west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone (304) 926-0475 • FAX: (304) 926-0479

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	G35-A118
Plant ID No.:	109-00220
Applicant:	Enervest Operating LLC Eastern Division (Enervest)
Facility Name:	Kopperston
Location:	Kopperston, Wyoming County, West Virginia
NAICS Code:	211111
Application Type:	Construction
Received Date:	September 28, 2015
Engineer Assigned:	David Keatley
Fee Amount:	$3,000
Date Fee Received:	September 30, 2015
Complete Date:	October 30, 2015
Due Date:	December 14, 2015
Applicant Ad Date:	September 2, 2015
Newspaper:	*The Register Herald*
UTM's:	Easting: 4,176.945 km Northing: 449.523 km Zone: 17
Description:	Installation and operation of one (1) 206-bhp compressor engine. Permitting one (1) 5.2-mmscf/day TEG dehydration unit and associated 0.25 mmBtu/hr reboiler. The facility also has one (1) 840-gallon produced water tank and one (1) 2,100-gallon produce water tank.

DESCRIPTION OF PROCESS

Natural gas enters the facility via pipeline. The natural gas is compressed to a higher pressure. The compressor is powered by one (1) four-stroke rich-burn 203-bhp Caterpillar G3306 TA natural gas fired engine. The compressed natural gas is then sent to the contactor of the triethylene glycol (TEG) dehydration unit to reduce the water content of the natural gas stream. In the contactor, natural gas at a maximum rate of 5.2 mmBtu/hr flows countercurrent to the circulating TEG. The compressed dehydrated natural gas will exit the facility via pipeline. The rich TEG from the contactor flows to the regenerator . The

rich TEG is heated by a 0.25 mmBtu/hr reboiler to remove the water.

SITE INSPECTION

John Moneypenny of DAQ's Compliance and Enforcement Section performed a site visit on October 28, 2015. The proposed site seems to be meet the G35-A siting criteria.

From I79 take exit 44. Turn onto WV 3 and travel west until you reach Glen Daniel. Turn onto WV 99 and travel west until you reach the intersection of WV 85. Turn left onto WV 85 and turn left onto bridge after manufactured housing community. Stay on dirt road and go past Dominion building.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emissions from the TEG dehydration unit were estimated using GRI-GLYCalc version 4.0. Emissions from engine CE-1 for NOx, CO, HCHO, and VOCs were estimated with manufacturer emission factors other emissions were estimated with AP-42 four-stroke rich-burn emission factors. Emissions from the two produced water tanks will be considered negligible due to the throughput, gas composition, and pressure drop.

Table 1: Summarized Estimated Controlled PTE

Source ID	Emission Source	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tpy)
CE-1	Caterpillar G3306 TA Compressor Engine 203 bhp	Nitrogen Oxides	12.4	54.31
		Carbon Monoxide	0.67	2.94
		Volatile Organic Compounds	0.05	0.22
		Formaldehyde	0.07	0.3
RVB-1	Reboiler	Nitrogen Oxides	0.03	0.11
		Carbon Monoxide	0.02	0.09
		Volatile Organic Compounds	<0.01	0.01
		Total Particulate Matter	<0.01	0.01
RSV-1	TEG Dehydrator Regenerator Still Vent	Volatile Organic Compounds	0.82	0.15

Table 2: Estimated Controlled Facility Wide PTE

Pollutant	Maximum Annual Facility Wide Emissions (tons/year)
Nitrogen Oxides	54.43
Carbon Monoxide	3.03
Volatile Organic Compounds	0.38
Particulate Matter	0.08
Sulfur Dioxide	0.01
Formaldehyde	0.30
Total HAPs	0.30

REGULATORY APPLICABILITY

The following rules and regulations apply to the facility:

45CSR2 *To Prevent and Control Particulate Air Pollution From Combustion of Fuel in Indirect Heat Exchangers*

The Reboilers (RVB-1) at this facility meets the definition for fuel burning unit (section 2.10). The Reboilers all have capacities below the 10 MMBTU/hr threshold and are exempt from the following sections: 4,5,6,8, and 9.

RVB-1 shall not cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air which is greater than ten (10) percent opacity based on a six minute block average.

45CSR4 *To Prevent and Control the Discharge of Air Pollutants Into the Open Air Which Causes or Contributes to an Objectionable Odor or Odors*

This facility shall not cause the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public. 45CSR4 states that an objectionable odor is an odor that is deemed objectionable when in the opinion of a duly authorized representative of the Air Pollution Control Commission (Division of Air Quality), based upon their investigations and complaints, such odor is objectionable

45CSR10 *To Prevent and Control Air Pollution From the Emissions of Sulfur Oxides*

The Reboiler (RVB-1) at this facility meets the definition for fuel burning unit (section 2.8). RVB-1 are Type 'b' fuel burning unit, which are below the 10 MMBTU threshold and are therefore exempt from sections 3, 6, 7, and 8 (Section 10.1). The reboiler is not consider a manufacturing process, refinery, or process gas stream.

45CSR13 *Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits, and Procedures for Evaluation*

This facility is subject to 40CFR63 subpart HH which is considered a substantive requirement and this permit action will be considered a modification.

45CSR22 *Air Quality Management Fee Program*

This source is subject to this rule due to the required construction application fee and the annual operating fee.

40 CFR 63 Subpart HH *National Emission Standards for Hazardous Air Pollutants From Oil and Natural Gas Production Facilities*

On June 1, 2013 the DAQ took delegation of the area source provisions of 40 CFR 63, Subpart HH. This facility is a natural gas production facility that processes, upgrades, or stores natural gas prior to transmission. This facility is an area source of HAPs refer to the previous facility wide emissions table.

Pursuant to §63.760(b)(2), each glycol dehydration unit (GDU) located at an area source that meets the requirements under §63.760(a)(3) is defined as an affected facility under Subpart HH. The requirements for affected sources at area sources are given under §63.764(d). However, for a GDU, exemptions to these requirements are given under §63.764(e)(2) "actual average emissions of benzene from the glycol dehydration unit process vent to the atmosphere are less than 0.90 megagram [1 TPY] per year."

As can be seen above in Table 1, the maximum PTE of benzene emissions from the GDU process vent are negligible. Therefore, the GDU is exempt from the Subpart HH requirements given under §63.764(d).

40CFR63 Subpart ZZZZ NESHAP for Stationary Reciprocating Internal Combustion Engines

This facility is an area source of Hazardous Air Pollutants. Engine CE-1 must comply with the applicable emission limitations, operating limitations, and other requirements no later than the date of installation. Engines CE-1 is a non-emergency, non-black start four-stoke rich-burn stationary RICE $\leq$500 HP (Table 2d.10). Engine CE-1 has oil, oil filter, spark plug, hose, and belt maintenance requirements.

The following regulations do not apply to the facility:

40CFR60 Subpart JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (SI ICE))

40CFR60 Subpart JJJJ sets forth emission limits, fuel requirements, installation requirements, and monitoring requirements based on the date of construction, date of manufacture, and horsepower (hp) of the spark ignition internal combustion engine. All proposed engines will commence construction after June 12, 2006.

Engine CE-1 is a SI RICE constructed before June 12, 2006 and is therefore not subject to this regulation.

Subpart Kb—Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984

Pursuant to §60.110b, 40 CFR 60, Subpart Kb applies to "each storage vessel with a capacity greater than or equal to 75 cubic meters (m^3) that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984." The storage tanks located at this facility are smaller than 75 m^3. Therefore, Subpart Kb does not apply to the storage tanks at this facility due to the tanks volume.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

The majority of non-criteria regulated pollutants fall under the definition of HAPs which, with some revision since, were 188 compounds identified under Section 112(b) of the Clean Air Act (CAA) as pollutants or groups of pollutants that EPA knows or suspects may cause cancer or other serious human health effects. This facility has the the following HAPs as emitted in substantive amounts (at least 20 pounds (0.01 tons) per year) in their emissions estimate: Formaldehyde. The following table lists each HAP's carcinogenic risk (as based on analysis provided in the Integrated Risk Information System (IRIS)):

Table 4: Potential HAPs - Carcinogenic Risk

HAPs	Type	Known/Suspected Carcinogen	Classification
Formaldehyde	VOC	Yes	Category B1 - Probable Human Carcinogen

All HAPs have other non-carcinogenic chronic and acute effects. These adverse health affects may be associated with a wide range of ambient concentrations and exposure times and are influenced by source-specific characteristics such as emission rates and local meteorological conditions. Health impacts are also dependent on multiple factors that affect variability in humans such as genetics, age, health status (e.g., the presence of pre-

existing disease) and lifestyle. As stated previously, *there are no federal or state ambient air quality standards for these specific chemicals*. For a complete discussion of the known health effects of each compound refer to the IRIS database located at *www.epa.gov/iris*.

SOURCE AGGREGATION

"Building, structure, facility, or installation" is defined as all the pollutant emitting activities which belong to the same industrial grouping, are located on one or more contiguous and adjacent properties, and are under the control of the same person.

Same SIC code. Kopperston will operate under SIC code 1311. There are no other compressor stations operated by Enervest that share the same first two-digit SIC code of 13. This facility is near a Dominion compressor station approximately 700 feet away.

"Contiguous or Adjacent" determinations are made on a case by case basis. These determinations are proximity based, and it is important to focus on this and whether or not it meets the common sense notion of a plant. The terms "contiguous" or "adjacent" are not defined by USEPA. Contiguous has a dictionary definition of being in actual contact; touching along a boundary or at a point. Adjacent has a dictionary definition of not distant; nearby; having a common endpoint or border.

There are no Enervest properties in question that are considered to be on contiguous or adjacent property with Kopperston. There is a Dominion facility which would be considered adjacent.

Common control. The natural gas from this facility goes to Clearfork Station compressor station which is approximately 1.5 miles away instead of going to the Dominion Station which is a few hundred feet away.

Since this facility has no facility which meets the three-prong test and because the Dominion facility does not meet the definition of being a support facility the air emissions from this facility should not be aggregated with any other facility.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates compliance with all state and federal air quality requirements will be satisfied and this facility is expected to meet the requirements of General Permit G35-A. Therefore 's Enervest's request to construct and operate its natural gas compression/dehydration facility is recommended to the Director of Air Quality.

David Keatley
Permit Writer - NSR Permitting

October 30, 2015

Date