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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	G70-A152
Plant ID No.:	103-00102
Applicant:	Triad Hunter, LLC
Facility Name:	WVDNR Pad No. 6 Production Facility
Location:	Jacksonburg, Wetzel County
NAICS Code:	211111
Application Type:	Construction
Received Date:	March 10, 2015
Engineer Assigned:	Jerry Williams, P.E.
Fee Amount:	$1,500.00
Date Received:	March 10, 2015
Complete Date:	April 6, 2015
Due Date:	May 21, 2015
Applicant Ad Date:	April 1, 2015
Newspaper:	*Wetzel Chronicle*
UTM's:	Easting: 529.446 km Northing: 4,372.904 km Zone: 17
Latitude/Longitude:	39.505258 / -80.657496
Description:	This permitting action is for an oil and natural gas production facility.

DESCRIPTION OF PROCESS

The following process description was taken from Registration Application G70-A152:

Natural gas and produced fluids (condensate and water) is received from seven (7) wells and passed through gas processing units (GPUs) to avoid ice formation during subsequent pressure drops. These materials are then passed through a three-way separator where gas, condensate and water are separated. The gas is routed to a gathering pipeline owned and operated by others. Under normal operating conditions, the two (2) liquids (condensate and produced water) are combined and injected (via pumps by electric motors) into a separate liquids line for transportation to a facility where they are separated and managed accordingly.

Due to the inherent complexities of transporting mixed phase liquids, Triad Hunter, LLC is seeking to install four (4) 400 barrel (bbl) tanks to receive the condensate and produced water, pending truck transportation by others. The condensate will be transported to a regional processing facility and the produced water to a regional disposal facility. Flashing, working and breathing losses from these tanks and associated truck loading will be routed to an enclosed combustor. While it is anticipated that these tanks will be utilized less than 20 days per year, this permitting action represents the potential emissions associated with full time use of the tanks and associated truck loading.

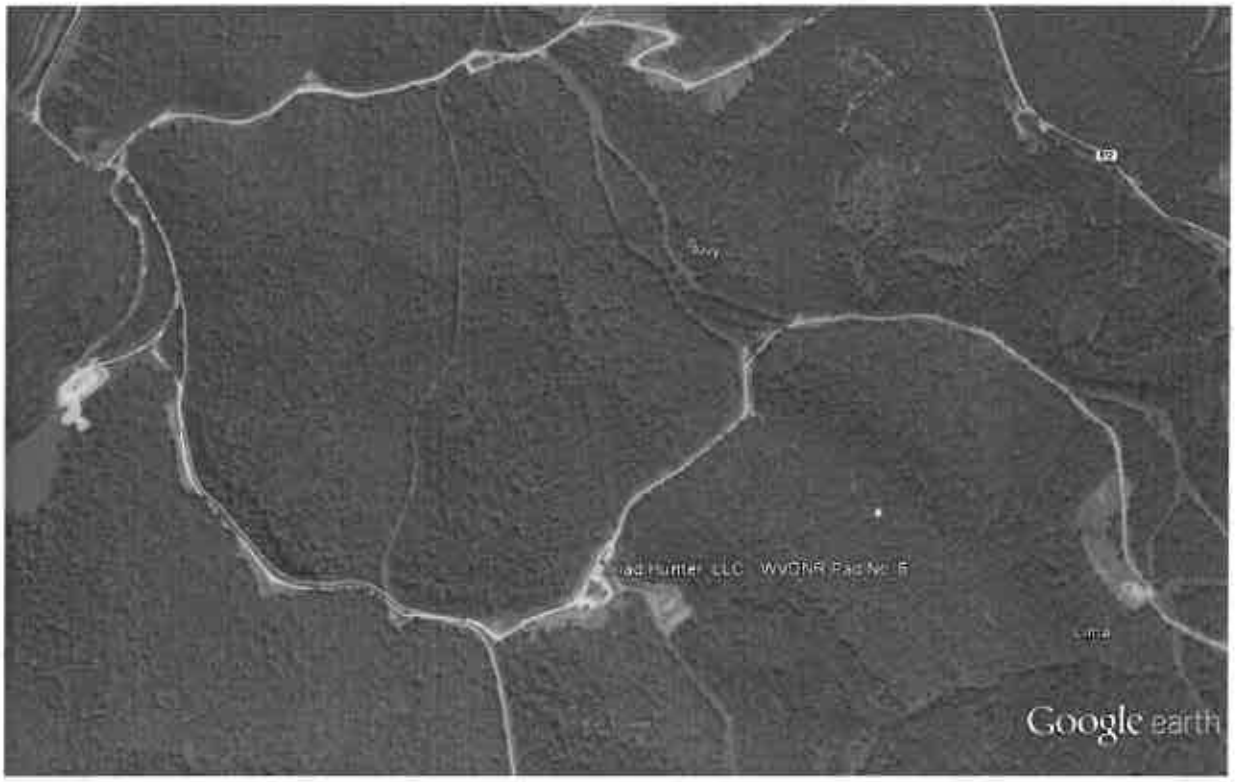
There are no gas fired compressor engines or glycol dehydration units proposed for this facility. There are no pig launchers or receivers at this facility. Fugitive emissions also occur from component leaks.

SITE INSPECTION

A site inspection was conducted by James Robertson of the DAQ Enforcement Section. There are no visible residences from the proposed facility location. Therefore, the G70-A siting requirements were met.

Directions to the proposed facility are as follows:

From Jacksonburg: Turn left onto Main Street. Proceed approximately 0.7 miles to lease road entrance. The pad is 2.9 miles down the lease road.



ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emissions associated with this construction application consist of the emissions from two (2) condensate storage tanks (T01, T02), two (2) produced water storage tanks (T03, T04), seven (7) GPU heaters (GPU-1 – GPU-7), one (1) combustor (C1), condensate truck loading (TL-1), produced water truck loading (TL-2) and fugitive emissions.

Triad Hunter, LLC provided a gas analysis for this pad with the permit application and ProMax emission estimation modeling software was utilized.

Each piece of equipment onsite are fitted with components such as flanges, valves, connectors, open-ended lines, and pressure relief valves to ensure a safe and efficient production process. These components are designed to have a small amount of gas vent to the atmosphere. The component counts were estimated using Table W-1B of 40 CFR Part 98 Subpart W for equipment in natural gas service. Weight fractions of specific pollutant component were used from a gas analysis the proposed well and from the ProMax output of the flashing gas evolved from the hydrocarbon liquid.

The following table indicates which methodology was used in the emissions determination:

Emission Point ID#	**Process Equipment**	**Calculation Methodology**
1E-7E	Seven (7) GPUs	EPA AP-42 Emission Factors
8E	Vapor Combustion Unit for Two (2) 400 bbl Condensate Tanks, Two (2) 400 bbl Produced Water Storage Tanks, Condensate and Produced Water Truck Loading	ProMax 3.2 Process Simulation EPA AP-42 Emission Factors
9E	Vapor Combustion Unit Pilot Emissions	EPA AP-42 Emission Factors
FUG	Fugitive VOC Emissions (Fittings and Connections)	40 CFR Part 98 Subpart W Emission Factors
HR	Haul Roads	EPA AP-42 Emission Factors

The total facility PTE for the WVDNR Pad No. 6 Production Facility is shown in the following table:

Pollutant	**Facility Wide PTE (tons/year)**
Nitrogen Oxides	9.80
Carbon Monoxide	33.14
Volatile Organic Compounds	60.44
Particulate Matter-10/2.5	8.96
Sulfur Dioxide	0.03
Total HAPs	2.13
Carbon Dioxide Equivalent	14,628

Maximum detailed controlled point source emissions were calculated by Triad Hunter, LLC and checked for accuracy by the writer and are summarized in the table on the next page.

Triad Hunter, LLC – WVDNR Pad No. 6 Production Facility (G70-A152)

Emission Point ID#	Source	NO_x		CO		VOC		PM-10/2.5		SO_2		Total HAPs		CO_2e
		lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	ton/year
1E-3E	2.0 MMBTU/hr GPUs	0.60	2.63	0.50	2.21	0.03	0.15	0.05	0.20	<0.01	0.02	0.01	0.05	3174
4E-7E	1.0 MMBTU/hr GPUs	0.40	1.75	0.34	1.47	0.02	0.10	0.03	0.13	<0.01	0.01	<0.01	0.03	2116
8E	Combustor 2 Cond Tanks, 2 PW Tanks, Cond, PW Truck Loadout	1.22	5.42	6.73	29.46	13.35	55.70	0.06	0.26	<0.01	<0.01	0.53	2.05	9315
9E	Combustor Pilot	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	7
Total Point Source PTE		**2.22**	**9.80**	**7.57**	**33.14**	**13.41**	**55.94**	**0.14**	**0.59**	**0.01**	**0.03**	**0.55**	**2.13**	**14612**
FUG	Fugitive Emissions	0.00	0.00	0.00	0.00	1.03	4.50	0.00	0.00	0.00	0.00	0.00	0.00	16
HR	Haulroad Emissions	0.00	0.00	0.00	0.00	0.00	0.00	55.80	8.37	0.00	0.00	0.00	0.00	0
Total Fugitive PTE		**0.00**	**0.00**	**0.00**	**0.00**	**1.03**	**4.50**	**55.80**	**8.37**	**0.00**	**0.00**	**0.00**	**0.00**	**16**
Total Sitewide PTE		**2.22**	**9.80**	**7.57**	**33.14**	**14.44**	**60.44**	**55.94**	**8.96**	**0.01**	**0.03**	**0.55**	**2.13**	**14628**

REGULATORY APPLICABILITY

The following rules 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 (GPU-1 – GPU-7) are below 10 MMBTU/hr. Therefore, these units are exempt from the aforementioned sections of 45CSR2. However, Triad Hunter, LLC would be subject to the opacity requirements in 45CSR2, which is 10% opacity based on a six minute block average.

45CSR6 (To Prevent and Control Air Pollution from the Combustion of Refuse)

45CSR6 prohibits open burning, establishes emission limitations for particulate matter, and establishes opacity requirements. Sources subject to 45CSR6 include completion combustion devices, enclosed combustion devices, and flares.

The facility-wide requirements of the general permit include the open burning limitations §§45-6-3.1 and 3.2.

All completion combustion devices, enclosed combustion devices, and flares are subject to the particulate matter weight emission standard set forth in §45-6-4.1; the opacity requirements in §§45-6-4-3 and 4-4; the visible emission standard in §45-6-4.5; the odor standard in §45-6-4.6; and the testing standard in §§45-6-7.1 and 7.2. Sections 5.0, 6.0 and 14.0 of the G70-A general permit include requirements for 45CSR6.

Enclosed combustion control devices and flares that are used to comply with emission standards of NSPS, Subpart OOOO are subject to design, operational, performance, recordkeeping and reporting requirements of the NSPS regulation that meet or exceed the requirements of 45CSR6.

Triad Hunter, LLC has one (1) combustor at the WVDNR Pad No. 6 Production Facility. The combustor has negligible particulate matter emissions. Therefore, the facility's combustor should demonstrate compliance with this section. The facility will demonstrate compliance by maintaining records of the amount of natural gas consumed by the combustor and the hours of operation. The facility will also monitor the flame of

the combustor and record any malfunctions that may cause no flame to be present during operation.

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 (GPU-1 – GPU-7) 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)

45CSR13 applies to this source due to the fact that Triad Hunter, LLC is defined as a "stationary source" under 45CSR13 Section 2.24.b, which states that an owner or operator discharges or has the potential to discharge more than six (6) pounds per hour and ten (10) tons per year, or has the potential to discharge more than 144 pounds per calendar day of any regulated air pollutant. Triad Hunter, LLC's carbon monoxide and volatile organic compounds (VOC) emissions exceed 45CSR13 permit thresholds. Triad Hunter, LLC has published the required Class I legal advertisement notifying the public of their permit application, and paid the appropriate application fee (construction).

45CSR22 (Air Quality Management Fee Program)

This facility is a minor source and not subject to 45CSR30. Triad Hunter, LLC is required to keep their Certificate to Operate current.

40CFR60 Subpart OOOO (Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution)

EPA published in the Federal Register new source performance standards (NSPS) and air toxics rules for the oil and gas sector on August 16, 2012. 40CFR60 Subpart OOOO establishes emission standards and compliance schedules for the control of volatile organic compounds (VOC) and sulfur dioxide (SO_2) emissions from affected facilities that commence construction, modification or reconstruction after August 23, 2011. The following affected sources which commence construction, modification or reconstruction after August 23, 2011 are subject to the applicable provisions of this subpart:

a. Each gas well affected facility, which is a single natural gas well.

The gas wells that are proposed at the WVDNR Pad No. 6 Production Facility were drilled principally for the production of natural gas and were done so after

August 23, 2011. Therefore, these wells would be considered affected facilities under this subpart. The compliance date for these hydraulically fractured wells is October 15, 2012. Triad Hunter, LLC is required under §60.5410 to submit an initial notification, initial annual report, maintain a log of records for each well completion, and maintain records of location and method of compliance. §60.5420 requires Triad Hunter, LLC demonstrate continuous compliance by submitting reports and maintaining records for each completion operation.

b. Each centrifugal compressor affected facility, which is a single centrifugal compressor using wet seals that is located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment. For the purposes of this subpart, your centrifugal compressor is considered to have commenced construction on the date the compressor is installed (excluding relocation) at the facility. A centrifugal compressor located at a well site, or an adjacent well site and servicing more than one well site, is not an affected facility under this subpart.

There are no centrifugal compressors at the WVDNR Pad No. 6 Production Facility. Therefore, all requirements regarding centrifugal compressors under 40 CFR 60 Subpart OOOO would not apply.

c. Each reciprocating compressor affected facility, which is a single reciprocating compressor located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment. For the purposes of this subpart, your reciprocating compressor is considered to have commenced construction on the date the compressor is installed (excluding relocation) at the facility. A reciprocating compressor located at a well site, or an adjacent well site and servicing more than one well site, is not an affected facility under this subpart.

There are no reciprocating compressors at the WVDNR Pad No. 6 Production Facility. Therefore, all requirements regarding reciprocating compressors under 40 CFR 60 Subpart OOOO would not apply.

d. Pneumatic Controllers

- Each pneumatic controller affected facility, which is a single continuous bleed natural gas-driven pneumatic controller operating at a natural gas bleed rate greater than 6 scfh which commenced construction after August 23, 2011, and is located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment and not located at a natural gas processing plant.

- Each pneumatic controller affected facility, which is a single continuous bleed natural gas-driven pneumatic controller which commenced construction after August 23, 2011, and is located at a natural gas processing plant.

The pneumatic controllers at this facility must meet the above regulatory requirements.

e. Each storage vessel affected facility, which is a single storage vessel, located in the oil and natural gas production segment, natural gas processing segment or natural gas transmission and storage segment.

40CFR60 Subpart OOOO defines a storage vessel as a unit that is constructed primarily of nonearthen materials (such as wood, concrete, steel, fiberglass, or plastic) which provides structural support and is designed to contain an accumulation of liquids or other materials. The following are not considered storage vessels:

- Vessels that are skid-mounted or permanently attached to something that is mobile (such as trucks, railcars, barges or ships), and are intended to be located at a site for less than 180 consecutive days. If the source does not keep or are not able to produce records, as required by §60.5420(c)(5)(iv), showing that the vessel has been located at a site for less than 180 consecutive days, the vessel described herein is considered to be a storage vessel since the original vessel was first located at the site.

- Process vessels such as surge control vessels, bottoms receivers or knockout vessels.

- Pressure vessels designed to operate in excess of 204.9 kilopascals and without emissions to the atmosphere.

This rule requires that the permittee determine the VOC emission rate for each storage vessel affected facility utilizing a generally accepted model or calculation methodology within 30 days of startup, and minimize emissions to the extent practicable during the 30 day period using good engineering practices. For each storage vessel affected facility that emits more than 6 tpy of VOC, the permittee must reduce VOC emissions by 95% or greater within 60 days of startup. The compliance date for applicable storage vessels is October 15, 2013.

The storage vessels located at the WVDNR Pad No. 6 Production Facility emit greater than 6 TPY. Therefore, Triad Hunter, LLC is required by this section to reduce VOC emissions by 95%. Triad Hunter, LLC has proposed to install a vapor combustor that reduces the emissions by 98%.

f. The group of all equipment, except compressors, within a process unit is an affected facility.

- Addition or replacement of equipment for the purpose of process improvement that is accomplished without a capital expenditure shall not by itself be considered a modification under this subpart.

- Equipment associated with a compressor station, dehydration unit, sweetening unit, underground storage vessel, field gas gathering system, or liquefied natural gas unit is covered by §§60.5400, 60.5401, 60.5402, 60.5421 and 60.5422 of this subpart if it is located at an onshore natural gas processing plant. Equipment not located at the onshore natural gas processing plant site is exempt from the provisions of §§60.5400, 60.5401, 60.5402, 60.5421 and 60.5422 of this subpart.

- The equipment within a process unit of an affected facility located at onshore natural gas processing plants and described in paragraph (f) of this section are exempt from this subpart if they are subject to and controlled according to subparts VVa, GGG or GGGa of this part.

The WVDNR Pad No. 6 Production Facility is not a natural gas processing plant. Therefore, Leak Detection and Repair (LDAR) requirements for onshore natural gas processing plants would not apply.

g. Sweetening units located at onshore natural gas processing plants that process natural gas produced from either onshore or offshore wells.

- Each sweetening unit that processes natural gas is an affected facility; and

- Each sweetening unit that processes natural gas followed by a sulfur recovery unit is an affected facility.

- Facilities that have a design capacity less than 2 long tons per day (LT/D) of hydrogen sulfide (H_2S) in the acid gas (expressed as sulfur) are required to comply with recordkeeping and reporting requirements specified in §60.5423(c) but are not required to comply with §§60.5405 through 60.5407 and paragraphs 60.5410(g) and 60.5415(g) of this subpart.

- Sweetening facilities producing acid gas that is completely reinjected into oil-or-gas-bearing geologic strata or that is otherwise not released to the atmosphere are not subject to §§60.5405 through 60.5407, 60.5410(g), 60.5415(g), and 60.5423 of this subpart.

There are no sweetening units at the WVDNR Pad No. 6 Production Facility. Therefore, all requirements regarding sweetening units under 40 CFR 60 Subpart OOOO would not apply.

The following rules do not apply to the facility:

40CFR60 Subpart Kb (Standards of Performance for VOC Liquid Storage Vessels)

40CFR60 Subpart Kb does not apply to storage vessels with a capacity less than 75 cubic meters. The tanks that Triad Hunter, LLC has proposed to install are 63.60 cubic meters each. Therefore, Triad Hunter, LLC would not be subject to this rule.

40CFR60 Subpart KKK (Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants)

40CFR60 Subpart KKK applies to onshore natural gas processing plants that commenced construction after January 20, 1984, and on or Before August 23, 2011. The WVDNR Pad No. 6 Production Facility was constructed after August 23, 2011 and is not a natural gas processing plant, therefore, Triad Hunter, LLC would not be subject to this rule.

40CFR63 Subpart HH (National Emission Standards for Hazardous Air Pollutants for Oil and Natural Gas Production Facilities)

Subpart HH establishes national emission limitations and operating limitations for HAPs emitted from oil and natural gas production facilities located at major and area sources of HAP emissions. There are no glycol dehydration units at this facility, therefore, this rule does not apply.

45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants)

45CSR19 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution which Cause or Contribute to Nonattainment)

The WVDNR Pad No. 6 Production Facility is located in Wetzel County, which is an unclassified county for all criteria pollutants, therefore this facility is not applicable to 45CSR19.

As shown in the following table, Triad Hunter, LLC is not a major source subject to 45CSR14 or 45CSR19 review. According to 45CSR14 Section 2.43.e, fugitive emissions are not included in the major source determination because it is not listed as one of the source categories in Table 1. Therefore, the fugitive emissions are not included in the PTE below.

Pollutant	PSD (45CSR14) Threshold (tpy)	NANSR (45CSR19) Threshold (tpy)	WVDNR Pad No. 6 Production Facility PTE (tpy)	45CSR14 or 45CSR19 Review Required?
Carbon Monoxide	250	NA	33.14	No
Nitrogen Oxides	250	NA	9.80	No
Sulfur Dioxide	250	NA	0.03	No
Particulate Matter 2.5	250	NA	0.59	No
Ozone (VOC)	250	NA	55.94	No

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. The following table lists common HAP's emitted from these types of facilities and each HAP's carcinogenic risk (as based on analysis provided in the Integrated Risk Information System (IRIS)):

HAPs	Type	Known/Suspected Carcinogen	Classification
Formaldehyde	VOC	Yes	Category B1 - Probable Human Carcinogen
Benzene	VOC	Yes	Category A - Known Human Carcinogen
Ethylbenzene	VOC	No	Inadequate Data
Toluene	VOC	No	Inadequate Data
Xylenes	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

Modeling was not required of 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 seen in the table listed in the Regulatory Discussion Section.

SOURCE AGGREGATION

Classifying multiple facilities as one "stationary source" under 45CSR13, 45CSR14, and 45CSR19 is based on the definition of "Building, structure, facility, or installation" as given in §45-14-2.13 and §45-19-2.12.

"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.

1. The WVDNR Pad No. 6 Production Facility will operate under SIC code 1311 (Crude Petroleum and Natural Gas Extraction). There are surrounding wells and compressor stations operated by Triad Hunter, LLC that share the same two-digit major SIC code of 13 for oil and gas exploration and production. Therefore, the WVDNR Pad No. 6 Production Facility does share the same SIC code as the wells and surrounding compressor stations.

2. "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 Triad Hunter, LLC facilities that are contiguous or adjacent with the WVDNR Pad No. 6 Production Facility. Additionally, there are no co-located facilities with the WVDNR Pad No. 6 Production Facility. The closest Triad Hunter, LLC facility is 0.8 miles from the proposed WVDNR Pad No. 6 Production Facility.

3. There are other wells and compressor stations that are under common control of Triad Hunter, LLC.

Because the facilities are not considered to be on contiguous or adjacent properties, the emissions from the WVDNR Pad No. 6 Production Facility should not be aggregated with other facilities in determining major source or PSD status.

MONITORING OF OPERATIONS

Triad Hunter, LLC will be required to perform the following monitoring and recordkeeping associated with this permit application:

- Monitor and record quantity of natural gas consumed for all combustion sources
- Monitor the presence of the combustor pilot flame with a thermocouple or equivalent
- Monitor opacity from all fuel burning units
- Monitor the storage tanks to ensure that all vapors are sent to the combustor
- Monitor all applicable requirements of 40CFR60 Subpart OOOO.
- Monitor and record the operating hours of the combustor
- Maintain records of testing conducted in accordance with the permit
- Maintain a record of all potential to emit (PTE) HAP calculations for the entire facility.
- Monitor the condensate and produced water truck loading
- The records shall be maintained on site or in a readily available off-site location maintained by Triad Hunter, LLC for a period of five (5) years.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates Triad Hunter, LLC's WVDNR Pad No. 6 Production Facility meets all the requirements of applicable regulations. Therefore, impact on the surrounding area should be minimized and it is recommended that the Wetzel County location should be granted registration under General Permit G70-A.

Jerry Williams, P.E.
Engineer

MAY 4, 2015
Date