west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-3246
Plant ID No.:	051-00215
Applicant:	Williams Ohio Valley Midstream LLC
Facility Name:	Stout Station
Location:	Near Camron, Marshall County, West Virginia
NAICS Code:	213112
Application Type:	Construction
Received Date:	April 14, 2015
Engineer Assigned:	David Keatley
Fee Amount:	$3,500
Date Received:	April 22, 2015
Complete Date:	August 5, 2016
Due Date:	November 3, 2016
Applicant Ad Date:	April 14, 2015
Newspaper:	*Moundsville Dailey Echo*
UTM's:	Easting: 538.846 Northing: 4,412.906 Zone: 17
Description:	Permitting of an existing facility which will have an increase in emissions from TEG dehydration unit.

DESCRIPTION OF PROCESS

This facility consists of one (1) triethlyene glycol (TEG) dehydration unit to reduce the water content of natural gas which began operating in 2012. Gas from nearby wells enters the facility via pipeline and goes to a contactor. In the contactor natural gas flows at a maximum rate of 7-mmscfd countercurrent to TEG. After the gas is dehydrated it leaves the facility via pipeline. The rich TEG from the contactor goes to a flash tank. The flash tank is to allow volatile hydrocarbons to volatilize. The vapors from the flash tank will be used as fuel in the reboiler as fuel for a reduction in emissions of 50%. The liquids from the flash tank go to the regenerator and are heated by one (1) 0.22-mmBtu/hr reboiler (RBV-1). The vapors from the regenerator are emitted at the still vent (RSV-1).

SITE INSPECTION

On May 5, 2015 Jaimie Jarrett from DAQ's Compliance and Enforcement Section performed a site visit with Angela Carey of DAQ's NPRO of Compliance and Enforcement. The facility was not in operation during the site visit. Williams was changing the TEG at the time of the site visit.

From Main Street in Cameron. Travel east on Main St. until you reach US 250 S/Waynesburg Pike. Turn left onto US 250 and travel approximately 1.5 miles. Turn right onto Moose Lake Road and travel for approximately 0.5 miles. The access road to the facility is on the left.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

All CO_2e emissions were estimated using emission factors from 40CFR90. Emissions from the flash tank and still vent (RSV-1) will be estimated using GRI-GLYCalc 4.0 with a 20% increase due to the variability of the gas composition. The efficiency for the flash tank will be 50% reduction. Emissions for the reboiler (RBV-1) were estimated using AP-42 emission factors. Fugitive emissions were estimated using the EPA's *Protocol for Equipment Leak Emission Estimates*.

Table 1: Estimated Maximum Controlled Point Source PTE

Emission Point ID	Emission Unit ID	Emission Source	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tpy)
1E	RSV-1	TEG Dehydrator - Still Vent 7mmscfd	Volatile Organic Compounds	4.35	19.06
			Benzene	0.11	0.47
			Toluene	0.45	1.97
			Xylenes	1.43	6.28
			n-Hexane	0.08	0.35
			CO_2e	13	57
2E	RBV-1	TEG Dehydrator - Reboiler 0.22 mmBtu/hr	Nitrogen Oxides	0.02	0.1
			Carbon Monoxide	0.02	0.08
			Volatile Organic Compounds	<0.01	0.01
			PM_{10}	<0.01	0.01
			CO_2e	26	115
3E	RSV-1	TEG Dehydrator - Flash Tank Vent 7 mmscfd	Volatile Organic Compounds	2.39	10.46
			Toluene	<0.01	0.01
			Xylenes	<0.01	0.01
			n-Hexane	0.02	0.11
			CO_2e	361	1,583

Table 2: Proposed Estimated Maximum Controlled Facility Wide PTE

Pollutant	Facility Wide PTE (tons/year)
Nitrogen Oxides	0.10
Carbon Monoxide	0.08
Volatile Organic Compounds	36.22
Particulate Matter-10	0.01
n-Hexane	0.87
Benzene	0.60
Toluene	2.10
Ethylbenzene	0.86
Xylenes	6.41
Total HAPs	10.95
Carbon Dioxide Equivalent	2,201

REGULATORY APPLICABILITY

The following rules and regulations apply to the facility:

45CSR2 (Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers)

The purpose of 45CSR2 (Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers) is to establish emission limitations for smoke and particulate matter which are discharged from fuel burning units.

45CSR2 states that any fuel burning unit that has a heat input under ten (10) million B.T.U.'s per hour is exempt from sections 4 (weight emission standard), 5 (control of fugitive particulate matter), 6 (registration), 8 (testing, monitoring, recordkeeping, reporting) and 9 (startups, shutdowns, malfunctions). However, failure to attain acceptable air quality in parts of some urban areas may require the mandatory control of these sources at a later date.

The individual heat input of all of the proposed fuel burning units (RBV-1) are below 10 MMBTU/hr. Therefore, these units are exempt from the aforementioned sections of 45CSR2. However this facility would be subject to the opacity requirements in 45CSR2, which is 10% 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)

45CSR10 states that any fuel burning unit that has a heat input under ten (10) million B.T.U.'s per hour is exempt from sections 3 (weight emission standard), 6 (registration), 7 (permits), and 8 (testing, monitoring, recordkeeping, reporting). However, failure to attain acceptable air quality in parts of some urban areas may require the mandatory control of these sources at a later date.

The individual heat input of all of the proposed fuel burning units (RVB-01 and HTR-01) are below 10 MMBTU/hr. Therefore, these units are exempt from the aforementioned sections of 45CSR10.

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

The VOC PTE exceed the thresholds of 6 lb/hr and 10 tons/year and therefore this facility requires a permit.

45CSR22 (Air Quality Management Fee Program)

This facility is a minor source as can be seen in Table 2 and not subject to 45CSR30 since the regulations this facility is subject to are exempt from the obligation to obtain a permit under 40 CFR part 70 or 40 CFR part 71. This facility has is a 9M source and is required to pay a $200 annual fee. Williams is required to keep their Certificate to Operate current.

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 vents is 0.47 TPY. Therefore, the GDU is exempt from the Subpart HH requirements given under §63.764(d).

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. Antero included the following HAPs as emitted in substantive amounts (0.01 tons/year) in their emissions estimate: Benzene, n-Hexane, Toluene, and Xylenes. The following table lists each HAP's carcinogenic risk (as based on analysis provided in the Integrated Risk Information System (IRIS)):

Table 3: Potential HAPs - Carcinogenic Risk

HAPs	Type	Known/Suspected Carcinogen	Classification
n-Hexane	VOC/HAP	No	Inadequate Data
Benzene	VOC/HAP	Yes	Category A - Known Human Carcinogen
Ethylbenzene	VOC/HAP	No	Category D - Not classifiable as to human carcinogenicity
Toluene	VOC/HAP	No	Inadequate Data
Xylenes	VOC/HAP	No	Inadequate Data

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*. This facility is a minor source of HAPs as can be seen in Table 2. For a complete discussion of the known health effects of each compound refer to the IRIS database located at *www.epa.gov/iris*.

AIR QUALITY IMPACT ANALYSIS

Modeling was not performed for this source due to the fact that the facility is not subject to 45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants) as can be seen in Table 2.

MONITORING OF OPERATIONS

The reboiler and dehydration unit will have monitoring requirements in the respective sections of the permit 5.2. and 6.2.

RECOMMENDATION TO DIRECTOR

The information provided in this facility's permit application indicates that compliance with all state and federal air quality requirements will be achieved. It is recommended that Williams should be granted a 45CSR13 Construction permit for their proposed after-the-fact Stout Station.

David Keatley

David Keatley
Permit Writer - NSR Permitting

August 5, 2016

Date