-0131  
SITE LAYOUT MAP

FIGURE-2  
TRAD ENGINEERING, INC.  
www.tradeng.com  
219 HARTMAN RUN ROAD  
MORGANTOWN, WV

## ATTACHMENT C

### Process Flow Diagram



**EQT** Where energy meets innovation.  
Equitrans, LP

**Process Flow Diagram**  
Burnsville Station

Trinity  
Consultants  
July 2017

**Flow Legend**  
 ↑ Gas/Liquid Flow  
 - - - - - Stack Emissions

**ATTACHMENT D**

**Equipment Table**

**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 <sup>1</sup>	Control Device <sup>1</sup>	Emission Unit ID <sup>1</sup>	Emission Unit Description	Design Capacity	Year Installed/Modified
C-001- Decommissioned	None	C-001- Decommissioned	Reciprocating Engine / Integral Compressor Superior, Model No. 66-825, Serial No. 300339 (This unit has been decommissioned)	600 HP	1984
C-002	None	C-002	Reciprocating Engine / Integral Compressor Cooper Bessemer, Model No. GMVH, Serial No. 48957	1,350 HP	1984
C-003	None	C-003	Reciprocating Engine / Integral Compressor Cooper Bessemer, Model No. GMVH, Serial No. 48958	1,350 HP	1984
G-001	None	G-001	Reciprocating Engine / Generator; Cummins Model No. GTA-743, Serial No. 25125199	251 HP	1984
G-002A	None	G-002A	Kohler Generator	302 HP	2015
FLARE	FLARE	TEG	TEG Dehydrator	34 MMSCFD	1984
FLARE	None	FLARE	Dehydration Flare; John Zink : EEF-U-4 Model 320-2	1.02 MMBTU/hr 50,000 Btu/hr (Pilot)	2014
BLR	None	BLR	Heating Boiler	1.26 MMBtu/hr	2016
DEHY	None	DEHY	Dehydration Boiler	0.025 MMcf/day	1984
Tank 1	None	Tank 1	Waste Fluid	10,000 gallon	1993
Tank 2	None	Tank 2	Lube Oil	12,000 gallon	1993
Tank 3	None	Tank 3	Triethylene Glycol	3,000 gallon	1993
Tank 4	None	Tank 4	Ethylene Glycol	3,000 gallon	1993
Tank 5	None	Tank 5	Used Oil	2,000 gallon	1993
Tank 6	None	Tank 6	Maintenance Oil	1,000 gallon	1993

<sup>1</sup>For 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**

<b>Emission unit ID number:</b> TEG	<b>Emission unit name:</b> TEG Dehydrator	<b>List any control devices associated with this emission unit:</b> Dehydration Flare
--	--	--

**Provide a description of the emission unit (type, method of operation, design parameters, etc.):**  
34 MMSCFD triethylene glycol dehydration unit with associated reboiler and flare for removing water and impurities from natural gas.

<b>Manufacturer:</b> CE NATCO	<b>Model number:</b>	<b>Serial number:</b>
<b>Construction date:</b> 1984	<b>Installation date:</b> 1984	<b>Modification date(s):</b> N/A

**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):** 34 MMscf/day

<b>Maximum Hourly Throughput:</b> 1.4 MMSCF	<b>Maximum Annual Throughput:</b> 12,410 MMSCF	<b>Maximum Operating Schedule:</b> 8,760 hrs/yr
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**Fuel Usage Data (fill out all applicable fields)**

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

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

**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

**Emissions Data**

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	---	---

Nitrogen Oxides (NO <sub>x</sub> )	---	---
Lead (Pb)	---	---
Particulate Matter (PM <sub>2.5</sub> )	---	---
Particulate Matter (PM <sub>10</sub> )	---	---
Total Particulate Matter (TSP)	---	---
Sulfur Dioxide (SO <sub>2</sub> )	---	---
Volatile Organic Compounds (VOC)	2.36	10.35
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Total HAP	0.55	2.41
Benzene	0.04	0.18
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO <sub>2</sub> e	1	5
<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 v4.0.</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.

No change from existing Title V permit

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.)

See Section 3 of the application report.

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**

<b>Emission unit ID number:</b> G-002A	<b>Emission unit name:</b> Doosan – D111TIC	<b>List any control devices associated with this emission unit:</b> None
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**Provide a description of the emission unit (type, method of operation, design parameters, etc.):**  
One (1) natural gas fired 302 hp reciprocating internal combustion engine that drives an electric generator.

<b>Manufacturer:</b> Doosan	<b>Model number:</b> D111TIC	<b>Serial number:</b>
<b>Construction date:</b> 2015	<b>Installation date:</b> 2015	<b>Modification date(s):</b> N/A

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

<b>Maximum Hourly Throughput:</b> 2,115 scf/hr	<b>Maximum Annual Throughput:</b> 1.1 MMscf/yr	<b>Maximum Operating Schedule:</b> 500 hrs/yr
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**Fuel Usage Data (fill out all applicable fields)**

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

<b>Maximum design heat input and/or maximum horsepower rating:</b> 302 HP	<b>Type and Btu/hr rating of burners:</b> 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.**

Natural gas fired – 2,115 scf/hr and 1.1 MMscf/yr

**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		1,113

**Emissions Data**

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.18	0.05

Nitrogen Oxides (NO <sub>x</sub> )	0.02	0.01
Lead (Pb)	N/A	N/A
Particulate Matter (PM <sub>2.5</sub> )	0.02	0.01
Particulate Matter (PM <sub>10</sub> )	0.02	0.01
Total Particulate Matter (TSP)	0.02	0.01
Sulfur Dioxide (SO <sub>2</sub> )	<0.01	<0.01
Volatile Organic Compounds (VOC)	0.17	0.04
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.05	0.01
Total HAP	0.08	0.02
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO <sub>2</sub> e	276	70
<p><b>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.).</b></p> <p>NO<sub>x</sub>, CO, and VOC emission factors are based on permit limits. All other criteria pollutants factors are based on AP-42 Section 3.2 Table 3.2-3.</p> <p>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.

40 CFR 60 Subpart JJJJ  
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.)

See Section 3 of the application report.

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

<b>Emission Unit Description</b>			
<b>Emission unit ID number:</b> G-001	<b>Emission unit name:</b> Cummins Generator GTA-743	<b>List any control devices associated with this emission unit:</b> None	
<b>Provide a description of the emission unit (type, method of operation, design parameters, etc.):</b> One (1) natural gas fired 251 hp reciprocating internal combustion engine that drives an electric generator.			
<b>Manufacturer:</b> Cummins	<b>Model number:</b> GTA-743	<b>Serial number:</b> 25125199	
<b>Construction date:</b> 1984	<b>Installation date:</b> 1984	<b>Modification date(s):</b> N/A	
<b>Design Capacity (examples: furnaces - tons/hr, tanks - gallons):</b> 251 HP			
<b>Maximum Hourly Throughput:</b> 2,327 scf/hr	<b>Maximum Annual Throughput:</b> 20.4 MMscf/yr	<b>Maximum Operating Schedule:</b> 8760 hrs/yr	
<b>Fuel Usage Data (fill out all applicable fields)</b>			
<b>Does this emission unit combust fuel?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<b>If yes, is it?</b> <input checked="" type="checkbox"/> Indirect Fired <input type="checkbox"/> Direct Fired	
<b>Maximum design heat input and/or maximum horsepower rating:</b> 251 HP		<b>Type and Btu/hr rating of burners:</b> N/A	
<b>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.</b>  Natural Gas – 2,327 scf/hr ; 20.4 MMscf/yr			
<b>Describe each fuel expected to be used during the term of the permit.</b>			
<b>Fuel Type</b>	<b>Max. Sulfur Content</b>	<b>Max. Ash Content</b>	<b>BTU Value</b>
Natural Gas	Negligible		1,113 BTU/scf

<b>Emissions Data</b>		
<b>Criteria Pollutants</b>	<b>Potential Emissions</b>	
	<b>PPH</b>	<b>TPY</b>

Carbon Monoxide (CO)	9.63	42.20
Nitrogen Oxides (NO <sub>x</sub> )	5.72	25.07
Lead (Pb)	N/A	N/A
Particulate Matter (PM <sub>2.5</sub> )	0.05	0.22
Particulate Matter (PM <sub>10</sub> )	0.05	0.22
Total Particulate Matter (TSP)	0.05	0.22
Sulfur Dioxide (SO <sub>2</sub> )	<0.01	0.01
Volatile Organic Compounds (VOC)	0.08	0.34
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.05	0.23
Total HAP	0.08	0.37
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO <sub>2e</sub>	303	1,328
<p><b>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.).</b></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.

40 CFR 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.)

See Section 3 of the application report.

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

<b>Emission Unit Description</b>			
<b>Emission unit ID number:</b> DEHY	<b>Emission unit name:</b> Dehydration Reboiler	<b>List any control devices associated with this emission unit:</b> None	
<b>Provide a description of the emission unit (type, method of operation, design parameters, etc.):</b> One (1) natural gas fired reboiler (rated at 1.06 MMBtu/hr) associated with the dehydration unit			
<b>Manufacturer:</b>	<b>Model number:</b>	<b>Serial number:</b>	
<b>Construction date:</b> 1984	<b>Installation date:</b> 1984	<b>Modification date(s):</b> N/A	
<b>Design Capacity (examples: furnaces - tons/hr, tanks - gallons):</b> 1.06 MMBtu/hr			
<b>Maximum Hourly Throughput:</b> 952 scf/hr	<b>Maximum Annual Throughput:</b> 8.34 MMscf/yr	<b>Maximum Operating Schedule:</b> 8,760 hrs/yr	
<b>Fuel Usage Data (fill out all applicable fields)</b>			
<b>Does this emission unit combust fuel?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<b>If yes, is it?</b> <input checked="" type="checkbox"/> Indirect Fired <input type="checkbox"/> Direct Fired	
<b>Maximum design heat input and/or maximum horsepower rating:</b> 1.06 MMBtu/hr		<b>Type and Btu/hr rating of burners:</b> N/A	
<b>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.</b>  Natural Gas – 952 scf/hr ; 8.34 MMscf/yr			
<b>Describe each fuel expected to be used during the term of the permit.</b>			
Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	Negligible		1,113 BTU/scf

<b>Emissions Data</b>		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.08	0.35
Nitrogen Oxides (NO <sub>x</sub> )	0.10	0.42
Lead (Pb)	N/A	N/A
Particulate Matter (PM <sub>2.5</sub> )	0.01	0.03

Particulate Matter (PM <sub>10</sub> )	0.01	0.03
Total Particulate Matter (TSP)	<0.01	0.01
Sulfur Dioxide (SO <sub>2</sub> )	<0.01	<0.01
Volatile Organic Compounds (VOC)	0.01	0.02
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Total HAP	<0.01	<0.01
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO <sub>2</sub> e	124	544
<p><b>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.).</b></p> <p>Criteria pollutant and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, &amp; 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.

No changes from current Title V permit condition

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.)

See Section 3 of the application report.

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**

<b>Emission unit ID number:</b> C-003	<b>Emission unit name:</b> Reciprocating Engine, Cooper Bessemer GMVH No 48958	<b>List any control devices associated with this emission unit:</b> 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

<b>Manufacturer:</b> Cooper Bessemer	<b>Model number:</b> GMVH	<b>Serial number:</b> 48958
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<b>Construction date:</b> 1984	<b>Installation date:</b> 1984	<b>Modification date(s):</b> N/A
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**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):**  
1,350 HP

<b>Maximum Hourly Throughput:</b> 8,249 scf/hr	<b>Maximum Annual Throughput:</b> 72.26 MMscf/yr	<b>Maximum Operating Schedule:</b> 8,760 hrs/yr
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**Fuel Usage Data (fill out all applicable fields)**

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

<b>Maximum design heat input and/or maximum horsepower rating:</b> 1,350 HP	<b>Type and Btu/hr rating of burners:</b> 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.**

Natural Gas – 8,743 scf/hr ; 76.59 MMscf/yr

**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		1,113 BTU/scf

**Emissions Data**

Criteria Pollutants	Potential Emissions	
	PPH	TPY

Carbon Monoxide (CO)	3.54	15.52
Nitrogen Oxides (NO <sub>x</sub> )	29.10	127.46
Lead (Pb)	N/A	N/A
Particulate Matter (PM <sub>2.5</sub> )	0.44	1.94
Particulate Matter (PM <sub>10</sub> )	0.44	1.94
Total Particulate Matter (TSP)	0.44	1.94
Sulfur Dioxide (SO <sub>2</sub> )	0.01	0.02
Volatile Organic Compounds (VOC)	1.10	4.83
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.51	2.22
Total HAP	0.73	3.20
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO <sub>2</sub> e	1,075	4,708
<p><b>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.).</b></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.

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.)

See Section 3 of the application report.

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*

<b>Emission unit ID number:</b> C-002	<b>Emission unit name:</b> Reciprocating Engine, Cooper Bessemer GMVH No 48957	<b>List any control devices associated with this emission unit:</b> 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

<b>Manufacturer:</b> Cooper Bessemer	<b>Model number:</b> GMVH	<b>Serial number:</b> 48957
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<b>Construction date:</b> 1984	<b>Installation date:</b> 1984	<b>Modification date(s):</b> N/A
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**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):**  
1,350 HP

<b>Maximum Hourly Throughput:</b> 8,249 scf/hr	<b>Maximum Annual Throughput:</b> 72.26 MMscf/yr	<b>Maximum Operating Schedule:</b> 8,760 hrs/yr
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### *Fuel Usage Data (fill out all applicable fields)*

<b>Does this emission unit combust fuel?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>If yes, is it?</b> <input checked="" type="checkbox"/> Indirect Fired <input type="checkbox"/> Direct Fired
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<b>Maximum design heat input and/or maximum horsepower rating:</b> 1,350 HP	<b>Type and Btu/hr rating of burners:</b> 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.**

Natural Gas – 8,249 scf/hr ; 72.26 MMscf/yr

**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		1,113 BTU/scf

### *Emissions Data*

Criteria Pollutants	Potential Emissions	
	PPH	TPY

Carbon Monoxide (CO)	3.54	15.52
Nitrogen Oxides (NO <sub>x</sub> )	29.10	127.46
Lead (Pb)	N/A	N/A
Particulate Matter (PM <sub>2.5</sub> )	0.44	1.94
Particulate Matter (PM <sub>10</sub> )	0.44	1.94
Total Particulate Matter (TSP)	0.44	1.94
Sulfur Dioxide (SO <sub>2</sub> )	0.01	0.02
Volatile Organic Compounds (VOC)	1.10	4.83
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.51	2.22
Total HAP	0.73	3.20
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO <sub>2e</sub>	1,075	4,708
<p><b>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.).</b></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.

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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.)

See Section 3 of the application report.

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*

<b>Emission unit ID number:</b> BLR	<b>Emission unit name:</b> Heating Boiler	<b>List any control devices associated with this emission unit:</b> None
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**Provide a description of the emission unit (type, method of operation, design parameters, etc.):**  
One (1) natural gas fired heating boiler rated at 1.25 MMBtu/hr.

<b>Manufacturer:</b> Delta	<b>Model number:</b> 898B-2339B	<b>Serial number:</b>
<b>Construction date:</b> 2016	<b>Installation date:</b> 2016	<b>Modification date(s):</b> N/A

**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):** 1.26 MMBtu/hr

<b>Maximum Hourly Throughput:</b> 1,132 scf/hr	<b>Maximum Annual Throughput:</b> 9.92 MMscf/yr	<b>Maximum Operating Schedule:</b> 8,760 hrs/yr
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### *Fuel Usage Data (fill out all applicable fields)*

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

<b>Maximum design heat input and/or maximum horsepower rating:</b> 1.25 MMBtu/hr	<b>Type and Btu/hr rating of burners:</b> 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.**

Natural Gas – 1,132 scf/hr ; 9.92 MMscf/yr

**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		1,113 BTU/scf

### *Emissions Data*

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.10	0.42

Nitrogen Oxides (NO <sub>x</sub> )	0.11	0.50
Lead (Pb)	N/A	N/A
Particulate Matter (PM <sub>2.5</sub> )	0.01	0.04
Particulate Matter (PM <sub>10</sub> )	0.01	0.04
Total Particulate Matter (TSP)	0.01	0.04
Sulfur Dioxide (SO <sub>2</sub> )	<0.01	<0.01
Volatile Organic Compounds (VOC)	0.01	0.03
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Total HAP	<0.01	<0.01
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO <sub>2</sub> e	147	646
<p><b>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.).</b></p> <p>Criteria pollutant and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, &amp; 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.

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.)

See Section 3 of the application report.

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

<b>Control device ID number:</b> Flare	<b>List all emission units associated with this control device.</b> Dehydration Unit	
<b>Manufacturer:</b> John Zink	<b>Model number:</b> EEF-U-4	<b>Installation date:</b> 2014
<b>Type of Air Pollution Control Device:</b> <input type="checkbox"/> Baghouse/Fabric Filter <input type="checkbox"/> Venturi Scrubber <input type="checkbox"/> Multiclone <input type="checkbox"/> Carbon Bed Adsorber <input type="checkbox"/> Packed Tower Scrubber <input type="checkbox"/> Single Cyclone <input type="checkbox"/> Carbon Drum(s) <input type="checkbox"/> Other Wet Scrubber <input type="checkbox"/> Cyclone Bank <input type="checkbox"/> Catalytic Incinerator <input type="checkbox"/> Condenser <input type="checkbox"/> Settling Chamber <input type="checkbox"/> Thermal Incinerator <input checked="" type="checkbox"/> Flare <input type="checkbox"/> Other (describe) _____ <input type="checkbox"/> Wet Plate Electrostatic Precipitator <input type="checkbox"/> Dry Plate Electrostatic Precipitator		
<b>List the pollutants for which this device is intended to control and the capture and control efficiencies.</b>		
Pollutant	Capture Efficiency	Control Efficiency
VOC	100%	98%
HAPs	100%	98%
<b>Explain the characteristic design parameters of this control device (flow rates, pressure drops, number of bags, size, temperatures, etc.).</b>  Elevated flare which controls emissions from TEG dehydration regenerator		
<b>Is this device subject to the CAM requirements of 40 C.F.R. 64? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</b> If Yes, Complete ATTACHMENT H If No, Provide justification.		
<b>Describe the parameters monitored and/or methods used to indicate performance of this control device.</b> <ul style="list-style-type: none"> <li>• Perform visual emission inspections.</li> <li>• Continuously monitor for presence of flame.</li> </ul>		

# ATTACHMENT I

## Emission Calculations

Company Name: Equitrans, L.P.  
 Facility Name: Burnsville Compressor Station  
 Project Description: Title V Renewal Application

Burnsville Station												Burnsville Station Potential Emissions
Emission Unit ID	Cooper Bessemer GMVH Compressor Engine	Cooper Bessemer GMVH Compressor Engine	Cummins Generator Engine	Doosan Generator Engine	Dehydration Unit	Dehy Flare	Reboiler	Heating Boiler	Fugitives & Blowdowns			
Fuel Type	C-002	C-003	G-001	G-002A	TEG	FLARE	DEHY	BLR				
Capacity	Natural Gas	Natural Gas	Natural Gas	Natural Gas	---	Natural Gas	Natural Gas	Natural Gas				
Unit	HP	HP	HP	HP	MMSCFD	MMBtu/hr	MMBtu/hr	MMBtu/hr				
Operating Hours (hrs)	8,760	8,760	8,760	8,760	8,760	8,760	8,760	8,760	8,760			
# of Emission Units	1	1	1	1	1	1	1	1	N/A			
Pollutant	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	
PM <sub>10</sub>	1.94	1.94	0.22	0.01	--	0.51	0.03	0.04	--	--	4.69	
PM <sub>2.5</sub>	1.94	1.94	0.22	0.01	--	0.51	0.03	0.04	--	--	4.69	
SO <sub>x</sub>	0.02	0.02	0.01	3.5E-04	--	0.04	2.5E-03	3.0E-03	--	--	0.10	
CO	15.52	15.52	42.20	0.05	--	5.67	0.35	0.42	--	--	79.72	
NO <sub>x</sub>	127.46	127.46	25.07	0.01	--	6.75	0.42	0.50	--	--	287.65	
VOC	4.83	4.83	0.34	0.04	10.35	0.37	0.02	0.03	10.48	0.07	31.28	
CO <sub>2</sub>	4,703	4,703	1,327	69	1	548	543	646	0.07	0.01	12,540	
CH <sub>4</sub>	0.09	0.09	0.03	1.3E-03	0.19	0.01	0.01	0.01	25.93	0.01	26	
N <sub>2</sub> O	0.01	0.01	2.5E-03	2.5E-03	--	1.0E-03	1.0E-03	1.2E-03	--	--	0.03	
CO <sub>2</sub> e <sup>1</sup>	4,708	4,708	1,328	70	5	549	544	646	648	0.01	13,207	
Formaldehyde	2.22	2.22	0.23	0.01	--	0.01	3.1E-04	3.7E-04	--	--	4.69	
Benzene	0.08	0.08	0.02	9.3E-04	0.18	1.4E-04	8.8E-06	1.0E-05	--	--	0.35	
Toluene	0.04	0.04	0.01	3.3E-04	0.00	2.3E-04	1.4E-05	1.7E-05	--	--	0.09	
Ethylbenzene	4.3E-03	4.3E-03	2.8E-04	1.5E-05	0.00	--	--	--	--	--	0.01	
Xylene	0.01	0.01	2.3E-03	1.1E-04	1.97	--	--	--	--	--	2.00	
n-Hexane	0.02	0.02	--	--	0.25	0.12	0.01	0.01	--	--	0.43	
Total HAPs (including HCHO)	3.20	3.20	0.37	0.02	2.41	0.13	0.01	0.01	1.06	0.01	10.40	

1. Conversion to CO<sub>2</sub>e based on CH<sub>4</sub> GWP = 25 and N<sub>2</sub>O GWP = 298, per 40 CFR 98.  
 2. VOC includes Formaldehyde.  
 3. Dehydration Unit Flare Emissions include pilot.

**Company Name:** Equitrans, LP  
**Facility Name:** Burnsville Compressor Station  
**Project Description:** Title V Renewal Application

**Cooper Bessemer Compressor Engine Emission Calculations**

<b>Source Designation:</b>	
Manufacturer:	Cooper Bessemer
Model No.:	GMVH
Serial No.:	48957
Stroke Cycle:	2
Type of Burn:	Lean Burn
Year Installed/Date Manufactured:	1984
Fuel Used:	Natural Gas
Fuel High Heating Value (HHV) (Btu/scf):	1,113
Rated Horsepower (bhp):	1,350
Specific Fuel Consumption (Btu/bhp-hr):	6,800
Maximum Fuel Consumption at 100% Load (scf/hr):	8,249
Heat Input (MMBtu/hr):	9.18
Stack Designation:	C-002

**Operational Details:**

Potential Annual Hours of Operation (hr/yr):	8,760
Potential Fuel Consumption (MMscf/yr):	72.26

**Criteria and Manufacturer Specific Pollutant Emission Factors:**

Pollutant	Emission Factors <sup>a</sup>	Units
NO <sub>x</sub>	3.17	lb/MMBtu
CO	0.39	lb/MMBtu
SO <sub>2</sub>	5.88E-04	lb/MMBtu
PM <sub>10</sub> (Filterable)	3.84E-02	lb/MMBtu
PM <sub>2.5</sub> (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 <sub>2</sub>	5.31E+01	kg/MMBtu
CH <sub>4</sub>	1.00E-03	kg/MMBtu
N <sub>2</sub> O	1.00E-04	kg/MMBtu

**Criteria and Manufacturer Specific Pollutant Emission Rates:**

Pollutant	Potential Emissions	
	(lb/hr) <sup>b</sup>	(tons/yr) <sup>c</sup>
NO <sub>x</sub>	29.10	127.46
CO	3.54	15.52
SO <sub>2</sub>	0.01	0.02
PM <sub>10</sub> (Filterable)	0.35	1.54
PM <sub>2.5</sub> (Filterable)	0.35	1.54
PM Condensable	0.09	0.40
PM Total	0.44	1.94
VOC	1.10	4.83
CO <sub>2</sub>	1,073.84	4,703.42
CH <sub>4</sub>	0.02	0.09
N <sub>2</sub> O	2.0E-03	0.01

**Hazardous Air Pollutant (HAP) Potential Emissions:**

Pollutant	Emission Factor (lb/MMBtu) <sup>a</sup>	Potential Emissions	
		(lb/hr) <sup>b</sup>	(tons/yr) <sup>c</sup>
<b>HAPs:</b>			
Acenaphthene	1.33E-06	1.22E-05	5.35E-05
Acenaphthylene	3.17E-06	2.91E-05	1.27E-04
Acetaldehyde	7.76E-03	7.12E-02	3.12E-01
Acrolein	7.78E-03	7.14E-02	3.13E-01
Benzene	1.94E-03	1.78E-02	7.80E-02
Benzo(b)fluoranthene	8.51E-09	7.81E-08	3.42E-07
Benzo(a)pyrene	5.68E-09	5.21E-08	2.28E-07
Benzo(g,h,i)perylene	2.48E-08	2.28E-07	9.97E-07
Biphenyl	3.95E-05	3.63E-04	1.59E-03
1,3-Butadiene	8.20E-04	7.53E-03	3.30E-02
Carbon Tetrachloride	6.07E-05	5.57E-04	2.44E-03
Chlorobenzene	4.44E-05	4.08E-04	1.79E-03
Chloroform	4.71E-05	4.32E-04	1.89E-03
Chrysene	6.72E-07	6.17E-06	2.70E-05
1,3-Dichloropropene	4.46E-05	4.09E-04	1.79E-03
Ethylbenzene	1.08E-04	9.91E-04	4.34E-03
Ethylene Dibromide	7.34E-05	6.74E-04	2.95E-03
Fluoranthene	3.61E-07	3.31E-06	1.45E-05
Fluorene	1.69E-06	1.55E-05	6.80E-05
Formaldehyde	5.52E-02	5.07E-01	2.22E+00
Methanol	2.48E-03	2.28E-02	9.97E-02
Methylene Chloride	1.47E-04	1.35E-03	5.91E-03
n-Hexane	4.45E-04	4.09E-03	1.79E-02
Phenanthrene	3.53E-06	3.24E-05	1.42E-04
Phenol	4.21E-05	3.86E-04	1.69E-03
Pyrene	5.84E-07	5.36E-06	2.35E-05
Styrene	5.48E-05	5.03E-04	2.20E-03
Toluene	9.63E-04	8.84E-03	3.87E-02
1,1,2,2-Tetrachloroethane	6.63E-05	6.09E-04	2.67E-03
Tetrachloroethane	6.63E-05	6.09E-04	2.67E-03
1,1,2-Trichloroethane	5.27E-05	4.84E-04	2.12E-03
2,2,4-Trimethylpentane	8.46E-04	7.77E-03	3.40E-02
Vinyl Chloride	2.47E-05	2.27E-04	9.93E-04
Xylene	2.68E-04	2.46E-03	1.08E-02
<b>Polycyclic Organic Matter:</b>			
Naphthalene	9.63E-05	8.84E-04	3.87E-03
2-Methylnaphthalene	2.14E-05	1.96E-04	8.60E-04
PAH	1.34E-04	1.23E-03	5.39E-03
<b>Total HAP</b>		<b>7.31E-01</b>	<b>3.20E+00</b>

<sup>a</sup> Criteria and HAP emission factors are 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.

<sup>b</sup> Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr) × Emission Factor (lb/MMBtu).

<sup>c</sup> Annual Emissions (tons/yr)<sub>Potential</sub> = (lb/hr)<sub>Emissions</sub> × (Maximum Allowable Operating Hours, 8,760 hrs/yr) × (1 ton/2000 lb).

**Company Name:** Equitrans, LP  
**Facility Name:** Burnsville Compressor Station  
**Project Description:** Title V Renewal Application

**Cooper Bessemer Compressor Engine Emission Calculations**

<b>Source Designation:</b>	
Manufacturer:	Cooper Bessemer
Model No :	GMVH
Serial No:	48958
Stroke Cycle:	2
Type of Burn:	Lean Burn
Year Installed/Date Manufactured	1984
Fuel Used:	Natural Gas
Fuel High Heating Value (HHV) (Btu/scf):	1,113
Rated Horsepower (bhp):	1,350
Specific Fuel Consumption (Btu/bhp-hr)	6,800
Maximum Fuel Consumption at 100% Load (scf/hr)	8,249
Heat Input (MMBtu/hr)	9.18
Stack Designation	C-003

**Operational Details:**

Potential Annual Hours of Operation (hr/yr):	8,760
Potential Fuel Consumption (MMscf/yr):	72.26

**Criteria and Manufacturer Specific Pollutant Emission Factors:**

Pollutant	Emission Factors <sup>a</sup>	Units
NO <sub>x</sub>	3.17	lb/MMBtu
CO	0.39	lb/MMBtu
SO <sub>2</sub>	5.88E-04	lb/MMBtu
PM <sub>10</sub> (Filterable)	3.84E-02	lb/MMBtu
PM <sub>2.5</sub> (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 <sub>2</sub>	5.31E+01	kg/MMBtu
CH <sub>4</sub>	1.00E-03	kg/MMBtu
N <sub>2</sub> O	1.00E-04	kg/MMBtu

**Criteria and Manufacturer Specific Pollutant Emission Rates:**

Pollutant	Potential Emissions	
	(lb/hr) <sup>b</sup>	(tons/yr) <sup>c</sup>
NO <sub>x</sub>	29.10	127.46
CO	3.54	15.52
SO <sub>2</sub>	0.01	0.02
PM <sub>10</sub> (Filterable)	0.35	1.54
PM <sub>2.5</sub> (Filterable)	0.35	1.54
PM Condensable	0.09	0.40
PM Total	0.44	1.94
VOC	1.10	4.83
CO <sub>2</sub>	1,073.84	4,703.42
CH <sub>4</sub>	0.02	0.09
N <sub>2</sub> O	2.0E-03	0.01

**Hazardous Air Pollutant (HAP) Potential Emissions:**

Pollutant	Emission Factor (lb/MMBtu) <sup>a</sup>	Potential Emissions	
		(lb/hr) <sup>b</sup>	(tons/yr) <sup>c</sup>
<b>HAPs:</b>			
Acenaphthene	1.33E-06	1.22E-05	5.35E-05
Acenaphthylene	3.17E-06	2.91E-05	1.27E-04
Acetaldehyde	7.76E-03	7.12E-02	3.12E-01
Acrolein	7.78E-03	7.14E-02	3.13E-01
Benzene	1.94E-03	1.78E-02	7.80E-02
Benzo(b)fluoranthene	8.51E-09	7.81E-08	3.42E-07
Benzo(a)pyrene	5.68E-09	5.21E-08	2.28E-07
Benzo(g,h,i)perylene	2.48E-08	2.28E-07	9.97E-07
Biphenyl	3.95E-05	3.63E-04	1.59E-03
1,3-Butadiene	8.20E-04	7.53E-03	3.30E-02
Carbon Tetrachloride	6.07E-05	5.57E-04	2.44E-03
Chlorobenzene	4.44E-05	4.08E-04	1.79E-03
Chloroform	4.71E-05	4.32E-04	1.89E-03
Chrysene	6.72E-07	6.17E-06	2.70E-05
1,3-Dichloropropene	4.46E-05	4.09E-04	1.79E-03
Ethylbenzene	1.08E-04	9.91E-04	4.34E-03
Ethylene Dibromide	7.34E-05	6.74E-04	2.95E-03
Fluoranthene	3.61E-07	3.31E-06	1.45E-05
Fluorene	1.69E-06	1.55E-05	6.80E-05
Formaldehyde	5.52E-02	5.07E-01	2.22E+00
Methanol	2.48E-03	2.28E-02	9.97E-02
Methylene Chloride	1.47E-04	1.35E-03	5.91E-03
n-Hexane	4.45E-04	4.09E-03	1.79E-02
Phenanthrene	3.53E-06	3.24E-05	1.42E-04
Phenol	4.21E-05	3.86E-04	1.69E-03
Pyrene	5.84E-07	5.36E-06	2.35E-05
Styrene	5.48E-05	5.03E-04	2.20E-03
Toluene	9.63E-04	8.84E-03	3.87E-02
1,1,2,2-Tetrachloroethane	6.63E-05	6.09E-04	2.67E-03
Tetrachloroethane	6.63E-05	6.09E-04	2.67E-03
1,1,2-Trichloroethane	5.27E-05	4.84E-04	2.12E-03
2,2,4-Trimethylpentane	8.46E-04	7.77E-03	3.40E-02
Vinyl Chloride	2.47E-05	2.27E-04	9.93E-04
Xylene	2.68E-04	2.46E-03	1.08E-02
<b>Polycyclic Organic Matter:</b>			
Naphthalene	9.63E-05	8.84E-04	3.87E-03
2-Methylnaphthalene	2.14E-05	1.96E-04	8.60E-04
PAH	1.34E-04	1.23E-03	5.39E-03
<b>Total HAP</b>		<b>7.31E-01</b>	<b>3.20E+00</b>

<sup>a</sup> Criteria and HAP emission factors are 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.

<sup>b</sup> Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr) × Emission Factor (lb/MMBtu).

<sup>c</sup> Annual Emissions (tons/yr)<sub>Potential</sub> = (lb/hr)<sub>Emissions</sub> × (Maximum Allowable Operating Hours, 8,760 hrs/yr) × (1 ton/2000 lb).

**Company Name:** Equitrans, L.P.  
**Facility Name:** Burnsville Compressor Station  
**Project Description:** Title V Renewal Application

**Cummins Generator Engine Emission Calculations**

<b>Source Designation:</b>	
Manufacturer:	Cummins
Model No:	GTA-743
Year Installed:	25125199
Type of Engine:	4SRB
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,113
Rated Horsepower (bhp):	251
Heat Input (MMBtu/hr):	2.59
Maximum Fuel Consumption at 100% Load (MMscf/hr):	0.002
Maximum Fuel Consumption at 100% Load (scf/hr):	2,327
Maximum Fuel Consumption at 100% Load (MMscf/yr):	20.4
Stack Designation:	G-001

**Operational Details:**

Potential Annual Hours of Operation (hr/yr):	8,760
Potential Fuel Consumption (MMBtu/yr):	22,686

**Criteria and Manufacturer Specific Pollutant Emission Factors:**

<b>Pollutant</b>	<b>Emission Factors<sup>a</sup></b>	<b>Units</b>
NO <sub>x</sub>	2.21	lb/MMBtu
CO	3.72	lb/MMBtu
SO <sub>2</sub>	5.88E-04	lb/MMBtu
PM <sub>10</sub> (Filterable)	1.94E-02	lb/MMBtu
PM <sub>2.5</sub> (Filterable)	9.50E-03	lb/MMBtu
PM Condensable	1.94E-02	lb/MMBtu
PM Total	1.94E-02	lb/MMBtu
VOC	0.03	lb/MMBtu
CO <sub>2</sub>	5.31E+01	kg/MMBtu
CH <sub>4</sub>	1.00E-03	kg/MMBtu
N <sub>2</sub> O	1.00E-04	kg/MMBtu

**Criteria and Manufacturer Specific Pollutant Emission Rates:**

Pollutant	Potential Emissions	
	(lb/hr) <sup>b</sup>	(tons/yr) <sup>c</sup>
NO <sub>x</sub>	5.72	25.07
CO	9.63	42.20
SO <sub>2</sub>	0.00	0.01
Total Particulate Matter (TSP)	0.05	0.22
PM (Filterable)	0.02	0.11
PM <sub>10</sub> (Filterable + Condensable)	0.05	0.22
PM <sub>2.5</sub> (Filterable + Condensable)	0.05	0.22
VOC	0.08	0.34
CO <sub>2</sub>	302.94	1326.86
CH <sub>4</sub>	0.01	0.03
N <sub>2</sub> O	0.00	0.00

**Hazardous Air Pollutant (HAP) Potential Emissions:**

Pollutant	Emission Factor (lb/MMBtu) <sup>a</sup>	Potential Emissions (lb/hr) <sup>b</sup>	Potential Emissions (tons/yr) <sup>c</sup>
<b>HAPs:</b>			
Acetaldehyde	2.79E-03	7.23E-03	3.16E-02
Acrolein	2.63E-03	6.81E-03	2.98E-02
Benzene	1.58E-03	4.09E-03	1.79E-02
1,3-Butadiene	6.63E-04	1.72E-03	7.52E-03
Carbon Tetrachloride	1.77E-05	4.58E-05	2.01E-04
Chlorobenzene	1.29E-05	3.34E-05	1.46E-04
Chloroform	1.37E-05	3.55E-05	1.55E-04
1,3-Dichloropropene	1.27E-05	3.29E-05	1.44E-04
Ethylbenzene	2.48E-05	6.42E-05	2.81E-04
Ethylene Dibromide	2.13E-05	5.52E-05	2.42E-04
Formaldehyde	2.05E-02	5.31E-02	2.33E-01
Methanol	3.06E-03	7.92E-03	3.47E-02
Methylene Chloride	4.12E-05	1.07E-04	4.67E-04
Styrene	1.19E-05	3.08E-05	1.35E-04
Toluene	5.58E-04	1.45E-03	6.33E-03
1,1,2,2-Tetrachloroethane	2.53E-05	6.55E-05	2.87E-04
1,1,2-Trichloroethane	1.53E-05	3.96E-05	1.74E-04
Vinyl Chloride	7.18E-06	1.86E-05	8.14E-05
Xylene	1.95E-04	5.05E-04	2.21E-03
<b>Polycyclic Organic Matter:</b>			
Naphthalene	9.71E-05	2.51E-04	1.10E-03
PAH	1.41E-04	3.65E-04	1.60E-03
<b>Total HAP</b>		<b>8.40E-02</b>	<b>3.68E-01</b>

<sup>a</sup> Criteria pollutant and HAP emission factors from AP-42 Section 3.2, "Natural Gas-fired Reciprocating Engines", Table 3.2-3 for 4-Stroke Rich Burn Engines, July 2000. Greenhouse gas emission factors are from 40 CFR Part 98 for natural gas combustion.

<sup>b</sup> Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr) × Emission Factor (lb/MMBtu).

<sup>c</sup> Annual Emissions (tons/yr)<sub>potential</sub> = (lb/hr)<sub>Emissions</sub> × (Maximum Allowable Operating Hours, 8,760 hrs/yr) × (1 ton/2000 lb).

Company Name: Equitrans, L.P.  
 Facility Name: Burnsville Compressor Station  
 Project Description: Title V Renewal Application

**Douzan Generator Engine Emission Calculations**

<b>Source Designation:</b>	
Manufacturer:	Doosan
Model No.:	D111TIC
Year Installed:	2015
Type of Engine:	4SRB
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,113
Rated Horsepower (bhp):	302
Heat Input (MMBtu/hr)	2.35
Maximum Fuel Consumption at 100% Load (MMscf/hr):	0.002
Maximum Fuel Consumption at 100% Load (scf/hr):	2,115
Maximum Fuel Consumption at 100% Load (MMscf/yr):	1.1
Stack Designation:	G-002A

**Operational Details:**

Potential Annual Hours of Operation (hr/yr):	500
Potential Fuel Consumption (MMBtu/yr):	1,177

**Criteria and Manufacturer Specific Pollutant Emission Factors:**

<b>Pollutant</b>	<b>Emission Factors<sup>a</sup></b>	<b>Units</b>
NO <sub>x</sub>	0.02	lb/hr
CO	0.18	lb/hr
SO <sub>2</sub>	5.88E-04	lb/MMBtu
PM <sub>10</sub> (Filterable)	9.50E-03	lb/MMBtu
PM <sub>2.5</sub> (Filterable)	9.91E-03	lb/MMBtu
PM Condensable	9.91E-03	lb/MMBtu
PM Total	1.94E-02	lb/MMBtu
VOC	0.17	lb/hr
CO <sub>2</sub>	5.31E+01	kg/MMBtu
CH <sub>4</sub>	1.00E-03	kg/MMBtu
N <sub>2</sub> O	1.00E-04	kg/MMBtu

**Criteria and Manufacturer Specific Pollutant Emission Rates:**

Pollutant	Potential Emissions	
	(lb/hr) <sup>b</sup>	(tons/yr) <sup>c</sup>
NO <sub>x</sub>	0.02	0.01
CO	0.18	0.05
SO <sub>2</sub>	0.00	0.00
Total Particulate Matter (TSP)	0.02	0.01
PM (Filterable)	0.02	0.01
PM <sub>10</sub> (Filterable + Condensable)	0.02	0.01
PM <sub>2.5</sub> (Filterable + Condensable)	0.05	0.01
VOC	0.17	0.04
CO <sub>2</sub>	275.34	68.83
CH <sub>4</sub>	0.01	0.00
N <sub>2</sub> O	0.00	0.00

**Hazardous Air Pollutant (HAP) Potential Emissions:**

Pollutant	Emission Factor (lb/MMBtu) <sup>a</sup>	Potential Emissions (lb/hr) <sup>b</sup>	Potential Emissions (tons/yr) <sup>c</sup>
<b>HAPs:</b>			
1,1,2,2-Tetrachloroethane	2.53E-05	5.96E-05	1.49E-05
1,1,2-Trichloroethane	1.53E-05	3.60E-05	9.00E-06
1,1-Dichloroethane	1.13E-05	2.66E-05	6.65E-06
1,2-Dichloroethane	1.13E-05	2.66E-05	6.65E-06
1,2-Dichloropropane	1.30E-05	3.06E-05	7.65E-06
1,3-Butadiene	6.63E-04	1.56E-03	3.90E-04
1,3-Dichloropropene	1.27E-05	2.99E-05	7.47E-06
Acetaldehyde	2.79E-03	6.57E-03	1.64E-03
Acrolein	2.63E-03	6.19E-03	1.55E-03
Benzene	1.58E-03	3.72E-03	9.30E-04
Carbon Tetrachloride	1.77E-05	4.17E-05	1.04E-05
Chlorobenzene	1.29E-05	3.04E-05	7.59E-06
Chloroform	1.37E-05	3.22E-05	8.06E-06
Ethylbenzene	2.48E-05	5.84E-05	1.46E-05
Ethylene Dibromide	2.13E-05	5.01E-05	1.25E-05
Formaldehyde	2.05E-02	4.83E-02	1.21E-02
Methanol	3.06E-03	7.20E-03	1.80E-03
Methylene Chloride	4.12E-05	9.70E-05	2.42E-05
Naphthalene	9.71E-05	2.29E-04	5.71E-05
PAH	1.41E-04	3.32E-04	8.30E-05
Styrene	1.19E-05	2.80E-05	7.00E-06
Toluene	5.58E-04	1.31E-03	3.28E-04
Vinyl Chloride	7.18E-06	1.69E-05	4.23E-06
Xylene	1.95E-04	4.59E-04	1.15E-04
<b>Total HAP</b>		<b>7.64E-02</b>	<b>1.91E-02</b>

<sup>a</sup> HAP emission factors are from AP-42 Section 3.2, Table 3.2-3 "Uncontrolled Emission Factors for 4-Stroke Rich-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.

<sup>b</sup> Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr) \* Emission Factor (lb/MMBtu).

<sup>c</sup> Annual Emissions (tons/yr)<sub>potential</sub> = (lb/hr)<sub>emissions</sub> \* (Maximum Allowable Operating Hours, 500 hrs/yr) \* (1 ton/2000 lb).

<sup>d</sup> NO<sub>x</sub>, CO, and VOC emission factors are based on permit limits.

**Company Name:** Equitrans, L.P.  
**Facility Name:** Burnsville Compressor Station  
**Project Description:** Title V Renewal Application

**TEG Dehydrator Emission Calculations**

GRI-GLYCalc Version 4.0 - CONTROLLED REGENERATOR EMISSIONS SUMMARY			
EMISSION RATES			
Pollutant	(lbs/hr)	(lbs/day)	(tons/yr)
Carbon Dioxide	0.1700	4.080	0.7446
Methane	0.0432	1.036	0.1892
Ethane	0.0561	1.347	0.2458
Propane	0.0673	1.615	0.2946
Isobutane	0.0224	0.538	0.0982
n-Butane	0.0617	1.480	0.2701
Isopentane	0.0325	0.779	0.1422
n-Pentane	0.0414	0.995	0.1815
Cyclopentane	0.0001	0.001	0.0002
n-Hexane	0.0581	1.394	0.2545
Cyclohexane	0.0324	0.778	0.1419
Heptanes	0.1516	3.638	0.6639
Methylcyclohexane	0.1079	2.591	0.4728
2,2,4-Trimethylpentane	0.0004	0.010	0.0019
Benzene	0.0410	0.985	0.1798
Toluene	0.0003	0.007	0.0013
Ethylbenzene	0.0006	0.014	0.0026
Xylenes	0.4504	10.810	1.9728
C8 + Heavier Hydrocarbons	1.2959	31.102	5.6761
<b>Total Emissions</b>	<b>2.4634</b>	<b>59.121</b>	<b>10.7895</b>
<b>Total Hydrocarbon Emissions</b>	<b>2.4633</b>	<b>59.120</b>	<b>10.7895</b>
<b>Total VOC Emissions</b>	<b>2.3640</b>	<b>56.737</b>	<b>10.3545</b>
<b>Total HAP Emissions</b>	<b>0.5509</b>	<b>13.221</b>	<b>2.4129</b>

\* As calculated using GRI GlyCalc 4.0, at a worst-case emissions scenario of design rated dry gas flowrate of 34 MMscf/day and operating conditions of T and P of 57°F and 82 psig, respectively, and using most recent extended gas analysis available for Burnsville Station (dated 4/10/2015). Flash Tank Off Gas is used as stripping gas in the reboiler.

Company Name: Equitrans, L.P.  
 Facility Name: Burnsville Compressor Station  
 Project Description: Title V Renewal Application

**TEG Dehydrator Flare Emission Calculations**

Source Designation:	
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,113
Heat Input (MMBtu/hr)	1.02
Fuel Consumption (mmscf/hr):	1.54E-02
Fuel Consumption (scf/hr):	15,360
Fuel Consumption (mmscf/yr):	134.55
Potential Annual Hours of Operation (hr/yr):	8,760

From design analysis

**Criteria and Manufacturer Specific Pollutant Emission Rates:**

Pollutant	Emission Factor (lb/MMscf) <sup>a</sup>	Potential Emissions	
		(lb/hr) <sup>b</sup>	(tons/yr) <sup>c</sup>
NO <sub>x</sub>	100	1.54	6.73
CO	84	1.29	5.65
SO <sub>2</sub>	0.6	0.01	0.04
PM Total	7.6	0.12	0.51
PM Condensable	5.7	0.09	0.38
PM <sub>10</sub> (Filterable)	1.9	0.03	0.13
PM <sub>2.5</sub> (Filterable)	1.9	0.03	0.13
VOC	5.5	0.08	0.37
CO <sub>2</sub> <sup>d</sup> (Natural Gas Firing)	53.06	119	523
CH <sub>4</sub> <sup>d</sup> (Natural Gas Firing)	0.001	2.2E-03	0.01
N <sub>2</sub> O <sup>d</sup> (Natural Gas Firing)	0.0001	2.2E-04	9.8E-04

**Hazardous Air Pollutant (HAP) Potential Emissions:**

Pollutant	Emission Factor (lb/MMscf) <sup>a</sup>	Potential Emissions	
		(lb/hr) <sup>b</sup>	(tons/yr) <sup>c</sup>
<b>HAPs:</b>			
3-Methylchloranthrene	1.80E-06	2.76E-08	1.21E-07
7,12-Dimethylbenz(a)anthracene	1.60E-05	2.46E-07	1.08E-06
Acenaphthene	1.80E-06	2.76E-08	1.21E-07
Acenaphthylene	1.80E-06	2.76E-08	1.21E-07
Anthracene	2.40E-06	3.69E-08	1.61E-07
Benz(a)anthracene	1.80E-06	2.76E-08	1.21E-07
Benzene	2.10E-03	3.23E-05	1.41E-04
Benzo(a)pyrene	1.20E-06	1.84E-08	8.07E-08
Benzo(b)fluoranthene	1.80E-06	2.76E-08	1.21E-07
Benzo(g,h,i)perylene	1.20E-06	1.84E-08	8.07E-08
Benzo(k)fluoranthene	1.80E-06	2.76E-08	1.21E-07
Chrysene	1.80E-06	2.76E-08	1.21E-07
Dibenzo(a,h)anthracene	1.20E-06	1.84E-08	8.07E-08
Dichlorobenzene	1.20E-03	1.84E-05	8.07E-05
Fluoranthene	3.00E-06	4.61E-08	2.02E-07
Fluorene	2.80E-06	4.30E-08	1.88E-07
Formaldehyde	7.50E-02	1.15E-03	5.05E-03
Hexane	1.80E+00	2.76E-02	1.21E-01
Indo(1,2,3-cd)pyrene	1.80E-06	2.76E-08	1.21E-07
Phenanthrene	1.70E-05	2.61E-07	1.14E-06
Pyrene	5.00E-06	7.68E-08	3.36E-07
Toluene	3.40E-03	5.22E-05	2.29E-04
Arsenic	2.00E-04	3.07E-06	1.35E-05
Beryllium	1.20E-05	1.84E-07	8.07E-07
Cadmium	1.10E-03	1.69E-05	7.40E-05
Chromium	1.40E-03	2.15E-05	9.42E-05
Cobalt	8.40E-05	1.29E-06	5.65E-06
Lead	5.00E-04	7.68E-06	3.36E-05
Manganese	3.80E-04	5.84E-06	2.56E-05
Mercury	2.60E-04	3.99E-06	1.75E-05
Nickel	2.10E-03	3.23E-05	1.41E-04
Selenium	2.40E-05	3.69E-07	1.61E-06
<b>Polycyclic Organic Matter:</b>			
Methylnaphthalene (2-)	2.40E-05	3.69E-07	1.61E-06
Naphthalene	6.10E-04	9.37E-06	4.10E-05
<b>Total HAP</b>		<b>2.90E-02</b>	<b>1.27E-01</b>

<sup>a</sup> Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3

<sup>b</sup> Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) \* Emission Factor (lb/MMscf).

<sup>c</sup> Annual Emissions (tons/yr)<sub>Potential</sub> = (lb/hr)<sub>Emissions</sub> \* (Maximum Allowable Operating Hours, 8760 hr/yr) \* (1 ton/2000 lb).

<sup>d</sup> GHG Emission factors from Tables C-1 and C-2, 40 CFR 98, Subpart C.

Company Name: Equitrans, LP  
 Facility Name: Burnsville Compressor Station  
 Project Description: Title V Renewal Application

**TEG Dehydrator Pilot Emission Calculations**

Source Designation:	
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,113
Heat Input (MMBtu/hr)	0.05
Fuel Consumption (mmscf/hr):	4.49E-05
Fuel Consumption (scf/hr):	45
Fuel Consumption (mmscf/yr):	0.39
Potential Annual Hours of Operation (hr/yr):	8,760

From design analysis

**Criteria and Manufacturer Specific Pollutant Emission Rates:**

Pollutant	Emission Factor (lb/MMscf) <sup>a</sup>	Potential Emissions	
		(lb/hr) <sup>b</sup>	(tons/yr) <sup>c</sup>
NO <sub>x</sub>	100	4.5E-03	2.0E-02
CO	84	3.8E-03	1.7E-02
SO <sub>2</sub>	0.6	2.7E-05	1.2E-04
PM Total	7.6	3.4E-04	1.5E-03
PM Condensable	5.7	2.6E-04	1.1E-03
PM <sub>10</sub> (Filterable)	1.9	8.5E-05	3.7E-04
PM <sub>2.5</sub> (Filterable)	1.9	8.5E-05	3.7E-04
VOC	5.5	2.5E-04	1.1E-03
CO <sub>2</sub> <sup>d</sup> (Natural Gas Firing)	53.06	5.85	25.62
CH <sub>4</sub> <sup>d</sup> (Natural Gas Firing)	0.001	1.1E-04	4.8E-04
N <sub>2</sub> O <sup>d</sup> (Natural Gas Firing)	0.0001	1.1E-05	4.8E-05

**Hazardous Air Pollutant (HAP) Potential Emissions:**

Pollutant	Emission Factor (lb/MMscf) <sup>a</sup>	Potential Emissions	
		(lb/hr) <sup>b</sup>	(tons/yr) <sup>c</sup>
<b>HAPs:</b>			
3-Methylchloranthrene	1.80E-06	8.09E-11	3.54E-10
7,12-Dimethylbenz(a)anthracene	1.60E-05	7.19E-10	3.15E-09
Acenaphthene	1.80E-06	8.09E-11	3.54E-10
Acenaphthylene	1.80E-06	8.09E-11	3.54E-10
Anthracene	2.40E-06	1.08E-10	4.72E-10
Benz(a)anthracene	1.80E-06	8.09E-11	3.54E-10
Benzene	2.10E-03	9.43E-08	4.13E-07
Benzo(a)pyrene	1.20E-06	5.39E-11	2.36E-10
Benzo(b)fluoranthene	1.80E-06	8.09E-11	3.54E-10
Benzo(g,h,i)perylene	1.20E-06	5.39E-11	2.36E-10
Benzo(k)fluoranthene	1.80E-06	8.09E-11	3.54E-10
Chrysene	1.80E-06	8.09E-11	3.54E-10
Dibenzo(a,h)anthracene	1.20E-06	5.39E-11	2.36E-10
Dichlorobenzene	1.20E-03	5.39E-08	2.36E-07
Fluoranthene	3.00E-06	1.35E-10	5.90E-10
Fluorene	2.80E-06	1.26E-10	5.51E-10
Formaldehyde	7.50E-02	3.37E-06	1.48E-05
Hexane	1.80E+00	8.09E-05	3.54E-04
Indo(1,2,3-cd)pyrene	1.80E-06	8.09E-11	3.54E-10
Phenanthrene	1.70E-05	7.64E-10	3.35E-09
Pyrene	5.00E-06	2.25E-10	9.84E-10
Toluene	3.40E-03	1.53E-07	6.69E-07
Arsenic	2.00E-04	8.99E-09	3.94E-08
Beryllium	1.20E-05	5.39E-10	2.36E-09
Cadmium	1.10E-03	4.94E-08	2.16E-07
Chromium	1.40E-03	6.29E-08	2.75E-07
Cobalt	8.40E-05	3.77E-09	1.65E-08
Lead	5.00E-04	2.25E-08	9.84E-08
Manganese	3.80E-04	1.71E-08	7.48E-08
Mercury	2.60E-04	1.17E-08	5.12E-08
Nickel	2.10E-03	9.43E-08	4.13E-07
Selenium	2.40E-05	1.08E-09	4.72E-09
<b>Polycyclic Organic Matter:</b>			
Methylnaphthalene (2-)	2.40E-05	1.08E-09	4.72E-09
Naphthalene	6.10E-04	2.74E-08	1.20E-07
<b>Total HAP</b>		<b>8.48E-05</b>	<b>3.72E-04</b>

<sup>a</sup> Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3

<sup>b</sup> Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) \* Emission Factor (lb/MMscf).

<sup>c</sup> Annual Emissions (tons/yr)<sub>Potential</sub> = (lb/hr)<sub>Emissions</sub> \* (Maximum Allowable Operating Hours, 8760 hr/yr) \* (1 ton/2000 lb).

<sup>d</sup> GHG Emission factors from Tables C-1 and C-2, 40 CFR 98, Subpart C and are in lb/MMBtu.

Company Name: Equitrans, LP  
 Facility Name: Burnsville Compressor Station  
 Project Description: Title V Renewal Application

**TEG Dehydrator Reboiler Emission Calculations**

<b>Source Designation:</b>	
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,113
Heat Input (MMBtu/hr)	1.06
Fuel Consumption (mmscf/hr):	9.52E-04
Fuel Consumption (scf/hr):	952
Fuel Consumption (mmscf/yr):	8.34
Potential Annual Hours of Operation (hr/yr):	8,760

**Criteria and Manufacturer Specific Pollutant Emission Rates:**

Pollutant	Emission Factor (lb/MMscf) <sup>a</sup>	Potential Emissions	
		(lb/hr) <sup>b</sup>	(tons/yr) <sup>c</sup>
NO <sub>x</sub>	100	0.10	0.42
CO	84	0.08	0.35
SO <sub>2</sub>	0.6	5.7E-04	2.5E-03
PM Total	7.6	0.01	0.03
PM Condensable	5.7	0.01	0.02
PM <sub>10</sub> (Filterable)	1.9	1.8E-03	0.01
PM <sub>2.5</sub> (Filterable)	1.9	1.8E-03	0.01
VOC	5.5	0.01	0.02
CO <sub>2</sub> <sup>d</sup> (Natural Gas Firing)	53.06	123.96	542.95
CH <sub>4</sub> <sup>d</sup> (Natural Gas Firing)	0.001	2.3E-03	0.01
N <sub>2</sub> O <sup>d</sup> (Natural Gas Firing)	0.0001	2.3E-04	1.0E-03

**Hazardous Air Pollutant (HAP) Potential Emissions:**

Pollutant	Emission Factor (lb/MMscf) <sup>a</sup>	Potential Emissions	
		(lb/hr) <sup>b</sup>	(tons/yr) <sup>c</sup>
<b>HAPs:</b>			
3-Methylchloranthrene	1.80E-06	1.71E-09	7.51E-09
7,12-Dimethylbenz(a)anthracene	1.60E-05	1.52E-08	6.67E-08
Acenaphthene	1.80E-06	1.71E-09	7.51E-09
Acenaphthylene	1.80E-06	1.71E-09	7.51E-09
Anthracene	2.40E-06	2.29E-09	1.00E-08
Benz(a)anthracene	1.80E-06	1.71E-09	7.51E-09
Benzene	2.10E-03	2.00E-06	8.76E-06
Benzo(a)pyrene	1.20E-06	1.14E-09	5.01E-09
Benzo(b)fluoranthene	1.80E-06	1.71E-09	7.51E-09
Benzo(g,h,i)perylene	1.20E-06	1.14E-09	5.01E-09
Benzo(k)fluoranthene	1.80E-06	1.71E-09	7.51E-09
Chrysene	1.80E-06	1.71E-09	7.51E-09
Dibenzo(a,h)anthracene	1.20E-06	1.14E-09	5.01E-09
Dichlorobenzene	1.20E-03	1.14E-06	5.01E-06
Fluoranthene	3.00E-06	2.86E-09	1.25E-08
Fluorene	2.80E-06	2.67E-09	1.17E-08
Formaldehyde	7.50E-02	7.14E-05	3.13E-04
Hexane	1.80E+00	1.71E-03	7.51E-03
Indo(1,2,3-cd)pyrene	1.80E-06	1.71E-09	7.51E-09
Phenanthrene	1.70E-05	1.62E-08	7.09E-08
Pyrene	5.00E-06	4.76E-09	2.09E-08
Toluene	3.40E-03	3.24E-06	1.42E-05
Arsenic	2.00E-04	1.90E-07	8.34E-07
Beryllium	1.20E-05	1.14E-08	5.01E-08
Cadmium	1.10E-03	1.05E-06	4.59E-06
Chromium	1.40E-03	1.33E-06	5.84E-06
Cobalt	8.40E-05	8.00E-08	3.50E-07
Lead	5.00E-04	4.76E-07	2.09E-06
Manganese	3.80E-04	3.62E-07	1.59E-06
Mercury	2.60E-04	2.48E-07	1.08E-06
Nickel	2.10E-03	2.00E-06	8.76E-06
Selenium	2.40E-05	2.29E-08	1.00E-07
<b>Polycyclic Organic Matter:</b>			
Methylnaphthalene (2-)	2.40E-05	2.29E-08	1.00E-07
Naphthalene	6.10E-04	5.81E-07	2.54E-06
<b>Total HAP</b>		<b>1.80E-03</b>	<b>7.88E-03</b>

<sup>a</sup> Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3

<sup>b</sup> Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf).

<sup>c</sup> Annual Emissions (tons/yr)<sub>potential</sub> = (lb/hr)<sub>Emission</sub> × (Maximum Allowable Operating Hours, 8760 hr/yr) ÷ (1 ton/2000 lb)

<sup>d</sup> GHG Emission factors from Tables C-1 and C-2, 40 CFR 98, Subpart C.

**Company Name:** Equitrans, LP  
**Facility Name:** Burnsville Compressor Station  
**Project Description:** Title V Renewal Application

**Heating Boiler Emission Calculations**

<b>Source Designation:</b>	
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,113
Heat Input (MMBtu/hr)	1.26
Fuel Consumption (mmscf/hr):	1.13E-03
Fuel Consumption (scf/hr):	1.132
Fuel Consumption (mmscf/yr):	9.92
Potential Annual Hours of Operation (hr/yr):	8,760

**Criteria and Manufacturer Specific Pollutant Emission Rates:**

Pollutant	Emission Factor (lb/MMscf) <sup>a</sup>	Potential Emissions	
		(lb/hr) <sup>b</sup>	(tons/yr) <sup>c</sup>
NO <sub>x</sub>	100	0.11	0.50
CO	84	0.10	0.42
SO <sub>2</sub>	0.6	6.8E-04	3.0E-03
PM Total	7.6	0.01	0.04
PM Condensable	5.7	0.01	0.03
PM <sub>10</sub> (Filterable)	1.9	2.2E-03	0.01
PM <sub>2.5</sub> (Filterable)	1.9	2.2E-03	0.01
VOC	5.5	0.01	0.03
CO <sub>2</sub> <sup>d</sup> (Natural Gas Firing)	53.06	147.39	645.57
CH <sub>4</sub> <sup>d</sup> (Natural Gas Firing)	0.001	2.8E-03	0.01
N <sub>2</sub> O <sup>d</sup> (Natural Gas Firing)	0.0001	2.8E-04	1.2E-03

**Hazardous Air Pollutant (HAP) Potential Emissions:**

Pollutant	Emission Factor (lb/MMscf) <sup>a</sup>	Potential Emissions	
		(lb/hr) <sup>b</sup>	(tons/yr) <sup>c</sup>
<b>HAPs:</b>			
3-Methylchloranthrene	1.80E-06	2.04E-09	8.93E-09
7,12-Dimethylbenz(a)anthracene	1.60E-05	1.81E-08	7.93E-08
Acenaphthene	1.80E-06	2.04E-09	8.93E-09
Acenaphthylene	1.80E-06	2.04E-09	8.93E-09
Anthracene	2.40E-06	2.72E-09	1.19E-08
Benz(a)anthracene	1.80E-06	2.04E-09	8.93E-09
Benzene	2.10E-03	2.38E-06	1.04E-05
Benzo(a)pyrene	1.20E-06	1.36E-09	5.95E-09
Benzo(b)fluoranthene	1.80E-06	2.04E-09	8.93E-09
Benzo(g,h,i)perylene	1.20E-06	1.36E-09	5.95E-09
Benzo(k)fluoranthene	1.80E-06	2.04E-09	8.93E-09
Chrysene	1.80E-06	2.04E-09	8.93E-09
Dibenzo(a,h) anthracene	1.20E-06	1.36E-09	5.95E-09
Dichlorobenzene	1.20E-03	1.36E-06	5.95E-06
Fluoranthene	3.00E-06	3.40E-09	1.49E-08
Fluorene	2.80E-06	3.17E-09	1.39E-08
Formaldehyde	7.50E-02	8.49E-05	3.72E-04
Hexane	1.80E+00	2.04E-03	8.93E-03
Indo(1,2,3-cd)pyrene	1.80E-06	2.04E-09	8.93E-09
Phenanthrene	1.70E-05	1.92E-08	8.43E-08
Pyrene	5.00E-06	5.66E-09	2.48E-08
Toluene	3.40E-03	3.85E-06	1.69E-05
Arsenic	2.00E-04	2.26E-07	9.92E-07
Beryllium	1.20E-05	1.36E-08	5.95E-08
Cadmium	1.10E-03	1.25E-06	5.45E-06
Chromium	1.40E-03	1.59E-06	6.94E-06
Cobalt	8.40E-05	9.51E-08	4.17E-07
Lead	5.00E-04	5.66E-07	2.48E-06
Manganese	3.80E-04	4.30E-07	1.88E-06
Mercury	2.60E-04	2.94E-07	1.29E-06
Nickel	2.10E-03	2.38E-06	1.04E-05
Selenium	2.40E-05	2.72E-08	1.19E-07
<b>Polycyclic Organic Matter:</b>			
Methylnaphthalene (2-)	2.40E-05	2.72E-08	1.19E-07
Naphthalene	6.10E-04	6.91E-07	3.02E-06
<b>Total HAP</b>		<b>2.14E-03</b>	<b>9.36E-03</b>

<sup>a</sup> Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3

<sup>b</sup> Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf).

<sup>c</sup> Annual Emissions (tons/yr)<sub>Potential</sub> = (lb/hr)<sub>Emissions</sub> × (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

<sup>d</sup> GHG Emission factors from Tables C-1 and C-2, 40 CFR 98, Subpart C.

Company Name: Equitrans, LP  
 Facility Name: Burnsville Compressor Station  
 Project Description: Title V Renewal Application

**Fugitive Emissions Calculations**

**Fugitive Component Information:**

Component Type	Estimated Component Count	Gas Leak Emission Factor		Average Gas Leak Rate (lb/hr)	Max Gas Leak Rate (tpy)	Potential VOC Emissions (tpy)	Potential HAP Emissions (tpy)
		(lb/hr/component)	Factor Source				
Connectors	700	0.0004	EPA Protocol, Table 2-4	0.31	1.62	0.33	0.03
Flanges	500	0.001	EPA Protocol, Table 2-4	0.43	2.26	0.45	0.05
Open-Ended Lines	8	0.004	EPA Protocol, Table 2-4	0.04	0.19	0.04	0.00
Pump Seals	0	0.005	EPA Protocol, Table 2-4	<0.01	<0.01	<0.01	<0.01
Valves	100	0.010	EPA Protocol, Table 2-4	0.99	5.21	1.05	1.1E-01
Other	75	0.019	EPA Protocol, Table 2-4	1.46	7.65	1.54	0.15
<b>Total</b>				<b>3.22</b>	<b>16.93</b>	<b>3.40</b>	<b>0.34</b>

**Notes:**

- The component type "Other" includes any equipment type other than connectors, flanges, open-ended lines, pumps and valves that have fugitive emissions.
- The component count is based on engineering estimates for the design of a Logansport Station.
- Table 2-4 - Oil & Gas Production Operations Average Emission Factors, Protocol for Equipment Leak Emission Estimates, EPA 453/R-95-017, November 1995. Emission factors based on average measured TOC from component types indicated in gas service at O&G Production Operations
- Assumes maximum leak rate 20% greater than measured average leak rate.

**GHG Fugitive Emissions from Component Leaks:**

Component Type	Estimated Component Count	GHG Emission Factor		CH <sub>4</sub> Emissions (tpy)	CO <sub>2</sub> Emissions (tpy)	CO <sub>2</sub> e Emissions (tpy)
		(scf/hr/component)	Factor Source			
Connectors	700	0.004	40 CFR 98, Table W-1A	0.42	1.1E-03	10.55
Flanges	500	0.004	40 CFR 98, Table W-1A	0.30	8.2E-04	7.53
Open-Ended Lines	8	0.061	40 CFR 98, Table W-1A	0.07	2.0E-04	1.84
Pump Seals	0	13.3	40 CFR 98, Table W-1A	<0.01	<0.01	<0.01
Valves	100	0.03	40 CFR 98, Table W-1A	0.41	1.1E-03	10.17
Other	75	0.04	40 CFR 98, Table W-1A	0.45	1.2E-03	11.30
<b>Total</b>				<b>1.66</b>	<b>0.00</b>	<b>41.39</b>

**Notes:**

- The component count is based on engineering estimates for the design of a Burnsville Station
- Table W-1 of Subpart W - Default Whole Gas Emission Factors for Onshore Production, 40 CFR 98, Subpart W, Pre-publication version, November 8, 2010
- Calculated in accordance with Equations W-31, W-35 and W-36 in Subpart W of 40 CFR 98
- GHG (CO<sub>2</sub>e) is carbon dioxide equivalent, which is the summation of CO<sub>2</sub> (GWP = 1) + CH<sub>4</sub> (GWP = 25) + N<sub>2</sub>O (GWP = 298)

Company Name: Equitrans, LP  
 Facility Name: Burnsville Compressor Station  
 Project Description: Title V Renewal Application

**Fugitive Emissions Calculations**

**VOC and HAP Vented Blowdown Emissions**

Blowdown Emissions Sources	Number of Units	Vented Gas Volume Per Blowdown Event (scf)	Number of Blowdown Events per year	Total Volume NG Emitted (scf/yr)	Potential VOC Emissions (tpy)	Potential HAP Emissions (tpy)
Station ESD Vent	1	300,000	1	300,000	1.51	0.15
Filter Vessels	1	4,510	1	4,510	0.02	0.00
Dehy Contactor	1	45,000	1	45,000	0.23	0.02
Compressors	3	7,000	12	252,000	1.27	0.13
<b>Total</b>					<b>3.02</b>	<b>0.305</b>

Notes:  
 1 Density of natural gas: 0.05 lb/ft<sup>3</sup> @ STP (www.engineeringtoolbox.com)

**GHG Vented Blowdown Emissions**

Blowdown Emissions Sources	Number of Units	Vented Gas Volume Per Blowdown Event (scf)	Number of Blowdown Events per year	Total Volume NG Emitted (scf/yr)	Potential CH <sub>4</sub> Emissions <sup>1</sup> (tpy)	Potential CO <sub>2</sub> Emissions <sup>1</sup> (tpy)	Potential CO <sub>2e</sub> Emissions (tpy)
Station ESD Vent	1	300,000	1	300,000	5.16	0.01	129
Filter Vessels	1	4,510	1	4,510	0.08	0.00	2
Dehy Contactor	1	45,000	1	45,000	0.77	0.00	19
Compressors	3	7,000	12	252,000	4.33	0.01	108
<b>Total</b>					<b>10.34</b>	<b>0.03</b>	<b>259</b>

1. Calculated in accordance with Equations W-35, and W-36 in Subpart W of 40 CFR 98.

**Rod Packing Emissions**

Number of Compressors	Number of Rods Per Compressor	Leak Rate (scf/hr/rod)	Total Volume NG Emitted (scf/yr)	Potential VOC Emissions (tpy)	Potential HAP Emissions (tpy)	Potential CO <sub>2</sub> Emissions (tpy)	Potential CH <sub>4</sub> Emissions (tpy)	Potential CO <sub>2e</sub> Emissions (tpy)
2	4	11.5	805,920	4.05	0.41	0.04	13.93	348.35
<b>Total</b>				<b>4.05</b>	<b>0.41</b>	<b>0.04</b>	<b>13.93</b>	<b>348.35</b>

Notes:  
 1. Assumes a density of natural gas of 0.05 lb/scf  
 2. Leak rate from https://www3.epa.gov/gasstar/documents/rl\_rodpack.pdf

**Fugitive Component Emissions Data:**

Pollutant	Atmospheric Emissions		Emissions Estimation Method
	lbs/hr	tpy	
VOC	2.39	10.48	EPA Protocol, Table 2-4 & Site-Specific Gas Analysis
HAP's	0.24	1.06	EPA Protocol, Table 2-4 and Site-Specific Gas Analysis
GHG (CO <sub>2e</sub> )	148	648	40 CFR 98, Table W-1A and Site-Specific Gas Analysis

**Company Name:** Equitrans, LP  
**Facility Name:** Burnsville Compressor Station  
**Project Description:** Title V Renewal Application

**Site-Specific Gas Analysis**

**Sample Location:** Burnsville Gas Analysis  
**Sample Date:** 4/10/2015  
**HHV (Btu/scf):** 1,113

Constituent	Natural Gas Stream Speciation (Vol. %)	Molecular Weight	Molar Weight	Average Weight Fraction	Natural Gas Stream Speciation (Wt. %)
Carbon Dioxide	0.0808%	44.01	3.56E-02	0.00	0.17%
Nitrogen	0.7014%	28.01	1.96E-01	0.01	0.949%
Methane	81.2621%	16.04	1.30E+01	0.63	62.932%
Ethane	10.9088%	30.07	3.28E+00	0.16	15.838%
Propane	3.9301%	44.10	1.73E+00	0.08	8.368%
Isobutane	0.5847%	58.12	3.40E-01	0.02	1.641%
n-Butane	1.0875%	58.12	6.32E-01	0.03	3.052%
Isopentane	0.3780%	72.15	2.73E-01	0.01	1.317%
n-Pentane	0.3271%	72.15	2.36E-01	0.01	1.139%
Cyclopentane	0.0071%	70.18	4.98E-03	0.00	0.024%
n-Hexane	0.1688%	86.18	1.45E-01	0.01	0.702%
Cyclohexane	0.0279%	84.16	2.35E-02	0.00	0.113%
Other Hexanes	0.2312%	86.18	1.99E-01	0.01	0.962%
Heptanes	0.1484%	100.21	1.49E-01	0.01	0.718%
Methylcyclohexane	0.0523%	98.19	5.14E-02	0.00	0.248%
2,2,4-Trimethylpentane	0.2260%	114.23	2.58E-01	0.01	1.246%
Benzene	0.0041%	78.11	3.23E-03	0.00	0.016%
Toluene	0.0068%	92.14	6.28E-03	0.00	0.030%
Ethylbenzene	0.0000%	106.17	0.00E+00	0.00	0.000%
Xylenes	0.0060%	106.16	6.36E-03	0.00	0.031%
C8 + Heavies	0.0911%	114.23	1.04E-01	0.01	0.502%
Totals			20.71	1.00	100%

TOC (Total)	99.45%		98.88%
VOC (Total)	7.28%		20.11%
HAP (Total)	0.41%		2.03%

## GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: R13-3252

File Name: C:\Program Files\GRI-GLYCalc4\R13-3252\_Burnsville\_EQT.ddf

Date: May 27, 2016

*stripping gas  
as flash gas*

## DESCRIPTION:

Description:

Annual Hours of Operation: 8760.0 hours/yr

## EMISSIONS REPORTS:

## CONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Hydrogen Sulfide	<0.0001	<0.001	<0.0001
Methane	0.0432	1.036	0.1892
Ethane	0.0561	1.347	0.2458
Propane	0.0673	1.615	0.2946
Isobutane	0.0224	0.538	0.0982
n-Butane	0.0617	1.480	0.2701
Isopentane	0.0325	0.779	0.1422
n-Pentane	0.0414	0.995	0.1815
Cyclopentane	0.0001	0.001	0.0002
n-Hexane	0.0581	1.394	0.2545
Cyclohexane	0.0324	0.778	0.1419
Heptanes	0.1516	3.638	0.6639
Methylcyclohexane	0.1079	2.591	0.4728
2,2,4-Trimethylpentane	0.0004	0.010	0.0019
Benzene	0.0410	0.985	0.1798
Toluene	0.0003	0.007	0.0013
Ethylbenzene	0.0006	0.014	0.0026
Xylenes	0.4504	10.810	1.9728
C8+ Heavies	1.2959	31.102	5.6761
Total Emissions	2.4634	59.121	10.7895
Total Hydrocarbon Emissions	2.4633	59.120	10.7895
Total VOC Emissions	2.3640	56.737	10.3545
Total HAP Emissions	0.5509	13.221	2.4129
Total BTEX Emissions	0.4923	11.816	2.1565

## UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Hydrogen Sulfide	0.0005	0.012	0.0022
Methane	2.1594	51.825	9.4580
Ethane	2.8055	67.333	12.2883
Propane	3.3636	80.725	14.7324
Isobutane	1.1215	26.915	4.9120
n-Butane	3.0835	74.004	13.5058
Isopentane	1.6231	38.955	7.1093
n-Pentane	2.0723	49.735	9.0766
Cyclopentane	0.0027	0.064	0.0118
n-Hexane	2.9049	69.717	12.7233
Cyclohexane	1.6202	38.884	7.0964
Heptanes	7.5786	181.888	33.1945
Methylcyclohexane	5.3971	129.531	23.6393
2,2,4-Trimethylpentane	0.0216	0.519	0.0948
Benzene	2.0524	49.257	8.9895
Toluene	0.0150	0.360	0.0657
Ethylbenzene	0.0294	0.705	0.1286
Xylenes	22.5207	540.497	98.6408
C8+ Heavies	64.7958	1555.100	283.8058
Total Emissions	123.1678	2956.027	539.4750
Total Hydrocarbon Emissions	123.1673	2956.015	539.4728
Total VOC Emissions	118.2024	2836.857	517.7265
Total HAP Emissions	27.5440	661.055	120.6426
Total BTEX Emissions	24.6175	590.819	107.8245

## FLASH TANK OFF GAS

Component	lbs/hr	lbs/day	tons/yr
Hydrogen Sulfide	<0.0001	0.001	0.0002
Methane	1.6541	39.699	7.2450
Ethane	1.5139	36.334	6.6310
Propane	1.3122	31.492	5.7473
Isobutane	0.3755	9.012	1.6446
n-Butane	0.9045	21.708	3.9617
Isopentane	0.4722	11.333	2.0683
n-Pentane	0.5351	12.841	2.3435
Cyclopentane	0.0002	0.005	0.0010
n-Hexane	0.5469	13.126	2.3955
Cyclohexane	0.0904	2.170	0.3960
Heptanes	0.9148	21.956	4.0069
Methylcyclohexane	0.2716	6.519	1.1897

2,2,4-Trimethylpentane	0.0043	0.103	0.0188
Benzene	0.0243	0.583	0.1064
Toluene	0.0001	0.003	0.0006
Ethylbenzene	0.0002	0.004	0.0008
Xylenes	0.1050	2.520	0.4599
C8+ Heavies	23.0343	552.823	100.8901
-----			
Total Emissions	31.7596	762.231	139.1072
-----			
Total Hydrocarbon Emissions	31.7596	762.230	139.1070
Total VOC Emissions	28.5916	686.197	125.2310
Total HAP Emissions	0.6808	16.339	2.9819
Total BTEX Emissions	0.1296	3.110	0.5677

## EQUIPMENT REPORTS:

## COMBUSTION DEVICE

Ambient Temperature: 68.00 deg. F  
 Excess Oxygen: 120.00 %  
 Combustion Efficiency: 98.00 %  
 Supplemental Fuel Requirement: 1.02e+000 MM BTU/hr

Component	Emitted	Destroyed
Hydrogen Sulfide	2.00%	98.00%
Methane	2.00%	98.00%
Ethane	2.00%	98.00%
Propane	2.00%	98.00%
Isobutane	2.00%	98.00%
n-Butane	2.00%	98.00%
Isopentane	2.00%	98.00%
n-Pentane	2.00%	98.00%
Cyclopentane	2.00%	98.00%
n-Hexane	2.00%	98.00%
Cyclohexane	2.00%	98.00%
Heptanes	2.00%	98.00%
Methylcyclohexane	2.00%	98.00%
2,2,4-Trimethylpentane	2.00%	98.00%
Benzene	2.00%	98.00%
Toluene	2.00%	98.00%
Ethylbenzene	2.00%	98.00%
Xylenes	2.00%	98.00%
C8+ Heavies	2.00%	98.00%

ABSORBER

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Specified Absorber Stages: 3.50  
 Calculated Dry Gas Dew Point: 3.44 lbs. H<sub>2</sub>O/MMSCF  
     Temperature: 57.0 deg. F  
     Pressure: 82.0 psig  
     Dry Gas Flow Rate: 34.0000 MMSCF/day  
 Glycol Losses with Dry Gas: 0.0219 lb/hr  
     Wet Gas Water Content: Subsaturated  
 Specified Wet Gas Water Content: 71.00 lbs. H<sub>2</sub>O/MMSCF  
 Calculated Lean Glycol Recirc. Ratio: 7.57 gal/lb H<sub>2</sub>O

Component	Remaining in Dry Gas	Absorbed in Glycol
Water	4.84%	95.16%
Carbon Dioxide	99.91%	0.09%
Hydrogen Sulfide	99.21%	0.79%
Nitrogen	100.00%	0.00%
Methane	100.00%	0.00%
Ethane	99.98%	0.02%
Propane	99.95%	0.05%
Isobutane	99.90%	0.10%
n-Butane	99.86%	0.14%
Isopentane	99.82%	0.18%
n-Pentane	99.75%	0.25%
Cyclopentane	98.98%	1.02%
n-Hexane	99.45%	0.55%
Cyclohexane	97.67%	2.33%
Heptanes	98.59%	1.41%
Methylcyclohexane	96.52%	3.48%
2,2,4-Trimethylpentane	99.37%	0.63%
Benzene	76.65%	23.35%
Toluene	56.61%	43.39%
Ethylbenzene	26.29%	73.71%
Xylenes	14.33%	85.67%
C8+ Heavies	93.67%	6.33%

FLASH TANK

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Flash Control: Used as stripping gas  
 Flash Temperature: 200.0 deg. F  
 Flash Pressure: 49.0 psig

Component	Left in Glycol	Removed in Flash Gas
Water	99.96%	0.04%
Carbon Dioxide	68.32%	31.68%
Hydrogen Sulfide	91.26%	8.74%
Nitrogen	23.09%	76.91%
Methane	23.40%	76.60%
Ethane	46.04%	53.96%
Propane	60.99%	39.01%
Isobutane	66.52%	33.48%
n-Butane	70.67%	29.33%
Isopentane	71.05%	28.95%
n-Pentane	74.31%	25.69%
Cyclopentane	91.93%	8.07%
n-Hexane	81.27%	18.73%
Cyclohexane	94.60%	5.40%
Heptanes	87.99%	12.01%
Methylcyclohexane	95.17%	4.83%
2,2,4-Trimethylpentane	80.50%	19.50%
Benzene	98.88%	1.12%
Toluene	99.15%	0.85%
Ethylbenzene	99.44%	0.56%
Xylenes	99.59%	0.41%
C8+ Heavies	68.72%	31.28%

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REGENERATOR

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Regenerator Stripping Gas:  
Flash Tank Off Gas  
Stripping Gas Flow Rate: 2.4158 scfm

Component	Remaining in Glycol	Distilled Overhead
Water	51.55%	48.45%
Carbon Dioxide	0.00%	100.00%
Hydrogen Sulfide	0.00%	100.00%
Nitrogen	0.00%	100.00%
Methane	0.00%	100.00%
Ethane	0.00%	100.00%
Propane	0.00%	100.00%
Isobutane	0.00%	100.00%
n-Butane	0.00%	100.00%
Isopentane	0.70%	99.30%
n-Pentane	0.67%	99.33%

Cyclopentane	0.54%	99.46%
n-Hexane	0.62%	99.38%
Cyclohexane	3.38%	96.62%
Heptanes	0.57%	99.43%
Methylcyclohexane	4.20%	95.80%
2,2,4-Trimethylpentane	1.86%	98.14%
Benzene	5.06%	94.94%
Toluene	7.97%	92.03%
Ethylbenzene	10.46%	89.54%
Xylenes	12.95%	87.05%
C8+ Heavies	17.46%	82.54%

## STREAM REPORTS:

## WET GAS STREAM

Temperature: 57.00 deg. F  
 Pressure: 96.70 psia  
 Flow Rate: 1.42e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	1.50e-001	1.01e+002
Carbon Dioxide	1.15e-001	1.89e+002
Hydrogen Sulfide	5.01e-005	6.39e-002
Nitrogen	7.27e-001	7.62e+002
Methane	8.03e+001	4.82e+004
Ethane	1.20e+001	1.36e+004
Propane	3.93e+000	6.49e+003
Isobutane	5.41e-001	1.18e+003
n-Butane	1.04e+000	2.26e+003
Isopentane	3.32e-001	8.97e+002
n-Pentane	3.12e-001	8.42e+002
Cyclopentane	1.00e-004	2.63e-001
n-Hexane	1.64e-001	5.28e+002
Cyclohexane	2.21e-002	6.95e+001
Heptanes	1.43e-001	5.37e+002
Methylcyclohexane	4.22e-002	1.55e+002
2,2,4-Trimethylpentane	8.02e-004	3.43e+000
Benzene	3.01e-003	8.79e+000
Toluene	1.00e-005	3.46e-002
Ethylbenzene	1.00e-005	3.98e-002

Xylenes 6.62e-003 2.63e+001  
 C8+ Heavies 1.61e-001 1.02e+003

-----  
 Total Components 100.00 7.68e+004

DRY GAS STREAM

-----  
 Temperature: 57.00 deg. F  
 Pressure: 96.70 psia  
 Flow Rate: 1.42e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
-----	-----	-----
Water	7.25e-003	4.87e+000
Carbon Dioxide	1.15e-001	1.89e+002
Hydrogen Sulfide	4.98e-005	6.34e-002
Nitrogen	7.29e-001	7.62e+002
Methane	8.04e+001	4.82e+004
Ethane	1.21e+001	1.35e+004
Propane	3.94e+000	6.48e+003
Isobutane	5.41e-001	1.17e+003
n-Butane	1.04e+000	2.26e+003
Isopentane	3.32e-001	8.95e+002
n-Pentane	3.12e-001	8.40e+002
Cyclopentane	9.94e-005	2.60e-001
n-Hexane	1.63e-001	5.25e+002
Cyclohexane	2.16e-002	6.78e+001
Heptanes	1.41e-001	5.29e+002
Methylcyclohexane	4.08e-002	1.50e+002
2,2,4-Trimethylpentane	7.99e-004	3.41e+000
Benzene	2.31e-003	6.74e+000
Toluene	5.69e-006	1.96e-002
Ethylbenzene	2.64e-006	1.05e-002
Xylenes	9.50e-004	3.77e+000
C8+ Heavies	1.51e-001	9.58e+002
-----	-----	-----
Total Components	100.00	7.65e+004

LEAN GLYCOL STREAM

-----  
 Temperature: 57.00 deg. F  
 Flow Rate: 1.21e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
-----	-----	-----

TEG	9.83e+001	6.68e+003
Water	1.50e+000	1.02e+002
Carbon Dioxide	2.51e-013	1.70e-011
Hydrogen Sulfide	7.43e-016	5.05e-014
Nitrogen	4.91e-014	3.34e-012
Methane	1.07e-018	7.26e-017
Ethane	1.95e-008	1.32e-006
Propane	2.01e-009	1.37e-007
Isobutane	4.95e-010	3.36e-008
n-Butane	1.13e-009	7.65e-008
Isopentane	1.20e-004	8.16e-003
n-Pentane	1.53e-004	1.04e-002
Cyclopentane	1.99e-007	1.35e-005
n-Hexane	2.15e-004	1.46e-002
Cyclohexane	7.88e-004	5.36e-002
Heptanes	5.60e-004	3.81e-002
Methylcyclohexane	3.31e-003	2.25e-001
2,2,4-Trimethylpentane	4.85e-006	3.30e-004
Benzene	1.59e-003	1.08e-001
Toluene	1.89e-005	1.29e-003
Ethylbenzene	5.01e-005	3.41e-003
Xylenes	4.91e-002	3.34e+000
C8+ Heavies	1.30e-001	8.84e+000
-----		
Total Components	100.00	6.80e+003

## RICH GLYCOL STREAM

-----

Temperature: 57.00 deg. F  
 Pressure: 96.70 psia  
 Flow Rate: 1.25e+001 gpm  
 NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)
-----		
TEG	9.52e+001	6.68e+003
Water	2.82e+000	1.98e+002
Carbon Dioxide	2.43e-003	1.70e-001
Hydrogen Sulfide	7.20e-006	5.05e-004
Nitrogen	4.75e-004	3.34e-002
Methane	3.08e-002	2.16e+000
Ethane	4.00e-002	2.81e+000
Propane	4.79e-002	3.36e+000
Isobutane	1.60e-002	1.12e+000
n-Butane	4.39e-002	3.08e+000
Isopentane	2.32e-002	1.63e+000

n-Pentane	2.97e-002	2.08e+000
Cyclopentane	3.85e-005	2.70e-003
n-Hexane	4.16e-002	2.92e+000
Cyclohexane	2.38e-002	1.67e+000
Heptanes	1.09e-001	7.62e+000
Methylcyclohexane	8.01e-002	5.62e+000
2,2,4-Trimethylpentane	3.13e-004	2.20e-002
Benzene	3.08e-002	2.16e+000
Toluene	2.32e-004	1.63e-002
Ethylbenzene	4.67e-004	3.28e-002
Xylenes	3.68e-001	2.59e+001
C8+ Heavies	1.05e+000	7.36e+001
-----		
Total Components	100.00	7.02e+003

## FLASH TANK OFF GAS STREAM

-----

Temperature: 200.00 deg. F  
 Pressure: 63.70 psia  
 Flow Rate: 1.45e+002 scfh

Component	Conc. (vol%)	Loading (lb/hr)
-----		
Water	1.25e+000	8.58e-002
Carbon Dioxide	3.21e-001	5.40e-002
Hydrogen Sulfide	3.39e-004	4.42e-005
Nitrogen	2.40e-001	2.57e-002
Methane	2.70e+001	1.65e+000
Ethane	1.32e+001	1.51e+000
Propane	7.79e+000	1.31e+000
Isobutane	1.69e+000	3.75e-001
n-Butane	4.07e+000	9.05e-001
Isopentane	1.71e+000	4.72e-001
n-Pentane	1.94e+000	5.35e-001
Cyclopentane	8.14e-004	2.18e-004
n-Hexane	1.66e+000	5.47e-001
Cyclohexane	2.81e-001	9.04e-002
Heptanes	2.39e+000	9.15e-001
Methylcyclohexane	7.24e-001	2.72e-001
2,2,4-Trimethylpentane	9.82e-003	4.28e-003
Benzene	8.14e-002	2.43e-002
Toluene	3.92e-004	1.38e-004
Ethylbenzene	4.55e-004	1.85e-004
Xylenes	2.59e-001	1.05e-001
C8+ Heavies	3.54e+001	2.30e+001
-----		

Total Components 100.00 3.19e+001

## FLASH TANK GLYCOL STREAM

Temperature: 200.00 deg. F  
 Flow Rate: 1.25e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.57e+001	6.68e+003
Water	2.83e+000	1.98e+002
Carbon Dioxide	1.67e-003	1.16e-001
Hydrogen Sulfide	6.60e-006	4.61e-004
Nitrogen	1.10e-004	7.70e-003
Methane	7.23e-003	5.05e-001
Ethane	1.85e-002	1.29e+000
Propane	2.94e-002	2.05e+000
Isobutane	1.07e-002	7.46e-001
n-Butane	3.12e-002	2.18e+000
Isopentane	1.66e-002	1.16e+000
n-Pentane	2.22e-002	1.55e+000
Cyclopentane	3.55e-005	2.48e-003
n-Hexane	3.40e-002	2.37e+000
Cyclohexane	2.27e-002	1.58e+000
Heptanes	9.59e-002	6.70e+000
Methylcyclohexane	7.66e-002	5.35e+000
2,2,4-Trimethylpentane	2.53e-004	1.77e-002
Benzene	3.06e-002	2.14e+000
Toluene	2.31e-004	1.61e-002
Ethylbenzene	4.66e-004	3.26e-002
Xylenes	3.69e-001	2.58e+001
C8+ Heavies	7.24e-001	5.06e+001
Total Components	100.00	6.99e+003

## REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F  
 Pressure: 14.70 psia  
 Flow Rate: 2.49e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	8.12e+001	9.59e+001
Carbon Dioxide	5.90e-002	1.70e-001

Hydrogen Sulfide	2.26e-004	5.05e-004
Nitrogen	1.82e-002	3.34e-002
Methane	2.05e+000	2.16e+000
Ethane	1.42e+000	2.81e+000
Propane	1.16e+000	3.36e+000
Isobutane	2.94e-001	1.12e+000
n-Butane	8.09e-001	3.08e+000
Isopentane	3.43e-001	1.62e+000
n-Pentane	4.38e-001	2.07e+000
Cyclopentane	5.84e-004	2.69e-003
n-Hexane	5.14e-001	2.90e+000
Cyclohexane	2.93e-001	1.62e+000
Heptanes	1.15e+000	7.58e+000
Methylcyclohexane	8.38e-001	5.40e+000
2,2,4-Trimethylpentane	2.89e-003	2.16e-002
Benzene	4.01e-001	2.05e+000
Toluene	2.48e-003	1.50e-002
Ethylbenzene	4.21e-003	2.94e-002
Xylenes	3.23e+000	2.25e+001
C8+ Heavies	5.80e+000	6.48e+001
-----	-----	-----
Total Components	100.00	2.19e+002

## COMBUSTION DEVICE OFF GAS STREAM

-----

Temperature: 1000.00 deg. F  
Pressure: 14.70 psia  
Flow Rate: 9.34e+000 scfh

Component	Conc. (vol%)	Loading (lb/hr)
-----	-----	-----
Hydrogen Sulfide	1.20e-003	1.01e-005
Methane	1.09e+001	4.32e-002
Ethane	7.58e+000	5.61e-002
Propane	6.20e+000	6.73e-002
Isobutane	1.57e+000	2.24e-002
n-Butane	4.31e+000	6.17e-002
Isopentane	1.83e+000	3.25e-002
n-Pentane	2.33e+000	4.14e-002
Cyclopentane	3.11e-003	5.37e-005
n-Hexane	2.74e+000	5.81e-002
Cyclohexane	1.56e+000	3.24e-002
Heptanes	6.14e+000	1.52e-001
Methylcyclohexane	4.47e+000	1.08e-001
2,2,4-Trimethylpentane	1.54e-002	4.33e-004
Benzene	2.13e+000	4.10e-002

Toluene	1.32e-002	3.00e-004
Ethylbenzene	2.25e-002	5.87e-004
Xylenes	1.72e+001	4.50e-001
C8+ Heavies	3.09e+001	1.30e+000

-----  
Total Components      100.00 2.46e+000



**Corrosion Products Division - *MSES* consultants, inc.**

609 West Main Street ■ P. O. Drawer 190  
Clarksburg, West Virginia 26301  
304-624-9700 Main • 304-622-0981 Fax • E-mail mses@mscsinc.com

**FIELD COLLECTION REPORT  
GAS SAMPLE**

Company Name EQT Midstream  
Sample Name Cylinder # 062  
Sample Number Burnsville Sta AE1  
Sample Date 4-10-15  
Sample Time 10:55 AM  
Sampled By SCL, JDP

**SAMPLE COLLECTED FROM:**

- Well \_\_\_\_\_
- Pipeline \_\_\_\_\_
- Storage \_\_\_\_\_
- Fuel Gas \_\_\_\_\_
- Other Comp. Sta. Piping

**SAMPLE INFORMATION:**

Sample Description Air Emission Testing  
Sample Temperature 96° Sample Pressure 76 lbs  
Sample Odor Methane Purge Time 4-5 min.  
Sample Source Burnsville Comp. Sta

**GAS ANALYSIS PROGRAM REQUESTED:**

Company to Specify: Field Samples

H<sub>2</sub>S 2.2 ppm  
CO<sub>2</sub> n=5 0.1 vol %  
H<sub>2</sub>O >80 lbs mmol

Gas Tubes Exp. Date - 2016, 2017

Sampler Remarks \_\_\_\_\_

**LOCATION SKETCH**

Sample Location: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**WEATHER:**

Air Temperature 65°  
Conditions Rain

**CONTACT INFORMATION:**

Name: Joseph Paylay  
Address: 303 Sand Cut Road  
Clarksburg, WV 26301  
Telephone: 304-266-9175 Fax \_\_\_\_\_  
E-mail: JPaylay@EQT.com

APR 10 2015  
JTBW

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CORROSION PRODUCTS DIVISION

# Gas Corrosion Analysis

EQT

PO Drawer 190 - Clarksburg, WV 26302-0190  
Telephone: 304.624.9700 - Fax: 304.622.0981  
Website: www.msescinc.com/analysis

Analysis No: 1  
Analysis Date: 04/15/2015  
MSES Project No.: 15-049

SAMPLE COLLECTION INFORMATION			
Client:	EQT	Sample Date:	4/10/2015
Sample Location:	Burnsville Station	Sample Time:	10:55 AM
Sample Collection Source:	Comp Sta. Piping	Collected By:	SCL, JDP
MSES Sample Number:	N/A	Sample Pressure:	76
Date Received at Lab:	4/10/2015	Sample Temp. (°F):	96
Unique Identifier:	Burnsville Station AE1	Sample Container Type:	Cylinder
		MSES/CPD ID#	062
		Client ID #:	N/A
ANALYSIS REPORT			
COMPONENTS	UNITS	ANALYTICAL METHODS	RESULTS
H <sub>2</sub> S HYDROGEN SULFIDE	PPMV	ASDTM D5504-08	<0.1
O <sub>2</sub> OXYGEN	Mole %	GPA 2261-00	0.0112
CO <sub>2</sub> CARBON DIOXIDE	Mole %	GPA 2261-00	0.0808
ANALYTICAL METHODS AND VALUES			
<p>(1) Extended analysis and reporting performed following procedures outlined in GPA 2286-95: Tentative Method of Extended Analysis for Natural Gas and Similar Mixtures by Temperature Programmed Gas Chromatography</p> <p>(2) Physical properties and values used in calculations were acquired from GPA 2145-09: Table of Physical properties for Hydrocarbons and Other Compounds of Interest to the Natural Gas Industry</p> <p>(3) Sulfur Compounds Analysis and Reporting Performed by Gas Chromatography using a Sulfur Chemiluminescence Detector Following Procedures Outlined by ASTM Method D5504-08</p>			

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CORROSION PRODUCTS DIVISION

# Fractional Analysis

## EQT

PO Drawer 190 - Clarksburg, WV 26302-0190  
Telephone: 304.624.9700 - Fax: 304.622.0981  
Website: www.msesinc.com/analysis

Analysis No: 1  
Analysis Date: 04/15/2015  
MSES Project No.: 15-049

SAMPLE COLLECTION INFORMATION				
Client:	EQT	Sample Date:	4/10/2015	
Sample Location:	Burnsville Station	Sample Time:	10:55 AM	
Sample Collection Source:	Comp Sta. Piping	Collected By:	SCL, JDP	
MSES Sample Number:	N/A	Sample Pressure:	76	
Date Received at Lab:	4/10/2015	Sample Temp. (°F):	96	
Unique Identifier:	Burnsville Station AE1	Sample Container Type:	Cylinder	
		MSES/CPD ID#	062	
		Client ID #:	N/A	
ANALYSIS REPORT				
FRACTIONAL ANALYSIS			ANALYTICAL RESULTS AT BASE CONDITIONS (CALCULATED VALUES)	
COMPONENTS	MOLE PERCENT	GPM		
METHANE	81.2621	2.91	BTU/SCF (DRY):	1236.99
ETHANE	10.9088		BTU/SCF (SATURATED):	1215.91
PROPANE	3.9301		PRESSURE (PSIA):	14.696
I-BUTANE	0.5847		TEMPERATURE (°F)	60.00
N-BUTANE	1.0875		Z FACTOR (DRY):	0.9966
I-PENTANE	0.3780		Z FACTOR (SATURATED):	0.9962
N-PENTANE	0.3271		ETHANE + GPM	5.1133
NITROGEN	0.7014		SPECIFIC GRAVITIES (CALCULATED VALUES)	
CARBON DIOXIDE	0.0808		IDEAL GRAVITY	0.7059
OXYGEN	0.0112		REAL GRAVITY	0.7080
HEXANES (PLUS)	0.7282	0.32		
<b>TOTAL</b>	<b>100.0000</b>			
COMMENTS				
ANALYTICAL METHODS AND VALUES				
(1) Extended analysis and reporting performed following procedures outlined in GPA 2286-95: Tentative Method of Extended Analysis for Natural Gas and Similar Mixtures by Temperature Programmed Gas Chromatography				
(2) Physical properties and values used in calculations were acquired from GPA 2145-09: Table of Physical properties for Hydrocarbons and Other Compounds of Interest to the Natural Gas Industry				

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CORROSION PRODUCTS DIVISION

# Extended Gas Analysis

## EQT

PO Drawer 190 - Clarksburg, WV 26302-0190  
 Telephone: 304.624.9700 - Fax: 304.622.0981  
 Website: www.msesinc.com/analysis

Analysis No: 1  
 Analysis Date: EQT  
 MSES Project No.: 15-049

SAMPLE COLLECTION INFORMATION			
Client:	EQT	Sample Date:	4/10/2015
Sample Location:	Burnsville Station	Sample Time:	10:55 AM
Sample Collection Source:	Comp Sta. Piping	Collected By:	SCL, JDP
MSES Sample Number:	N/A	Sample Pressure:	76
Date Received at Lab:	4/10/2015	Sample Temp. (°F):	96
Unique Identifier:	Burnsville Station AE1	Sample Container Type:	Cylinder
		MSES/CPD ID#	062
		Client ID #:	N/A
ANALYSIS REPORT			
COMPONENTS	UNITS	ANALYTICAL METHODS	RESULTS
C <sub>5</sub> H <sub>10</sub> CYCLOPENTANE	Mole %	GPA 2186	0.0071
C <sub>6</sub> H <sub>12</sub> CYCLOHEXANE	Mole %	GPA 2186	0.0279
C <sub>6</sub> H <sub>14</sub> n-HEXANE	Mole %	GPA 2186	0.1688
C <sub>6</sub> H <sub>14</sub> 2 METHYLPENTANE (isohexane)	Mole %	GPA 2186	0.1195
C <sub>6</sub> H <sub>14</sub> 3 METHYLPENTANE	Mole %	GPA 2186	0.0721
C <sub>6</sub> H <sub>14</sub> 2,2 DIMETHYLBUTANE (neohexane)	Mole %	GPA 2186	0.0145
C <sub>6</sub> H <sub>14</sub> 2,3 DIMETHYLBUTANE	Mole %	GPA 2186	0.0251
C <sub>7</sub> H <sub>14</sub> METHYLCYCLOHEXANE	Mole %	GPA 2186	0.0523
C <sub>7</sub> H <sub>16</sub> n-HEPTANE	Mole %	GPA 2186	0.1484
C <sub>8</sub> H <sub>18</sub> n-OCTANE	Mole %	GPA 2186	0.0622
C <sub>8</sub> H <sub>18</sub> 2,2,4 TRIMETHYLPENTANE (isooctane)	Mole %	GPA 2186	0.2260
C <sub>9</sub> H <sub>20</sub> n-NONANE	Mole %	GPA 2186	0.0179
C <sub>10</sub> H <sub>22</sub> n-DECANE	Mole %	GPA 2186	0.0047
C <sub>11</sub> H <sub>24</sub> UNDECANE	Mole %	GPA 2186	0.0063
C <sub>12</sub> H <sub>26</sub> DODECANE	Mole %	GPA 2186	<0.0001
C <sub>13</sub> H <sub>28</sub> TRIDECANE	Mole %	GPA 2186	<0.0001
C <sub>14</sub> H <sub>30</sub> TETRADECANE	Mole %	GPA 2186	<0.0001
ANALYTICAL METHODS AND VALUES			
(1) Extended analysis and reporting performed following procedures outlined in GPA 2286-95: Tentative Method of Extended Analysis for Natural Gas and Similar Mixtures by Temperature Programmed Gas Chromatography			
(2) Limit of Detection= 0.0001 Mole Percent			



# Aromatic Hydrocarbon Analysis

## EQT

PO Drawer 190 - Clarksburg, WV 26302-0190  
 Telephone: 304.624.9700 - Fax: 304.622.0981  
 Website: www.msesinc.com/analysis

Analysis No: 1  
 Analysis Date: 04/15/2015  
 MSES Project No.: 15-049

### SAMPLE COLLECTION INFORMATION

Client:	EQT	Sample Date:	4/10/2015
Sample Location:	Burnsville Station	Sample Time:	10:55 AM
Sample Collection Source:	Comp Sta. Piping	Collected By:	SCL, JDP
MSES Sample Number:	N/A	Sample Pressure:	76
Date Received at Lab:	4/10/2015	Sample Temp. (°F):	96
Unique Identifier:	Burnsville Station AE1	Sample Container Type:	Cylinder
		MSES/CPD ID#	062
		Client ID #:	N/A

### ANALYSIS REPORT

COMPONENTS	UNITS	ANALYTICAL METHODS	RESULTS
C <sub>6</sub> H <sub>6</sub> BENZENE	ppmV	GPA 2286-95	41.4
C <sub>7</sub> H <sub>8</sub> TOLUENE	ppmV	GPA 2286-95	68.2
C <sub>8</sub> H <sub>10</sub> ETHYLBENZENE	ppmV	GPA 2286-95	<0.1
C <sub>8</sub> H <sub>10</sub> XYLENE	ppmV	GPA 2286-95	59.9

### ANALYTICAL METHODS AND VALUES

(1) Extended analysis and reporting performed following procedures outlined in GPA 2286-95: Tentative Method of Extended Analysis for Natural Gas and Similar Mixtures by Temperature Programmed Gas Chromatography

(2) Limit of Detection = 0.1 ppmV



# Sulfur Compounds Analysis

## EQT

PO Drawer 190 - Clarksburg, WV 26302-0190  
 Telephone: 304.624.9700 - Fax: 304.622.0981  
 Website: www.msesinc.com/analysis

Analysis No: 1  
 Analysis Date: 04/15/2015  
 MSES Project No.: 15-049

### SAMPLE COLLECTION INFORMATION

Client:	EQT	Sample Date:	4/10/2015
Sample Location:	Burnsville Station	Sample Time:	10:55 AM
Sample Collection Source:	Comp Sta. Piping	Collected By:	SCL, JDP
MSES Sample Number:	N/A	Sample Pressure:	76
Date Received at Lab:	4/10/2015	Sample Temp. (°F):	96
Unique Identifier:	Burnsville Station AE1	Sample Container Type:	Cylinder
		MSES/CPD ID#	062
		Client ID #:	N/A

### ANALYSIS REPORT

COMPONENTS	UNITS	ANALYTICAL METHODS	RESULTS
H <sub>2</sub> S HYDROGEN SULFIDE	PPMV	ASTM D-6228	<0.1
COS CARBONYL SULFIDE	PPMV	ASTM D-6228	<0.1
CS <sub>2</sub> CARBON DISULFIDE	PPMV	ASTM D-6228	<0.1
SO <sub>2</sub> SULFUR DIOXIDE	PPMV	ASTM D-6228	<0.1
CH <sub>4</sub> S METHYL MERCAPTAN	PPMV	ASTM D-6228	<0.1
C <sub>2</sub> H <sub>6</sub> S ETHYL MERCAPTAN	PPMV	ASTM D-6228	<0.1
(CH <sub>3</sub> ) <sub>2</sub> S DIMETHYL SULFIDE	PPMV	ASTM D-6228	<0.1
(CH <sub>3</sub> ) <sub>3</sub> CSH <i>tert</i> -BUTYL MERCAPTAN	PPMV	ASTM D-6228	<0.1
C <sub>2</sub> H <sub>5</sub> SCH <sub>3</sub> ETHYL METHYL SULFIDE	PPMV	ASTM D-6228	<0.1
TOTAL SULFUR COMPOUNDS	PPMV	ASTM D-6228	<0.1

### ANALYTICAL METHODS AND VALUES

- (1) Sulfur Compounds Analysis and Reporting Performed by Gas Chromatography using a Sulfur Chemiluminescence Detector Following Procedures Outlined by ASTM Method D5504-08
- (2) Limit of Detection = 0.1 ppmV