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.:	R13-3324
Plant ID No.:	051-00017
Applicant:	West Virginia Oil Gathering, LLC
Facility Name:	Stockley Station
Location:	Clay County
SIC/NAICS Code:	5171/424710
Application Type:	Construction
Received Date:	May 31, 2016
Engineer Assigned:	Joe Kessler
Fee Amount:	$2,000
Date Received:	June 2, 2016
Complete Date:	September 9, 2016
Due Date:	December 8, 2016
Applicant Ad Date:	June 1, 2016
Newspaper:	*Clay County Free Press*
UTM's:	488.201 km Easting • 4,266.441 km Northing • Zone 17
Latitude/Longitude:	38.546375/-81.135408
Description:	After-the-Fact construction of a Petroleum Liquids Storage and Transfer Station.

COPY

Entire Document
NON-CONFIDENTIAL

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 138,600 gallon crude oil tank, a 16,800 gallon produced water tank, and associated loading operations and fugitive emissions. The facility is located in a rural area of Clay County approximately 1.4 miles south of Wallback, WV along State Route (SR) 36 and was originally constructed in 1985.

The Stockley Station receives brine and crude oil solutions from surrounding gas and oil wells via tanker truck and pipeline. The fluids are stored in either the 138,600 gallon crude oil storage tank (OTK-1) equipped with an internal floating roof or the 16,800 gallon produced water tank (BR-1). Additionally, there is one small diesel fuel tank (less than 10,567 gallons) located at the site that is considered a *de minimis* source under 45CSR13.

Crude oil can be either trucked or piped into the facility. Typically, fluids are removed from the facility via pipeline. In the event there is an issue with the pipeline, fluids can also be loaded back onto tanker trucks from the tanks (TH-1 and TH-2) for removal from the site. Conservatively, the maximum annual throughput of crude oil and produced water is estimated to be 52,101,000 and 147,168,000 gallons, respectively.

SITE INSPECTION

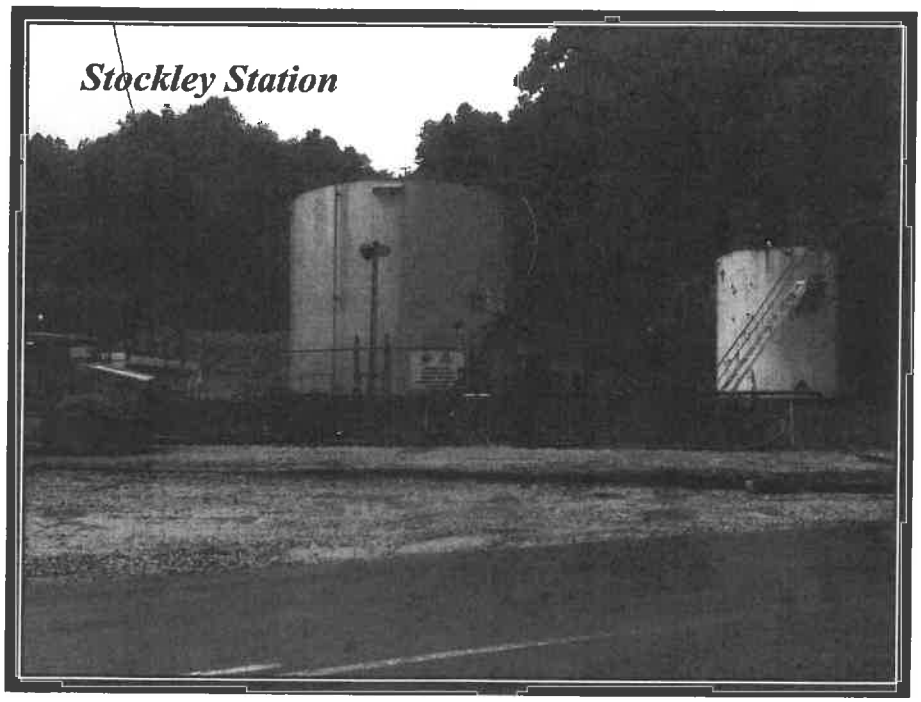
On July 13, 2016, the writer conducted an inspection of the Stockley Station. The facility is located in a rural area of Clay County approximately 1.4 miles south of Wallback, WV along State Route (SR) 36. The writer was accompanied on the inspection by Mr. Duane Whiting, the Foreman, Fleet Operations for WVOG. Observations from the inspection include:

- The existing facility is located immediately adjacent to SR 36 approximately 1.4 miles south of Wallback, WV. The area is hilly and rural in nature with scattered homes and businesses within several miles of the facility along SR36. SR 36 in that area runs along the Right Fork of Big Sandy Creek valley;

- At the time of the inspections, the tanks and pump stations appeared clean and well maintained. Only a faint grease/oil odor was noticed while in the facility. Much mud was present due to recent flooding, but no damage to the facility could be seen; and

- The occupied dwelling located nearest to the facility is several hundred yards to the south, also along SR 36.

The following is a picture of the proposed site of the Stockley Station:



Directions: [Latitude: 38.54638°, Longitude: -81.13541°] From the Wallback exit on I-79, travel south on SR 36 for approximately 1.5 miles to the site on the right.

AIR EMISSIONS AND CALCULATION METHODOLOGIES

WVOG included in Attachment N of the permit application an emission estimate for the existing Stockley 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 and produced water storage tanks (OTK-1 and BR-1) using the TANKS 4.09d program (working/breathing losses) as provided under AP-42, Section 7 (AP-42 is a database of emission factors maintained by USEPA). These were the only storage tanks on site determined to have the potential for any substantive emissions. The total emissions from each tank are the combination of the calculated "breathing loss" and "working loss." The breathing loss refers to the loss of vapors as a result of tank vapor space breathing (resulting from temperature and pressure differences) that occurs continuously when the tank is storing liquid. The working loss refers to the loss of vapors as a result of tank filling or emptying operations. Standing losses are independent of storage tank throughput while working losses are dependent on throughput.

Conservatively, maximum annual throughputs of crude oil and produced water of 52,101,000 and 147,168,000 gallons, respectively, were used in the calculations. Five (5) percent of the produced water throughput was estimated to contain heavy oils in the calculations. WVOG doubled the calculated emission rates 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 and produced water loading operations (TH-1 and TH-2) 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 and produced water of 1,204,500 and 147,168,000 gallons, respectively. 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. Maximum hourly pumping rates of 16,800 gal-crude oil/hour and 7,500 gal-produced water/hour were used to determine the short term emission rates. 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 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. 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 Stockley Station is given in the following table:

Table 1: Stockley Station Facility-Wide Emissions

Source	VOC		$PM_{2.5}$		PM_{10}		PM		HAPs	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Storage Tanks	0.54	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.13
Truck Loading	1.45	6.35	0.00	0.00	0.00	0.00	0.00	0.00	1.86	0.34
Leak Fugitives	0.14	0.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Haul Roads	0.00	0.00	0.04	0.15	0.33	1.45	1.36	5.96	0.00	0.00
Facility-Wide Totals	2.13	9.32	0.04	0.15	0.33	1.45	1.36	5.96	1.89	0.47

REGULATORY APPLICABILITY

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

The Stockley 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 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 a permit under 45CSR13 for the after-the-fact construction and operation of Stockley 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 June 1, 2016 in *Clay County Free Press* and the affidavit of publication for this legal advertisement was submitted on July 26, 2016.

45CSR14 (NON APPLICABILITY)

The facility-wide PTE of Stockley Station (see Table 1 above) is below the levels that would define the source as "major" under 45CSR14 and, therefore, the facility evaluated herein is not subject to the provisions of 45CSR14.

45CSR30: Requirements for Operating Permits - (NON APPLICABILITY)

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. Source's in this classification are not required 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 m^3 (19,813 gallons). However, storage tanks with a capacity greater than or equal to 151 m^3 (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 m^3 but less than 151 m^3 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 138,600 gallon (524.66 m^3) crude oil (~ 35 kPa) storage tank (OTK-1) is subject to the applicable provisions therein.

The substantive requirement for the crude oil tanks, 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 Stockley Station is equipped with an internal floating roof.

TOXICITY ANALYSIS OF NON-CRITERIA REGULATED POLLUTANTS

This section provides an analysis for those regulated pollutants that may be emitted from Stockley 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 (PM), Particulate Matter less than 10 microns (PM_{10}), Particulate Matter less than 2.5 microns ($PM_{2.5}$), and Sulfur Dioxide (SO_2). 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)):

Table 2: HAPs - Carcinogenic Risk

HAPs	Type	Known/Suspected Carcinogen	Classification
n-Hexane	VOC	No	Inadequate Data
Benzene	VOC	Yes	Category A - Known Human Carcinogen
Toluene	VOC	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*. 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, COMPLIANCE DEMONSTRATIONS, RECORD-KEEPING, AND REPORTING REQUIREMENTS

The following substantive monitoring, compliance demonstration, reporting, and record-keeping requirements (MRR) shall be required:

- For the purposes of demonstrating compliance with maximum throughput limit of liquids 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 liquids (in gallons) throughput in each storage tank.

- 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.

PERFORMANCE TESTING OF OPERATIONS

The following substantive performance testing requirements shall be required:

- At such reasonable time(s) as the Secretary may designate, in accordance with the provisions of 3.3 of the draft permit, WVOG shall be required to conduct or have conducted test(s) to determine compliance with the emission limitations established in this permit and/or applicable regulations.

RECOMMENDATION TO DIRECTOR

The information provided in permit application R13-3324 indicates that compliance with all applicable state and federal air quality regulations will be achieved. Therefore, I recommend to the Director the issuance of Permit Number R13-3324 to West Virginia Oil Gathering, LLC for the after-the-fact construction and operation of the Stockley Station located near Wallback, Clay County, WV.

Joe Kessler, PE
Engineer

10/27/16
Date