



west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-3377
Plant ID No.:	013-00019
Applicant:	West Virginia Oil Gathering, LLC
Facility Name:	Brooksville Station
Location:	Calhoun County
NAICS Code:	424710
Application Type:	Construction (After the Fact)
Received Date:	August 28, 2017
Engineer Assigned:	Steven R. Pursley, PE
Fee Amount:	\$2,000.00
Date Received:	August 30, 2017
Complete Date:	September 28, 2017
Due Date:	December 27, 2017
Applicant Ad Date:	September 5, 2017
Newspaper:	<i>The Calhoun Chronicle</i>
UTM's:	Easting: 484.963 Northing: 4,312.334 Zone: 17
Description:	After-the-fact construction of a Petroleum Liquids Storage and Transfer Station.

DESCRIPTION OF PROCESS

West Virginia Oil Gathering, LLC (WVOG), a subsidiary of EnLink Midstream LLC, has submitted a permit application for the after-the-fact construction and operation of a petroleum liquids storage and transfer station consisting primarily of a 630,000 gallon crude oil tank and associated loading operations and fugitive emissions. The facility is located in a rural area of Calhoun County approximately 1 mile west of Bigbend, WV on State Route (SR) 5 and was originally constructed in 2006.

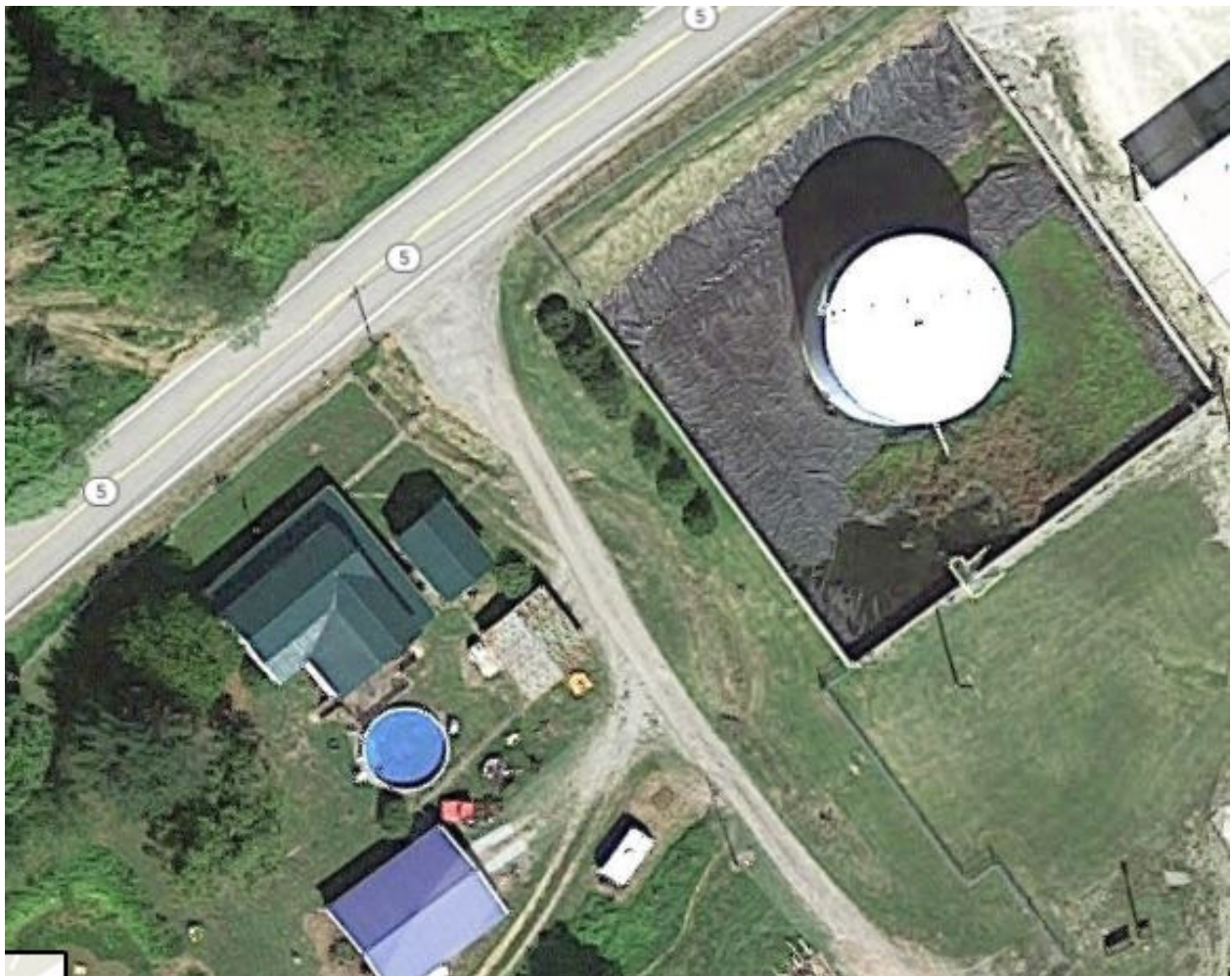
The Brooksville Station receives crude oil solutions from surrounding gas and oil wells via tanker truck and pipeline. The fluids are stored in the 630,000 gallon crude oil storage tank (OTK-1) equipped with an internal floating roof. Additionally, there is one small diesel

fuel tank (less than 10,567 gallons) located at the site.

Crude oil can be either trucked or piped into the facility. Typically, crude oil is removed from the facility via pipeline. In the event there is an issue with the pipeline, oil can also be loaded back onto tanker trucks (TL-1) from the tanks for removal from the site. Conservatively, the maximum annual throughput of crude oil is estimated to be 229,950,000 gallons.

SITE INSPECTION

Because of the nature of the facility and the permitting action, no site inspection was deemed necessary. The facility consists only of one tank and can be plainly seen on Google Maps.



Fact Sheet R13-3377
West Virginia Oil Gathering, LLC
Brooksville Station

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

WVOG included in Attachment N of the permit application an emission estimate for the existing Brooksville Station. The following will summarize the calculation methodologies used by WVOG to calculate the potential-to-emit (PTE) of the existing facility.

Storage Tanks

WVOG provided an estimate of the emissions produced from the crude oil storage tank (OTK-1) using the TANKS 4.09d program as provided under AP-42, Section 7 (AP-42 is a database of emission factors maintained by USEPA). This was the only storage tank on site determined to have the potential for any substantive emissions. The total emissions loss from a floating roof are the combination of the calculated "rim seal," "withdrawal," "deck fitting," and "deck seam" losses.

Conservatively, a maximum annual throughput of crude oil of 229,950,000 gallons (630,000 gallon tank turned over 365 times) was used in the calculations. WVOG doubled the calculated emission rate to account for any unknown variability in the makeup of the liquids. The utilization of the internal floating roof on OTK-1 was considered in the calculations. Hazardous Air Pollutant (HAP) weight percentages (of total VOC emissions) were based on Table 11.3-2, "HAP Percent of VOC Emissions," Gasoline Marketing (Stage I and Stage II), EPA Document Revised Final 1/2001.

Truck Loadouts

Air emissions from crude oil loading operations (TL-1) occur as fugitive emissions generated by displacement of vapors when loading trucks. The emission factor used to generate the VOC emissions is based on Equation (1) of AP-42 Section 5.2-4. In this equation, WVOG used variables specific to the liquids loaded and to the method of loading - in this case "submerged loading - dedicated normal service." Additionally, worst-case annual emissions were based on a maximum loading rate of crude oil of 22,995,000 gallons (ten percent of total facility crude throughput). Note that under normal operations, truck loading of crude oil will not occur. It will only occur if there is a problem with the pipeline normal used to transport the oil. A maximum hourly pumping rate of 16,800 gal-crude oil/hour was used to determine the short term emission rate. HAP weight percentages (of total VOC emissions) were based on Table 11.3-2, "HAP Percent of VOC Emissions," Gasoline Marketing (Stage I and Stage II), EPA Document Revised Final 1/2001.

Fugitives

WVOG based their VOC fugitive equipment leak calculations (leaked from valves, connectors, flanges, etc.) on emission factors taken from the document EPA-453/R-95-017 - "Protocol for Equipment Leak Emission Estimates" Table 2-4 (VOCs). No control efficiencies, as based on a Leak Detection and Repair (LDAR) protocol, were applied. Component counts were given and shall be limited in the draft permit. Conservative VOC by-weight percentages of 100% were used in the calculations.

Haul Roads

WVOG included in their application an estimate of fugitive emissions created by truck traffic unloading and removing liquids from the tanks. As all the roadways around the station are unpaved, WVOG used the equation given in Section 13.2.2 of AP-42 and appropriate variables to estimate potential emissions.

Emissions Summary

Based on the above estimation methodology, the facility-wide emissions of the Brooksville Station is given in the following table:

Source	PM		VOCs		HAPs	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Storage Tank	0.00	0.00	1.08	4.72	0.06	0.25
Truck Loading	0.00	0.00	32.59	22.35	1.78	1.18
Leak Fugitives	0.00	0.00	0.14	0.59	0.00	0.00
Haul Roads	2.12	9.26	0.00	0.00	0.00	0.00
<i>Facility-Wide Totals</i>	2.12	9.26	33.81	27.66	1.84	1.43

REGULATORY APPLICABILITY

This section will address the potential regulatory applicability/non-applicability of substantive state and federal air quality rules relevant to the Brooksville Station.

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

Fact Sheet R13-3377
West Virginia Oil Gathering, LLC
Brooksville Station

The Brooksville Station has a maximum uncontrolled (without operational limits) emission rate of a regulated pollutant in excess of six (6) lbs/hour and ten (10) TPY and, additionally, the facility is "subject to [a] substantive requirement [Subpart Kb] of an emission control rule promulgated by the Secretary." Therefore, pursuant to §45-13-2.24, the facility is defined as a "stationary source" under 45CSR13. Pursuant to §45-13-5.1, "[n]o person shall cause, suffer, allow or permit the construction . . . and operation of any stationary source to be commenced without . . . obtaining a permit to construct." WVOG is required to obtain an after-the-fact permit under 45CSR13 for the after-the-fact construction and operation of Brooksville Station.

As required under §45-13-8.3 ("Notice Level A"), WVOG placed a Class I legal advertisement in a "newspaper of general circulation in the area where the source is . . . located." The ad ran on August 24, 2017 in *The Calhoun Chronicle* and the affidavit of publication for this legal advertisement was submitted on September 5, 2017.

45CSR30: Requirements for Operating Permits

45CSR30 provides for the establishment of a comprehensive air quality permitting system consistent with the requirements of Title V of the Clean Air Act. The facility does not meet the definition of a "major source under § 112 of the Clean Air Act" as outlined under §45-30-2.26 and clarified (fugitive policy) under 45CSR30b. However, as there is an emissions source at the facility subject to requirements promulgated under §111 or §112(r) of the Clean Air Act (specifically 40 CFR 60, Subpart Kb) that does not have a specific exemption from Title V permitting, the facility is considered a non-major "area" source subject to Title V. Sources in this classification (also known as "deferred sources") are deferred from a requirement to get a Title V permit.

40 CFR60, 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

Subpart Kb of 40 CFR 60 is the NSPS for storage tanks containing Volatile Organic Liquids (VOLs) which construction commenced after July 23, 1984. The Subpart applies to storage vessels used to store volatile organic liquids with a capacity greater than or equal to 75 m³ (19,813 gallons). However, storage tanks with a capacity greater than or equal to 151 m³ (39,890 gallons) storing a liquid with a maximum true vapor pressure less than 3.5 kilopascals (kPa) or with a capacity greater than or equal to 75 m³ but less than 151 m³ storing a liquid with a maximum true vapor pressure less than 15.0 kPa are exempt from Subpart Kb. Note that this facility is located after the custody transfer and is, therefore, not eligible for the exemption given under §60.110b(d)(4). Therefore, based on the above, the 630,000 gallon (2384.81 m³) crude oil (~ 35 kPa) storage tank (OTK-1) is subject to the applicable provisions therein.

The substantive requirement for the crude oil tank, as relevant to OTK-1, is given under §60.112b(a), which applies to the "owner or operator of each storage vessel either with a design capacity greater than or equal to 151 m³ containing a VOL that, as stored, has a maximum true vapor pressure equal to or greater than 5.2 kPa but less than 76.6 kPa . . .," is for the storage tank to be equipped with a an internal floating roof meeting the requirements given under §60.112b(a)(1)(i) though (ix). The applicable crude oil tank at the Brooksville Station is equipped with an internal floating roof.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

This section provides an analysis for those regulated pollutants that may be emitted from Brooksville Station and that are not classified as "criteria pollutants." Criteria pollutants are defined as Carbon Monoxide (CO), Lead (Pb), Oxides of Nitrogen (NO_x), Ozone, Particulate Matter (PM₁₀ and PM_{2.5}), and Sulfur Dioxide (SO₂). These pollutants (with the exception of PM) have National Ambient Air Quality Standards (NAAQS) set for each that are designed to protect the public health and welfare. Other pollutants of concern, although designated as non-criteria and without national concentration standards, are regulated through various federal and programs designed to limit their emissions and public exposure. These programs include federal source-specific Hazardous Air Pollutants (HAPs) limits promulgated under 40 CFR 61 (NESHAPS) and 40 CFR 63 (MACT). Any potential applicability to these programs were discussed above under REGULATORY APPLICABILITY.

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. The following table lists each HAP identified by WVOG with facility-wide emissions above 0.05 TPY (100 lbs/year) and the associated carcinogenic risk (as based on analysis provided in the Integrated Risk Information System (IRIS)):

HAPs	Type	Known/Suspected Carcinogen	Classification
n-Hexane	VOC	No	Inadequate Data
Ethylbenzene	VOC	No	Group D-Not Classifiable
Benzene	VOC	Yes	Category A - Known Human Carcinogen
Xylene	VOC	No	Group D-Not Classifiable
Toluene	VOC	No	Inadequate Data

All HAPs have other non-carcinogenic chronic and acute effects. These adverse health effects 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.

AIR QUALITY IMPACT ANALYSIS

The facility does not meet the definition of a "major stationary source" pursuant to 45CSR14 and, therefore, an air quality impact (computer modeling) analysis was not required. Additionally, based on the nature of the construction, modeling was not required under 45CSR13, Section 7.

MONITORING OF OPERATIONS

The following monitoring and record-keeping requirements shall be required:

- * For the purposes of demonstrating compliance with maximum throughput limit of crude oil set forth in 4.1.2 of the draft permit, WVOG shall be required to monitor and record the monthly and rolling twelve month total of crude oil (in gallons) throughput in the storage tank; and
- * For the purposes of demonstrating compliance with the truck loadout limit set forth in 4.1.3(b) of the draft permit, WVOG shall be required to monitor and maintain monthly and rolling twelve month records of the amount of crude oil loaded into tanker trucks.

RECOMMENDATION TO DIRECTOR

The information provided in permit application R13-3377 indicates that compliance with all applicable state and federal air quality regulations should be achieved. Therefore, I recommend to the Director the issuance of Permit Number R13-3377 to West Virginia Oil Gathering, LLC for the after-the-fact construction and operation of the Brooksville Station located in Calhoun County, WV.

Steven R. Pursley, PE
Engineer

November 27, 2017

Fact Sheet R13-3377
West Virginia Oil Gathering, LLC
Brooksville Station