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Response to Public Comments

**R13-3166 (Mountain Compressor Station)
R13-3167 (Canton North Compressor Station)**

Antero Resources Corporation

Date: August 22, 2014

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BACKGROUND INFORMATION

On March 25, 2014, pursuant to §45-13-8, the West Virginia Division of Air Quality (DAQ) provided notice to the public of a preliminary determination to issue Permit Number R13-3167 to Antero Resources Corporation (Antero) for the construction of the Canton North natural gas compressor station proposed to be located near Center Point, Doddridge County, WV.

On March 26, 2014, pursuant to §45-13-8, the DAQ provided notice to the public of a preliminary determination to issue Permit Number R13-3166 to Antero for the construction of the Mountain natural gas compressor station proposed to be located near Pennsboro, Tyler County, WV.

At those times, the draft permit and Engineering Evaluation/Fact Sheet were made available to the public for review. The permit application had previously been available for public review and remained so during the public comment period.

The public notice was followed by a public comment period (required to be a minimum of 30 days under §45-13-8) scheduled to end at 5:00 P.M. on April 24, 2014 (Canton North) and April 25, 2014 (Mountain). During the public comment period, the DAQ accepted comments on our preliminary determination to issue permits R13-3166 and R13-3167 to Antero and on all documents related thereto. To provide information on the permitting action and to facilitate the submission of comments, the DAQ held, on May 14, 2014, pursuant to §45-13-9, a public meeting concerning R13-3166 and R13-3167 at the Doddridge Senior Center located in West Union, Doddridge County, WV. Due to the public meeting, the public comment period was extended until 8:30 p.m., Wednesday, May 14, 2014. Before the conclusion of the May 14, 2014 public meeting, the public comment period was extended again until May 21, 2014 at 4:00 p.m. to accept further comments based on any new information discussed during the public meeting.

OVERVIEW OF COMMENTS RECEIVED

The DAQ received written comments during the public comment period. There was one (1) written comment that requested a public meeting for the Canton North Compressor Station that contained 20 signatures. Additional oral comments were made during the public meeting. Some comments were general in nature (and non-technical). However, technical questions/comments were also submitted. Pursuant to §45-13-8.8, all submitted comments received during the public comment period have been reviewed and are appropriately addressed in this document.

ORGANIZATION OF COMMENT RESPONSE

The DAQ's response to the submitted comments includes both a general and specific response section. The general response defines issues over which the DAQ has authority and by contrast, identify those issues that are beyond the purview of the DAQ. The general response also describes the statutory basis for the issuance/denial of a permit, discusses the role of the pre-construction permitting process in the larger divisional goal of maintaining air quality in WV, and details the current status of the ambient air quality of Doddridge and Tyler Counties.

The specific response summarizes each relevant non-general comment that falls within the purview of the DAQ and provides a response to it. This document does not reproduce all the comments here (they are available for review in the R13-3166 and R13-3167 files). Instead, each comment is summarized and key points are listed. The DAQ makes no claim that the summaries are complete; they are provided only to place the responses in a proper context. For a complete understanding of submitted comments, please see the original documents in the file. The DAQ responses, however, are directed to the entire comments and not just to what is summarized. Comments that are not directly identified and responded to in the specific response section of this document are assumed to be answered under the general response section (or not relevant to the Antero applications or an air quality-related issue).

GENERAL RESPONSE TO COMMENTS

Statutory Authority of the DAQ

The statutory authority of the DAQ is given under the Air Pollution Control Act (APCA) - West Virginia Code §22-5-1, *et. seq.* - which states, under §22-5-1 ("Declaration of policy and purpose"), that:

It is hereby declared the public policy of this state and the purpose of this article to achieve and maintain such levels of air quality as will [underlining and emphasis added] protect human health and safety, and to the greatest degree practicable, prevent injury to plant and animal life and property, foster the comfort and convenience of the people, promote the economic and social development of this state and facilitate the enjoyment of the natural attractions of this state.

Therefore, while the code states that the intent of the rule includes the criteria outlined in the latter part of the above sentence, it is clear by the underlined and bolded section of the above sentence that the scope of the delegated authority does not extend beyond the impact of air quality on these criteria. Based on the language under §22-5-1, *et. seq.*, the DAQ, in making determinations on issuance or denial of permits under 45CSR13, does not take into consideration substantive non-air quality issues such as job creation, economic viability of proposed product, energy independence, nuisance potential (sight line obstruction, traffic), non-air quality environmental impacts, grant eligibility, etc. Beyond the DAQ's position that the code does not grant us the authority to take into consideration such issues, it is also self-evident that these issues are beyond the expertise of the Division of Air Quality and that most are regulated by other bodies with the mandates and expertise to do so.

Statutory Basis for Permit Denial

Pursuant to §22-5-4 (“Powers and duties of director; and legal services; rules”), the DAQ is authorized:

To promulgate legislative rules . . . providing for . . . [p]rocedures and requirements for permit applications, transfers and modifications and the review thereof;

This authorization is effected under WV Legislative Rule 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.” Pursuant to §45-13-5.7, the DAQ shall issue a permit unless:

a determination is made that the proposed construction, modification, registration or relocation will violate applicable emission standards, will interfere with attainment or maintenance of an applicable ambient air quality standard, cause or contribute to a violation of an applicable air quality increment, or be inconsistent with the intent and purpose of this rule or W. Va. Code §22-5-1 et seq., in which case an order denying such construction, modification, relocation and operation shall be issued. The Secretary shall, to the extent possible, give priority to the issuance of any such permit so as to avoid undue delay and hardship.

It is clear under 45CSR13 that denial of a permit must be based on one of the above explicitly stated criteria or, as noted, is inconsistent with the intent of 45CSR13 or §22-5-1, *et seq.* As is stated above, it is the DAQ’s position that the intent of both the APCA and 45CSR13 is to limit the authority of the DAQ to air quality issues as outlined in the APCA and in West Virginia’s State Implementation Plan (SIP).

The air quality issues evaluated relating to Antero’s applications to construct natural gas compressor stations are outlined in the DAQ’s Engineering Evaluation/Fact Sheet made public on March 25, 2014 and March 26, 2014. The issues covered under those documents represent the extent of the substantive air quality issues over which the DAQ believes it has authority to evaluate under 45CSR13 and the APCA as relating to Antero’s permit applications R13-3166 and R13-3167.

DAQ Permitting Process in Context

It is important to note that the DAQ permitting process is but one part of a system that works to meet the intent of the APCA in WV. The DAQ maintains a Compliance/Enforcement (C/E) Section, an Air Monitoring Section, a Planning Section, *etc.* to effect this. Most pertinent to the permitting process, the C/E Section regularly inspects permitted sources to determine the compliance status of the facility including compliance with all testing, monitoring, record-keeping, and reporting requirements.

General Response Conclusion

In conclusion, in response to all commenters who referenced substantive non-air quality issues, the APCA and 45CSR13 does not grant the DAQ the authority to take into consideration such issues in determining to issue or deny the permit. Further, the requirements of 45CSR13 require the DAQ to, when denying a permit, explicitly state the reason pursuant to §45-13-5.7. Additionally, the permit is but the beginning of the involvement of the DAQ with a source. After issuance, the facility will receive regular inspections to determine compliance with the requirements as outlined in the applicable permit.

SPECIFIC RESPONSES TO COMMENTS

Comment #1

The public expressed interest in setting up air quality monitors at the facility that would record real time data.

DAQ Response

The DAQ Air Monitoring Section, with ambient air quality sampling sites located throughout West Virginia, monitors air pollutants on either a continuous or periodic basis. The sampling sites are located to assess air quality levels based on population exposure, industry emissions, determine compliance with the National Ambient Air Quality Standards (NAAQS), background levels and other special purposes.

The monitoring network is reviewed annually and revised as necessary to accommodate changing Federal requirements. The data collected is used by the DAQ to implement programs to ensure attainment of NAAQS for criteria pollutants. The purpose of the network monitoring plan is to enhance ambient air quality monitoring to better serve current and future air quality management and research needs. USEPA reviews and approves the network monitoring plans annually. The general monitoring network design requires ambient air monitors to focus on populated areas with air quality problems and to reduce monitors in areas that have measured ambient air concentrations well below the applicable NAAQS.

The closest air monitoring sites are in Harrison County (PM_{2.5}), Marion County (PM_{2.5}), Wood County (PM_{2.5}, SO₂, ozone), Marshall County (PM_{2.5}, PM_{2.5} speciation, and SO₂), and Monongalia County (PM_{2.5}, SO₂, ozone).

The 2013 State of West Virginia Air Quality Annual Report which includes information on the NAAQS in regards to all regulated air pollutants, the air quality index from around the state, and detailed technical information on how the monitoring program works in making these determinations can be downloaded from the following website:

<http://www.dep.wv.gov/daq/CandE/Documents/2013%20Report%20Cover.pdf>

The types of air quality monitors that have been proposed in comment letters that have been received and discussed during the public meeting are not of the same caliber as used for DAQ's long term air monitoring network that are used to determine compliance with the NAAQS. These types of short term monitors consist of photo ionization detectors for total hydrocarbons

and monitors for dust collection. This type of equipment can, at best, be indicative that there may be issues to follow up on, but not conclusive of any long term issues.

As stated above, the DAQ does have several monitors in this area of the state and PM_{2.5} concentrations in this area have declined significantly, as shown in the most recent State of West Virginia Air Quality Annual Report. The DAQ is aware of the recent increased activity in the oil and gas industry as it pertains to horizontal drilling in the Marcellus Shale. The increase in drilling activity has created new challenges with maintaining healthy air, water, and land usage. Air quality issues associated with the oil and gas sector are an expanding aspect of the DAQ's regulatory responsibilities.

It should be noted that Antero's compressor engines are subject to 40CFR60 Subpart JJJJ, which sets forth emission limits, fuel requirements, installation requirements, and monitoring requirements based on the year of installation of the subject internal combustion engine. Antero must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, they must conduct an initial performance test within 1 year of engine startup and conduct subsequent performance testing every 8,760 hours of operation or 3 years, whichever comes first, thereafter to demonstrate compliance.

Comment #2

I have great concern about the amount of hazardous air pollutants (HAPs) that Antero will be allowed to emit from the Canton North Compressor Station. How can the DAQ allow this level of HAPs to be emitted? Will it be safe for families to live in their homes after this station is built and starts polluting the air around our homes? Do you consider the health risks to the people who are forced to live and breathe near this station? These pollutants do not stay on top of each station, they will mix with all of the stations that encircle the county.

DAQ Response

It is the public policy of this state, and the purpose of Article 5 (Air Pollution Control Act) of the West Virginia Code, to achieve and maintain such levels of air quality as will protect human health and safety, and to the greatest degree practicable, prevent injury to plant and animal life and property, foster the comfort and convenience of the people, promote the economic and social development of this state and facilitate the enjoyment of the natural attractions of this state.

Antero has proposed air pollution control devices on their reciprocating internal combustion engines (RICES), glycol dehydration units, storage tanks, and product loadout. As stated previously above, pursuant to §45-13-5.7, the DAQ shall issue a permit unless a determination is made that the proposed construction, modification, registration or relocation will violate applicable emission standards, will interfere with attainment or maintenance of an applicable ambient air quality standard, cause or contribute to a violation of an applicable air quality increment, or be inconsistent with the intent and purpose of this rule or W. Va. Code §22-5-1 et seq., in which case an order denying such construction, modification, relocation and operation shall be issued. Therefore, all air permit applications must be reviewed to determine if all applicable standards are met.

The proposed Canton North Compressor Station has a total HAP emission rate of 11.11 tons per year (tpy). The majority of the HAP emissions at the Canton North Compressor Station consist

of those from the reciprocating internal combustion engines (RICEs) – 9.02 tpy and glycol dehydration units – 1.94 tpy. These sources constitute 98.6% of all HAP emissions from the facility.

The United States Environmental Protection Agency (EPA) has established a ‘major source’ threshold of HAP emissions to be 10 tpy of any one (1) HAP or 25 tpy of a combination of HAPs. If a facility is determined to be ‘major’ under these EPA thresholds, they would be required to obtain a Title V permit and implement maximum achievable control technology (MACT). This is required of all ‘major’ sources and a limited number of smaller sources, called ‘area’ sources. Source categories have been developed to target the pollutants of concern from that particular industry.

Over the past decade, a significant number of new rules have been adopted that specifically apply to area sources. For area sources within each source category, the Clean Air Act allows U.S. EPA to develop standards or requirements which provide for the use of generally available control technologies (GACT) or management practices rather than the MACT required for major sources. MACT requirements apply to major sources of HAPs or area sources, and these standards are congressionally mandated. GACT standards apply to some area sources, and they are considered to be an optional alternative approach to MACT.

The highest individual HAP proposed to be emitted at the Canton North station is formaldehyde at a rate of 1.93 tpy. Therefore, the Canton North station is not considered ‘major’ for HAPs. However, EPA has established federal standards for RICEs as will be installed at the Canton North station. These federal standards require the RICEs to meet stringent emission standards for nitrogen oxides, carbon monoxide, and volatile organic compounds. Additionally, the glycol dehydration units proposed at the facility are also subject to ‘area’ source requirements mandated by EPA. This requires Antero to demonstrate on an ongoing basis that their actual annual average of benzene emissions are below federally established thresholds in order to minimize emissions to the atmosphere. The Canton North station meets both the requirements of the RICE GACT and the glycol dehydration GACT.

The DAQ recognizes that pollutants do not stay on top of each facility. As compounds are emitted into the air, dispersion occurs in which the compounds become less concentrated. Additionally, compounds decompose to simpler compounds over time. Half-life refers to the time it takes for a compound to decompose to half of its original amount in the environment. The following is a list of HAPs emitted by the facility, the half-life of each and more detailed information on each HAP:

- Benzene – 8 days -13.4 days in atmosphere (<http://www.atsdr.cdc.gov/ToxProfiles/tp3.pdf>, <http://www.epa.gov/ogwdw000/pdfs/factsheets/voc/tech/benzene.pdf>)
- Toluene – 13 hours in atmosphere (http://www.epa.gov/chemfact/s_toluen.txt)
- Ethylbenzene – 2 days in atmosphere (<http://www.atsdr.cdc.gov/toxprofiles/tp110-c6.pdf>)
- Xylene – 8-14 hours in atmosphere (<http://www.atsdr.cdc.gov/toxprofiles/tp71-c2.pdf>)
- Acetaldehyde – 6 hr – 12 days (http://www.epa.gov/chemfact/s_acetal.txt)
- Acrolein – 15-20 hours in atmosphere (<http://www.atsdr.cdc.gov/ToxProfiles/tp124.pdf>)
- Hexane – 2.9 days in atmosphere (<http://www.atsdr.cdc.gov/toxprofiles/tp113.pdf>)

- Formaldehyde - 1.6-19 hours in sunlit atmosphere (<http://www.atsdr.cdc.gov/ToxProfiles/tp111.pdf>)

Comment #3

Where residents do agree to accept such facilities nearby, the operator should be required to use the most effective technology available to reduce hazardous emissions. For facilities emitting known hazardous substances, there should be no size loophole that allows companies to state they are below the threshold and thus have a lesser standard to comply with.

DAQ Response

See response to Comment #2. Antero is required to meet all applicable regulations.

Comment #4

Why is Antero being permitted to build this station so close to people's homes? It seems that this is a matter of convenience for Antero, but should not trump the health and welfare of area residents.

DAQ Response

A site inspection was conducted on February 5, 2014 by an inspector from the DAQ's C/E Section. According to the inspector, who is very familiar with this industry, the site location was deemed appropriate for the proposed facility. The permit application underwent a thorough review to ensure that all applicable regulations were met. These regulations were developed to ensure that public health will be protected.

It is the responsibility of the DAQ to apply the rules and regulations of the State of West Virginia and EPA as they apply to air quality. The public participation process, as a matter of law, cannot make permitting decisions contingent upon the popularity or lack thereof of a proposed project. Rather, it is a means of providing information to the public, of receiving information relevant to the permitting decision from the public, and of reviewing the work performed by the DAQ. If the DAQ determines that a proposed facility will comply with the Air Pollution Control Act and all applicable state and federal regulations, the DAQ must issue that facility a permit.

When the public is concerned about siting, zoning, or other issues such as the decision to bring a business to their area, they should contact their local officials, such as the mayor, city council, county commission, etc. The DAQ has no control or influence over these matters.

Comment #5

A residence is located 350-400 feet from the proposed Canton North site. How can you disregard the quality of life of nearby residents? Would you purchase a home close to such a facility? The residents were here first and have a right to continue with the quality of life they currently enjoy.

DAQ Response

See response to Comment #4.

Comment #6

Where did the emission data come from? Please tell me that your office will do air quality monitoring to make sure they are in compliance.

DAQ Response

The emission data found in the draft permit comes from various sources. It was either from manufacturer's data, EPA emission factors, or emission modeling which was all derived through extensive testing.

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

| Emission Unit ID# | Process Equipment | Calculation Methodology |
|--------------------------|--|--|
| C-100 – C-1100 | 1,680 hp Waukesha 7044 GSI Reciprocating Internal Combustion Engine (RICE) w/ NSCR | Manufacturer's Data, EPA AP-42 Emission Factors |
| GEN1, GEN2 | 600 kW Capstone C600 NG Microturbine Generators | Manufacturer's Data, EPA AP-42 Emission Factors |
| CATHT1 | 0.024 MMBTU/hr Catalytic Heater | EPA AP-42 Emission Factors |
| DEHY1, DEHY2 | 60 mmscfd TEG Dehydrator Still Vent w/ Condenser/Recycle and Flare | GRI-GlyCalc 4.0 |
| DREB1, DREB2 | 1.5 MMBtu/hr TEG Dehydrator Reboiler | EPA AP-42 Emission Factors |
| TK-1502 | 400 bbl (16,800 gal) Produced Water/Condensate Settling Tank | EPA Tanks 4.09d and Vasquez-Beggs Correlation (Flashing) |
| TK-200, TK-201 | 400 bbl (16,800 gal) Condensate Storage Tanks | EPA Tanks 4.09d |
| TK-1500, TK-1501 | 400 bbl (16,800 gal) Produced Water Storage Tanks | EPA Tanks 4.09d |
| LDOUT1 | 83 bbl (3,486 gal) / day Product Loadout Rack | EPA AP-42 Emission Factors |
| FLARE1 | 4.8 MMBTU/hr Flare Control Device | EPA AP-42 Emission Factors |

Antero will be required to perform the following monitoring and/or testing:

- Test all of their RICEs within 1 year of engine startup and conduct subsequent performance testing every 8,760 hours of operation or 3 years, whichever comes first, thereafter to demonstrate compliance. This includes the submittal and subsequent approval of an EPA approved performance testing protocol for NO_x, CO and VOC.
- Demonstrate compliance with the HAP emissions for the glycol dehydration unit thresholds.
- Monitor the visible emissions of the reboilers utilizing EPA Method 9.
- Monitor and inspect all closed vent requirements on the vapor recovery units of the storage tanks.
- Monitor and inspect all closed vent requirements on the vapor recovery units of the product loadout rack.
- Monitor and replace all compressor rod packing on a pre-determined interval.

Comment #7

Does the permit application take into consideration the aggregate emissions of Antero's nearby wells and stations and all other oil and gas related activities?

DAQ Response

The facility-wide potential-to-emit of the Canton North Station is below the levels that would define the source as "major" under 45CSR14 and, therefore, the construction evaluated herein is not subject to the provisions of 45CSR14.

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. The definition states:

"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. Pollutant-emitting activities are a part of the same industrial grouping if they belong to the same "Major Group" (i.e., which have the same two (2)-digit code) as described in the Standard Industrial Classification Manual, 1987 (United States Government Printing Office stock number GPO 1987 0-185-718:QL 3).

The Canton North Compressor Station is located in Doddridge County and will be operated by Antero.

1. The Canton North Compressor Station will operate under SIC code 4932 (Natural Gas Distribution). There are other compressor stations operated by Antero that share the same two-digit major SIC code of 49 for natural gas transmission. Therefore, the Canton North Compressor Station does share the same SIC code as other Antero 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 Antero properties in question that are considered to be on contiguous or adjacent property with the Canton North Compressor Station. The closest Antero property (Forest and Brenda Moore Gas Wells) is located approximately 3 miles from the proposed facility. The land between these sites is not owned or managed by Antero. Operations separated by these distances do not meet the common sense notion of a plant. Therefore, the properties in question are not considered to be on contiguous or adjacent property.

3. Common control. The natural gas well sites that supply the incoming natural gas streams to the Canton North Compressor Station are owned and operated by Antero.

Because the facilities are not considered to be on contiguous or adjacent properties, the emissions from the Canton North Compressor Station should not be aggregated with other facilities in determining major source or PSD status.

The Mountain Compressor Station is located in Tyler County and will be operated by Antero.

1. The Mountain Compressor Station will operate under SIC code 4932 (Natural Gas Distribution). There are other compressor stations operated by Antero that share the same two-digit major SIC code of 49 for natural gas transmission. Therefore, the Mountain Compressor Station does share the same SIC code as other Antero 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 Antero properties in question that are considered to be on contiguous or adjacent property with the Mountain Compressor Station. The closest Antero property is located approximately 2400 feet (0.45 miles) from the proposed facility. The land between these sites is not owned or managed by Antero. Operations separated by these distances do not meet the common sense notion of a plant. Therefore, the properties in question are not considered to be on contiguous or adjacent property.

3. Common control. The natural gas well sites that supply the incoming natural gas streams to the Mountain Compressor Station are owned and operated by Antero.

Because the facilities are not considered to be on contiguous or adjacent properties, the emissions from the Mountain Compressor Station should not be aggregated with other facilities in determining major source or PSD status.

Comment #8

The purpose of the DAQ permitting process is to “prevent significant deterioration in air quality”. How is it possible to prevent this by permitting in the current piecemeal fashion with no consideration of the aggregate impacts of industry activity in the area? I do not believe this is possible. I respectfully request a moratorium on granting permits until a process is developed to assess the aggregate impacts on currently planned gas development (wells, pipelines, compressors, storage tanks, and processing facilities).

DAQ Response

This process already exists. This has been prescribed by EPA and is outlined in the response to Comment #7. This source aggregation analysis is performed with each permit application that is reviewed.

Comment #9

Have the adverse health impacts from these HAPs been studied? If so, what were the results of these studies and who did them? What about the short term and long term health impacts from the HAPs? Have these been taken into consideration?

DAQ Response

The HAPs in question have been studied at length by EPA. EPA subsequently established emission standards that they believed to be protective of human health, including sensitive populations. As a result of the pollutant studies, EPA has established a ‘major source’ threshold of HAP emission to be 10 tpy of any one (1) HAP or 25 tpy of a combination of HAPs. If a facility is determined to be ‘major’ under these EPA thresholds, they would be required to obtain a Title V permit and implement maximum achievable control technology (MACT). This is required of all ‘major’ sources and a limited number of smaller sources, called ‘area’ sources. Source categories have been developed to target the pollutants of concern from that particular industry.

Over the past decade, a significant number of new rules have been adopted that specifically apply to area sources. For area sources within each source category, the Clean Air Act allows U.S. EPA to develop standards or requirements which provide for the use of generally available control technologies (GACT) or management practices rather than the MACT required for major sources. MACT requirements apply to major sources of HAPs or area sources, and these standards are congressionally mandated. GACT standards apply to some area sources, and they are considered to be an optional alternative approach to MACT.

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 two (2) draft permits established emission limits for the following HAPs: Benzene, Formaldehyde, Toluene, Xylene, and n-Hexane. The following table

lists each HAP's carcinogenic risk (as based on analysis provided in the Integrated Risk Information System [IRIS]):

| HAP | Type | Known/Suspected Carcinogen | Classification |
|--------------|------|----------------------------|---|
| Formaldehyde | VOC | Yes | Category B1 - Probable Human Carcinogen |
| Benzene | VOC | Yes | Category A - Known Human Carcinogen |
| Toluene | VOC | No | Inadequate Data |
| Xylenes | VOC | No | Inadequate Data |
| n-Hexane | 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 pollutants*. For a complete discussion of the known health effects of each compound refer to the IRIS database located at www.epa.gov/iris.

Comment #10

Why can't Antero build these stations underground? This would not cost the company any more and if this was done, all emissions will definitely stay on site.

DAQ Response

The DAQ does not prescribe how a facility is to be designed. Pursuant to §45-13-5.7, the DAQ shall issue a permit unless:

a determination is made that the proposed construction, modification, registration or relocation will violate applicable emission standards, will interfere with attainment or maintenance of an applicable ambient air quality standard, cause or contribute to a violation of an applicable air quality increment, or be inconsistent with the intent and purpose of this rule or W. Va. Code §22-5-1 et seq., in which case an order denying such construction, modification, relocation and operation shall be issued. The Secretary shall, to the extent possible, give priority to the issuance of any such permit so as to avoid undue delay and hardship.

Regardless of whether an underground station was feasible, the emissions from the emission units would still vent to the atmosphere. Therefore, there would be no difference in emission values if the facility were built underground. Furthermore, depending on the height of the stacks exiting the underground facility, the concentration of the ground level emissions may be much higher.

Comment #11

If Antero is saying that they are using a vapor recovery system that will eliminate 98% of VOC emissions, does that mean that the 2% that will be emitted into our air will be the numbers published in the legal advertisement.

DAO Response

The emissions from the five (5) condensate/produced water storage tanks are controlled by a vapor recovery unit (VRU). This VRU reduces the VOC and HAP emissions from these storage tanks by 98%.

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 (SO₂) emissions from affected facilities that commence construction, modification or reconstruction after August 23, 2011.

The aforementioned storage tanks are subject to this rule.

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 Canton North and Mountain Compressor Stations will be controlled by a VRU which will reduce the potential to emit to less than 6 tpy of VOC.

The following table represents the uncontrolled and controlled emissions from the storage tanks at each station by utilization of the VRU:

| Storage Tank | Uncontrolled VOC Annual Emissions (tpy) | Controlled VOC Annual Emissions (tpy) | Uncontrolled HAP Annual Emissions (tpy) | Controlled HAP Annual Emissions (tpy) |
|----------------|---|---------------------------------------|---|---------------------------------------|
| Produced Water | 0.13 | 0.0027 | 0.0019 | 0.000039 |
| Condensate | 7.61 | 0.15 | 0.11 | 0.0022 |
| Settling | 136.19 | 2.72 | 1.95 | 0.039 |

| Product Loadout Rack | Uncontrolled VOC Annual Emissions (tpy) | Controlled VOC Annual Emissions (tpy) | Uncontrolled HAP Annual Emissions (tpy) | Controlled HAP Annual Emissions (tpy) |
|----------------------|---|---------------------------------------|---|---------------------------------------|
| | 2.97 | 0.059 | 0.042 | 0.00085 |

The emission values published in the Class I legal advertisement are the controlled VOC and HAP emissions.

Comment #12

The gas compressor stations individually may not exceed the HAP limits to be qualified as major stationary sources. However, there are many other existing compressor stations and hundreds of wells nearby, and there will be many more other compressor stations built in the future of West Virginia to move the gas produced from the Marcellus Shale Gas Field to market. In the spirit of 45CSR14 and 40CFR60 the Best Available Control Technology (BACT) should be used. It appears that the glycol dehydrator proposed in the permits is not the best technology.

DAQ Response

All source aggregation analyses are done on a case-by-case basis as was done with both of these stations. Please see the response to Comment #5 for a detailed analysis of the source aggregation analyses. Neither facility is subject to 45CSR14, therefore BACT is not required. The glycol dehydration unit emissions are controlled by a flare that reduces VOC and HAP emissions by 98%. The combustion emissions from the glycol dehydration reboiler are uncontrolled and vent to the atmosphere. However, the emissions from these units meet all regulatory requirements.

Comment #13

Since there are no federal or state ambient air quality standards for HAPs and some HAPs are known or probable carcinogens, permitting should not be allowed until there are safe standards. WV Code 22-5-1, states, "... To achieve and maintain such levels of air quality as will protect human health and safety ..."

DAQ Response

The Clean Air Act (CAA) requires the EPA to set NAAQS for criteria pollutants considered to be harmful to public health and the environment. Criteria pollutants are those pollutants that are common and found all over the United States. The EPA uses these criteria pollutants as indicators of air quality. The agency establishes two distinct kinds of standards for acceptable concentrations of specific pollutants in the ambient (outdoor) air. Primary standards establish limits to protect public health, including the health of sensitive populations, such as children, the elderly and those with asthma. Secondary standards set limits to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation and buildings. Such standards have been established for six principal pollutants:

- ground-level ozone (O₃)
- particulate matter (PM₁₀ and PM_{2.5})
- sulfur dioxide (SO₂)
- carbon monoxide (CO)
- nitrogen dioxide (NO₂)
- lead (Pb)

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 CAA as pollutants or groups of pollutants that EPA knows or suspects may cause cancer or other serious human health effects. The two (2) draft permits established emission limits for the following HAPs: Benzene, Formaldehyde, Toluene, Xylene, and n-Hexane. The following table lists 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 |
| Toluene | VOC | No | Inadequate Data |
| Xylenes | VOC | No | Inadequate Data |
| n-Hexane | 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 pollutants.*

However, EPA has established a 'major source' threshold of HAP emission to be 10 tpy of any one (1) HAP or 25 tpy of a combination of HAPs. If a facility is determined to be 'major' under these EPA thresholds, they would be required to obtain a Title V permit and implement MACT. This is required of all 'major' sources and a limited number of smaller sources, called 'area' sources. Source categories have been developed to target the pollutants of concern from that particular industry.

Over the past decade, a significant number of new rules have been adopted that specifically apply to area sources. For area sources within each source category, the Clean Air Act allows U.S. EPA to develop standards or requirements which provide for the use of GACT or management practices rather than the MACT required for major sources. MACT requirements apply to major sources of HAPs or area sources, and these standards are congressionally mandated. GACT standards apply to some area sources, and they are considered to be an optional alternative approach to MACT.

Both of these facilities are subject to the area source requirements to employ this level of control on their compressor engines and glycol dehydration units.

West Virginia Code §22-5-1, *et. seq.* - which states, under §22-5-1 ("Declaration of policy and purpose"), that:

It is hereby declared the public policy of this state and the purpose of this article to achieve and maintain such levels of air quality as will protect human health and safety, and to the greatest degree practicable, prevent injury to plant and animal life and property, foster the comfort and convenience of the people, promote the economic and social development of this state and facilitate the enjoyment of the natural attractions of this state.

Pursuant to §45-13-5.7, the DAQ shall issue a permit unless:

a determination is made that the proposed construction, modification, registration or relocation will violate applicable emission standards, will interfere with attainment or maintenance of an applicable ambient air quality standard, cause or contribute to a violation of an applicable air quality increment, or be inconsistent with the intent and purpose of this rule or W. Va. Code §22-5-1 et seq., in which case an order denying such construction, modification, relocation and operation shall be issued. The Secretary shall, to the extent possible, give priority to the issuance of any such permit so as to avoid undue delay and hardship.

Both of the proposed stations meet all applicable regulatory requirements and emission standards. These standards are explained in great detail in the Regulatory Discussion section of each Engineering Evaluation / Fact Sheet that accompanied the draft permits.

Comment #14

Antero states they are limiting operation time in order to remain under the limit of greenhouse gas emissions for non-major source. What protections are in place to ensure they remain below the 100,000 ton threshold? Is there really that much difference between 99,103 and 100,001 tons/year CO₂e? What happens if they exceed the threshold after the fact?

DAO Response

On June 23, 2014, in *Utility Air Regulatory Group v. Environmental Protection Agency*, the Supreme Court (SCOTUS) ruled that Greenhouse Gases (GHG, CO₂e) alone could no longer define a source as a “major stationary source” or a modification as a “major modification” for the purposes of Prevention of Significant Deterioration (PSD) review and Title V. However, SCOTUS confirmed that if a traditional pollutant triggers PSD review, GHGs will still be subject to PSD review if the emissions of CO₂e exceed a de minimis level (currently still defined at 75,000 TPY). Per the Director, WVDAQ will be abiding by this ruling as we wait USEPA guidance on the matter and make the appropriate changes to 45CSR14.

Comment #15

If you think these toxic chemicals are just going to blow away please consider the low average wind speeds recorded at the Parkersburg airport and available at n.o.a.a.gov. This toxic waste will go nowhere, fast. I can see no compelling reason to allow this pollution and I urge you in the strongest terms politely possible to deny these permits.

DAO Response

As compounds are emitted into the air, dispersion occurs in which the compounds become less concentrated. Additionally, compounds decompose to simpler compounds over time. Average wind speed data is but one part of air dispersion that will occur. More importantly is the type of emission plume based upon temperature of the plume and the ambient air, and density of the plume and the ambient air. These factors, as well as wind speed and direction, would play a factor into air dispersion modeling. However, air dispersion modeling was not required of these facilities due to the fact that the facilities are not subject to 45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants).

Comment #16

Since the operations of pig launchers and receivers are frequently the source of large quantities of raw gas being released into the atmosphere, and since they are frequently located on compressor sites, has there been any consideration of quantifications of how much gas will be released from them and how often?

DAO Response

Pigging refers to the practice of using devices known as pigs to perform various maintenance operations on a pipeline.

These operations include but are not limited to cleaning and inspecting the pipeline. This is accomplished by inserting the pig into a pig launcher (or launching station) - an oversized section in the pipeline, reducing to the normal diameter. The launcher / launching station is then closed and the pressure-driven flow of the product in the pipeline is used to push it along down the pipe until it reaches the receiving trap – the pig catcher (or receiving station). These are not always located at compressor sites, but Antero has accounted for pigging venting in both the Canton North and Mountain Compressor Station applications.

In regards to the Canton North site, Antero has estimated that 26 pigging events will occur per year and the amount vented would be 1,000 standard cubic feet of gas per event. This would result in a VOC emission rate of 0.13 tons/year, a HAP emission rate of 0.00036 tons/year and a greenhouse gas emission rate of 11 tons/year.

In regards to the Mountain site, Antero has estimated that 26 pigging events will occur per year and the amount vented would be 1,000 standard cubic feet of gas per event. This would result in a VOC emission rate of 0.14 tons/year, a HAP emission rate of 0.00036 tons/year and a greenhouse gas emission rate of 11 tons/year.

Comment #17

Will this raw gas just be released elsewhere away from the compressor station location (outside the fence line) in order to avoid inclusion in any permit document of any regulatory oversight?

DAO Response

“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. Pollutant-emitting activities are a part of the same industrial grouping if they belong to the same “Major Group” (i.e., which have the same two (2)-digit code) as described in the Standard Industrial Classification Manual, 1987 (United States Government Printing Office stock number GPO 1987 0-185-718:QL 3).

The proposed compressor stations were reviewed and include all emissions that fall under this definition.

Comment #18

What methods will be used to capture all natural gas released during blow downs or maintenance on the pipelines coming into or out of the compressor station?

DAQ Response

There are no regulatory requirements that require the capture of natural gas released during blow downs or maintenance activities. However, the DAQ required Antero to install, maintain, and operate all above-ground piping, valves, pumps, etc. that service lines in the transport of potential sources of regulated air pollutants to prevent any substantive fugitive escape of regulated air pollutants. Any above-ground piping, valves, pumps, etc. that shows signs of excess wear and that have a reasonable potential for substantive fugitive emissions of regulated air pollutants shall be replaced.

Comment #19

Is the VRU listed on the load out for the tanks only for the NGL tanks, or will it also cover the tanks with produced water.

DAQ Response

The VRU will be utilized to control VOC and HAP emissions (98% control efficiency) from the condensate/produced water settling tank, two (2) condensate tanks, and two (2) produced water tanks.

Comment #20

What measurements or modeling will Antero be required to perform to quantify the fugitive emissions from component leaks, fugitive venting, or blowdown events?

DAQ Response

See response to Comment #18.

Antero estimated these fugitive emissions in both permit applications. The values that Antero provided are in line with industry data for these events.

Comment #21

Given the very large amount of noise and all types of air pollutants and especially the HAPs, this seems to be very close to nearby homes. Is Antero able to guarantee that no harmful air pollutants will ever leave their property and migrate onto other properties? The ability to smell or not to smell objectionable odors does not mean that there will not be harmful vapors present. Will the air quality be regularly monitored at these nearby homes? If not, why not?

DAQ Response

See responses to Comment #1 and Comment #2.

Comment #22

What permits are being issued for noise levels at Canton North?

DAQ Response

The DAQ takes these citizen concerns very seriously and Antero has agreed to install and operate the following noise abatement equipment prior to operation at the Canton North and Mountain Compressor Stations:

- An Emit Technologies ELH-4200-1616F-6CEE-362 hospital grade silencer capable of an insertion loss of 35-40 dBA or equivalent on each Waukesha 7044 GSI reciprocating internal combustion engine (C-100 – C-1100).
- Each engine cooling fan shall include an even number of blades and reduced fan tip speed.
- Each Capstone C600 NG Microturbine Generator (GEN-1, GEN-2) shall be housed in an enclosure.
- The Waukesha 7044 GSI reciprocating internal combustion engines (C-100 – C-1100) shall be housed in an enclosed building. All operations shall occur with the doors closed.

In addition to the above requirements, the DAQ will also require Antero to install the following additional noise abatement equipment at the Canton North facility due to increased public interest and the closer proximity of the residences:

- A SEMCO Model ST5005 sound silencer or equivalent shall be ducted to the front of each engine cooler intake.
- Construct a twelve (12) foot high acoustical wall with a Sound Transmission Class (STC) rating of 40 located around the vapor recovery units (VRUs).

All of the above noise abatement equipment shall be employed during any and all operation of the noise emitting sources at the facility. Further, the noise abatement equipment shall be operated and maintained in accordance with the manufacturer's specifications.

Comment #23

Significant noise levels will be caused by both compressor stations. Each one will have 18,480 hp of compressors. What all measures will be taken to guarantee that the overall noise level will never be objectionable?

DAQ Response

See response to Comment #22.

Comment #24

Will specific detailed air quality testing be done now in the immediate areas surrounding these two compressor stations to provide baseline historical data for future reference?

DAQ Response

No. This is not a prerequisite for obtaining a minor source air quality permit under 45CSR13. The proposed facilities are located in an unclassified area. Both facilities that Antero has

proposed meet all applicable rules and regulations. These rules and regulations contain emission standards established by EPA that they believe to be protective of human health, including sensitive populations. Furthermore, Antero has proposed air pollution control devices on their RICEs, glycol dehydration units, storage tanks, and product loadout to ensure that all regulatory requirements will be met.

Comment #25

What will it take to get air quality monitors in Doddridge County?

DAQ Response

See response to Comment #1. Additionally on May 14, 2014, the DAQ provided a 30 day public notice of the statewide ambient air monitoring network design for 2015. EPA requires the DAQ to make the statewide ambient air monitoring network design available annually for public review and comment, and submit the plan to EPA by July 1 of each year.

Comment #26

Are the emissions from the trucks being factored into the pollutant totals?

DAQ Response

The Director of the DAQ only has those authorities specifically granted in the West Virginia Code and supporting regulations promulgated there under. It is the responsibility of the DAQ to apply the rules and regulations of the State of West Virginia and of the USEPA as they apply to air quality. The DAQ has no control over mobile sources.

Comment #27

Is the WVDEP concerned about the overall regional impact of the air quality issues of these two gas fired compressor locations and how they might affect the long term quality of the multi county region?

DAQ Response

It is the public policy of this state, and the purpose of Article 5 (Air Pollution Control Act) of the West Virginia Code, to achieve and maintain such levels of air quality as will protect human health and safety, and to the greatest degree practicable, prevent injury to plant and animal life and property, foster the comfort and convenience of the people, promote the economic and social development of this state and facilitate the enjoyment of the natural attractions of this state.

Both facilities that Antero has proposed meet all applicable rules and regulations. These rules and regulations contain emission standards established by EPA that they believe to be protective of human health, including sensitive populations. Furthermore, Antero has proposed air pollution control devices on their RICEs, glycol dehydration units, storage tanks, and product loadout to ensure that all regulatory requirements will be met.

It is the responsibility of the DAQ to apply the rules and regulations of the State of West Virginia and EPA as they apply to air quality. If the DAQ determines that a proposed facility will comply

with the Air Pollution Control Act and all applicable state and federal regulations, the DAQ must issue that facility a permit.

Comment #28

Has there been any effort on the part of DAQ to attempt to assess the long term cumulative effect of these two compressor stations and their associated gas wells and all the fugitive emissions and intentional blowoffs that are always associated with interconnecting gathering pipelines between and among all the non-contiguous and non-adjacent well pads. Will Antero be able to assure all the residents that their personal NO_x emissions will never mix with any of their well pad VOCs? Will they guarantee that there will be no additional ozone created in these counties?

DAQ Response

See response to Comment #27.

Comment #29

Will the DAQ and Antero be able to categorically and unequivocally assure all the residents of all the contiguous and adjacent counties that there will be no measurable or noticeable or discernable or harmful deterioration to their current air quality?

DAQ Response

See response to Comment #27.

Comment #30

The DAQ states that the Canton North Compressor Station is located in Doddridge County, which is an attainment county for all criteria pollutants. How does the DAQ know that this is true? When was that determination made? How was the evaluation arrived at? Where was the measurement done? How often will that measurement and monitoring be repeated to assure all residents that their air quality will stay the same? What have the trends been over the past five years?

DAQ Response

See response to Comment #1.

Comment #31

Since all the engines will not be certified by the manufacturer, the projected emissions which form the basis for the permit calculations are the likely the best theoretical ideal values achievable under new, controlled, factory perfect, conditions. Given the many variables which affect their combustion efficiencies and since the shale gas might have varying BTU content and chemical composition, will there be adequate monitors and sensors and will the air-fuel ratio controllers be able to achieve and maintain the predicted level of air quality? Will the engine sensors and controls be required to be modified later based on the actual testing and measurements done in the first six months? And during the subsequent required tests as the controls deteriorate with age?

DAQ Response

Antero's compressor engines are subject to 40CFR60 Subpart JJJJ, which sets forth emission limits, fuel requirements, installation requirements, and monitoring requirements based on the year of installation of the subject internal combustion engine. This rule requires the permittee to either install engines that were certified by EPA to meet the required emission standard or perform the required performance testing. Engines of this size normally are not certified and are required to conduct performance testing.

Antero must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, they must conduct an initial performance test within 1 year of engine startup and conduct subsequent performance testing every 8,760 hours of operation or 3 years, whichever comes first, thereafter to demonstrate compliance.

These standards are set forth by EPA under New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP). The engine manufacturer and/or catalyst manufacturer takes the variables above into consideration when establishing the engine's emission factor. These emissions are verified through the required performance testing, which is an ongoing process. If there are any non-compliant performance tests, the C/E Section will address this appropriately.

Comment #32

Does Antero and DAQ consider that the actual BTEX and other HAPs from the glycol dehydration unit released to the atmosphere will therefore be less harmful to those in the nearby areas because the actual average benzene emissions are below 1 ton/year? Will these HAPs therefore be confined to the Antero property only?

DAQ Response

40CFR63 Subpart HH (National Emission Standards for Hazardous Air Pollutants for Oil and Natural Gas Production Facilities) 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. The glycol dehydration units at these facilities are subject to the area source requirements for glycol dehydration units. However, because the facility is an area source of HAP emissions and the actual average benzene emissions from the glycol dehydration unit is below 0.90 megagram per year (1.0 tons/year), it is exempt from all requirements of Subpart HH except to maintain records of actual average flowrate of natural gas to demonstrate a continuous exemption status.

These regulations were developed to ensure that public health will be protected.

The HAPS from these stations will not be confined to Antero property only.

Comment #33

Will each compressor station be manned 24/7 with a trained operator capable of responding to any upset, accurately assessing the potential danger or problem and be able to implement prompt corrective actions? If these facilities will not have experienced personnel on duty on site 24/7, will there be an integrated, comprehensive system of monitoring instruments on all relevant variables, designed to activate appropriate fail safe control systems circuits? Will this integrated plant electronic controller be connected to a telemetry system capable of transmitting in real time to a 24/7 live operator?

DAQ Response

According to Antero, the station will be manned continuously with experienced personnel.

Comment #34

Fugitive emissions are mentioned in both permit documents. These emissions can come from any of the many valves, piping, fittings, unions, flanges, compressor seals, improper installation or faulty components or lax maintenance procedures and the general deterioration that comes with age and operation. What is the estimate of all the fugitive emissions at each compressor location? How will they be measured and what method will be used to identify and correct the source of them?

DAQ Response

In regards to the Canton North site, Antero has estimated that there will be 7.09 tons/year of VOC fugitive emissions from the flanges, valves, and compressor seals, 0.02 tons/year of HAPs, and 133 tons/year of greenhouse gas (CO₂e). In addition, Antero estimated that there will be 8.35 tons/year of VOC fugitive emissions from possible compressor blowdowns, compressor startups, plant shutdowns, and pigging venting, 0.03 tons/year of HAP, and 709 tons/year of greenhouse gas (CO₂e).

In regards to the Mountain site, Antero has estimated that there will be 7.74 tons/year of VOC fugitive emissions from the flanges, valves, and compressor seals, 0.02 tons/year of HAPs, and 133 tons/year of greenhouse gas (CO₂e). In addition, Antero estimated that there will be 9.26 tons/year of VOC fugitive emissions from possible compressor blowdowns, compressor startups, plant shutdowns, and pigging venting, 0.03 tons/year of HAP, and 667 tons/year of greenhouse gas (CO₂e).

Antero estimated these fugitive emissions in both permit applications. The values that Antero provided are in line with industry data for these events.

The DAQ required Antero to install, maintain, and operate all above-ground piping, valves, pumps, etc. that service lines in the transport of potential sources of regulated air pollutants to prevent any substantive fugitive escape of regulated air pollutants. Any above-ground piping, valves, pumps, etc. that shows signs of excess wear and that have a reasonable potential for substantive fugitive emissions of regulated air pollutants shall be replaced.

Comment #35

What volume of gas will be moved through these stations?

DAQ Response

Antero has proposed that each facility would have a throughput of 60 million standard cubic feet per day.

Comment #36

How often will an inspector be on site?

DAQ Response

These facilities would have an initial inspection within the first year of operation. In addition, an inspector from the DAQ C/E Section would be available to witness the annual required performance testing that would occur for the reciprocating internal combustion engines. Inspectors would also be on site to investigate any complaints and/or operating issues concerning a facility.

Comment #37

Is DAQ strictly relying on Antero's recordkeeping? Self policing does not work.

DAQ Response

Antero will be required to perform recordkeeping of fuel consumption in the reciprocating internal combustion engines, catalytic reduction device maintenance, flare operating requirements, opacity requirements, glycol dehydration unit natural gas throughput, reboiler natural gas consumption, vapor recovery unit operating requirements, storage tank throughput, closed vent monitoring requirements, product loadout throughput, 40CFR60 Subpart JJJJ requirements, 40CFR60 Subpart OOOO requirements, and 40CFR63 Subpart ZZZZ requirements. In addition, Antero will be required to perform testing on the reciprocating internal combustion engines and opacity requirements on the flare and reboiler.

It is important to note that the DAQ permitting process is but one part of a system that works to meet the intent of the APCA in WV. The DAQ maintains a Compliance/Enforcement (C/E) Section, an Air Monitoring Section, a Planning Section, *etc.* to effect this. Most pertinent to the permitting process, the C/E Section regularly inspects permitted sources to determine the compliance status of the facility including compliance with all testing, monitoring, record-keeping, and reporting requirements.

Comment #38

Why isn't state of the art technology being used at this site?

DAQ Response

Both facilities that Antero has proposed meet all applicable rules and regulations. These rules and regulations contain emission standards established by EPA that they believe to be protective of human health, including sensitive populations. Furthermore, Antero has proposed air

pollution control devices on their RICEs, glycol dehydration units, storage tanks, and product loadout to ensure that all regulatory requirements will be met.

Comment #39

How many compressor permits are waiting to be permitted in Doddridge County?

DAQ Response

As of June 4, 2014, there are nine (9) pending construction/modification applications and eight (8) pending general permit registration applications for Doddridge County.

Comment #40

How many active well pads have been issued air quality permits in Doddridge County?

DAQ Response

As of June 4, 2014, seven (7) Rule 13 permits and twenty-six (26) General Permit Registrations have been issued for Doddridge County in 2014.

Comment #41

How many permits for wells are being waited to be issued air quality permits?

DAQ Response

See response to Comment #40.

Comment #42

How many compressor stations are located in Doddridge, Tyler, and Ritchie County and what are their latitude and longitude coordinates?

DAQ Response

Please see the attached spreadsheet for all approved permits/registrations for Doddridge, Tyler and Ritchie Counties from January 1, 2009 to May 31, 2014. This spreadsheet includes all industry sectors. To obtain coordinates for each permit, a Freedom of Information Act request would have to be filed and this information gathered by the requestor from DAQ application files.

Air Permitting Approved Actions

January 1, 2009 through May 31, 2014

| Co. ID No. | Permit No. | Company Name | Action | Type | Action Date |
|-------------------------|------------|--|----------|----------------|-------------|
| Doddridge County | | | | | |
| 017-00002 | 13-2695A | Dominion Transmission, Inc., Smithburg Station | Approved | ADMINISTRATIVE | 6/29/2010 |
| 017-00002 | G60-C027 | Dominion Transmission, Inc., Smithburg Station | Approved | CONSTRUCTION | 2/10/2011 |
| 017-00004 | G35-A076 | Dominion Transmission, Inc., Collins Station | Approved | MODIFICATION | 3/29/2013 |
| 017-00004 | G60-C025 | Dominion Transmission, Inc., Collins Station | Approved | CONSTRUCTION | 1/7/2011 |
| 017-00005 | G35-A031 | Dominion Transmission, Inc., Maxwell Station | Approved | MODIFICATION | 11/16/2009 |
| 017-00005 | G35-A031A | Dominion Transmission, Inc., Maxwell Station | Approved | MODIFICATION | 7/6/2011 |
| 017-00026 | G35-A026 | Jay-Bee Oil & Gas, Inc., Stradley Site | Approved | CONSTRUCTION | 8/12/2009 |
| 017-00026 | G35-A026A | Jay-Bee Oil & Gas, Inc., Stradley Site | Approved | MODIFICATION | 6/16/2011 |
| 017-00027 | 13-3150 | EQT Gathering, LLC, Saturn Station | Approved | MODIFICATION | 3/5/2014 |
| 017-00027 | G35-A033 | EQT Gathering, LLC, Saturn Station | Approved | CONSTRUCTION | 3/4/2010 |
| 017-00027 | G35-A033A | EQT Gathering, LLC, Saturn Station | Approved | MODIFICATION | 9/7/2011 |
| 017-00027 | G35-A033B | EQT Gathering, LLC, Saturn Station | Approved | MODIFICATION | 4/2/2012 |
| 017-00028 | G65-C300 | Dominion Transmission, Inc., Tonkin MW Tower | Approved | CONSTRUCTION | 9/1/2010 |
| 017-00029 | G35-A053 | Dominion Transmission, Inc., Big Isaac Station | Approved | CONSTRUCTION | 5/10/2011 |
| 017-00030 | 13-2905 | Statoil USA Onshore Properties, Inc., Goodwin | Approved | MODIFICATION | 2/17/2012 |
| 017-00030 | G35-A043 | Statoil USA Onshore Properties, Inc., Goodwin | Approved | CONSTRUCTION | 2/23/2011 |
| 017-00030 | G35-A101 | Statoil USA Onshore Properties, Inc., Goodwin | Approved | MODIFICATION | 12/18/2013 |
| 017-00031 | G65-C304 | Dominion Transmission, Inc., Oxford Junction | Approved | CONSTRUCTION | 3/22/2011 |

| | | | | | |
|-----------|-----------|---|----------|----------------|------------|
| 017-00032 | G35-A060 | Exterran Energy Solutions, LP, Pike Fork Station | Approved | CONSTRUCTION | 7/22/2011 |
| 017-00032 | G35-A060A | Exterran Energy Solutions, LP, Pike Fork Station | Approved | MODIFICATION | 11/7/2013 |
| 017-00033 | 13-2909 | Dominion Transmission, Inc., New Oxford Station | Approved | CONSTRUCTION | 2/23/2012 |
| 017-00034 | 13-2914 | MarkWest Liberty Midstream & Resources, Sherwood | Approved | CONSTRUCTION | 8/6/2012 |
| 017-00034 | 13-2914A | MarkWest Liberty Midstream & Resources, Sherwood | Approved | ADMINISTRATIVE | 2/11/2013 |
| 017-00035 | 13-2929 | Mountaineer Midstream Co., LLC, Midpoint Station | Approved | CONSTRUCTION | 8/22/2012 |
| 017-00035 | 13-2929A | Mountaineer Midstream Co., LLC, Midpoint Station | Approved | MODIFICATION | 1/15/2014 |
| 017-00036 | 13-2996 | EQT Production Company, OXF-152 Pad | Approved | CONSTRUCTION | 2/22/2013 |
| 017-00037 | 13-3000 | EQT Production Company, OXF-44 Pad | Approved | CONSTRUCTION | 2/22/2013 |
| 017-00038 | 13-3001 | EQT Production Company, OXF-131 Pad | Approved | CONSTRUCTION | 2/22/2013 |
| 017-00039 | 13-3011 | EQT Production Company, OXF-160 Pad | Approved | CONSTRUCTION | 3/29/2013 |
| 017-00040 | 13-3018 | EQT Production Company, OXF-150 Pad | Approved | CONSTRUCTION | 3/15/2013 |
| 017-00040 | G70-A031 | EQT Production Company, OXF-150 Pad | Approved | CONSTRUCTION | 5/5/2014 |
| 017-00041 | 13-3019 | EQT Production Company, OXF-149 Pad | Approved | CONSTRUCTION | 3/15/2013 |
| 017-00041 | 13-3019A | EQT Production Company, OXF-149 Pad | Approved | ADMINISTRATIVE | 1/21/2014 |
| 017-00042 | 13-3020 | EQT Production Company, OXF-136 Pad | Approved | CONSTRUCTION | 3/15/2013 |
| 017-00043 | 13-3021 | EQT Production Company, OXF-115 Pad | Approved | CONSTRUCTION | 3/15/2013 |
| 017-00044 | 13-3022 | EQT Production Company, OXF-45 Pad | Approved | CONSTRUCTION | 3/15/2013 |
| 017-00045 | 13-3036 | Crestwood Appalachia Pipeline LLC, West Union | Approved | CONSTRUCTION | 4/29/2013 |
| 017-00045 | 13-3036A | Crestwood Appalachia Pipeline LLC, West Union | Approved | MODIFICATION | 9/20/2013 |
| 017-00046 | 13-3044 | EQT Production Company, OXF-114 Pad | Approved | CONSTRUCTION | 5/3/2013 |
| 017-00047 | 13-3045 | EQT Production Company, OXF-134 Pad | Approved | CONSTRUCTION | 5/3/2013 |
| 017-00047 | 13-3045A | EQT Production Company, OXF-134 Pad | Approved | ADMINISTRATIVE | 9/3/2013 |
| 017-00048 | 13-3046 | EQT Production Company, OXF-127 Pad | Approved | CONSTRUCTION | 5/10/2013 |
| 017-00049 | 13-3047 | EQT Production Company, OXF-121 Pad | Approved | CONSTRUCTION | 5/10/2013 |
| 017-00050 | 13-3049 | EQT Production Company, WEU2 | Approved | CONSTRUCTION | 11/1/2013 |
| 017-00051 | 13-3050 | EQT Production Company, WEU1 | Approved | CONSTRUCTION | 11/1/2013 |
| 017-00051 | 13-3050A | EQT Production Company, WEU1 | Approved | ADMINISTRATIVE | 12/20/2013 |
| 017-00052 | 13-3051 | EQT Production Company, OXF138 | Approved | CONSTRUCTION | 11/1/2013 |
| 017-00053 | 13-3052 | EQT Production Company, OXF153 | Approved | CONSTRUCTION | 11/1/2013 |
| 017-00054 | G35-A100 | Crestwood Marcellus Midstream LLC, Morgan Station | Approved | CONSTRUCTION | 4/15/2013 |
| 017-00055 | 13-3064 | EQT Production Company, SMI-28 | Approved | CONSTRUCTION | 8/9/2013 |
| 017-00055 | 13-3064A | EQT Production Company, SMI-28 | Approved | ADMINISTRATIVE | 1/27/2014 |
| 017-00056 | 13-3080 | Antero Resources Appalachian Corp., Pennington | Approved | CONSTRUCTION | 10/4/2013 |

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| 017-00057 | 13-3092 | Crestwood Marcellus Midstream LLC, Perkins Station | Approved | CONSTRUCTION | 11/5/2013 |
| 017-00058 | 13-3095 | EQT Gathering, Pandora Station | Approved | CONSTRUCTION | 11/1/2013 |
| 017-00059 | 13-3097 | Crestwood Marcellus Midstream, LLC, Victoria Stati | Approved | CONSTRUCTION | 12/2/2013 |
| 017-00060 | 13-3106 | Antero Resources Corporation, New Milton Station | Approved | CONSTRUCTION | 12/3/2013 |
| 017-00061 | G70-A045 | Antero Resources Corporation, Powell Pad | Approved | CONSTRUCTION | 5/27/2014 |
| 017-00062 | G70-A018 | Antero Resources Corporation, Coastal Hilltop Pad | Approved | CONSTRUCTION | 4/7/2014 |
| 017-00063 | G70-A019 | Antero Resources Corporation, Erwin Valley Pad | Approved | CONSTRUCTION | 4/7/2014 |
| 017-00065 | 13-3129 | Antero Resources Corporation, Erwin Hilltop Pad | Approved | CONSTRUCTION | 3/28/2014 |
| 017-00066 | 13-3124 | EQT Production Company, WEU-8 | Approved | CONSTRUCTION | 12/13/2013 |
| 017-00067 | G70-A016 | Antero Resources Corporation, Moore Pad | Approved | CONSTRUCTION | 4/9/2014 |
| 017-00068 | 13-3130 | EQT Production Company, WEU-6 Pad | Approved | CONSTRUCTION | 4/18/2014 |
| 017-00070 | 13-3134 | EQT Production Company, OXF-156 | Approved | CONSTRUCTION | 1/3/2014 |
| 017-00071 | 13-3144 | EQT Production Company, SMI-27 | Approved | CONSTRUCTION | 1/3/2014 |
| 017-00071 | G70-A027 | EQT Production Company, SMI-27 | Approved | CONSTRUCTION | 4/28/2014 |
| 017-00072 | G70-A001 | Noble Energy, Inc., OXF-DI | Approved | CONSTRUCTION | 12/20/2013 |
| 017-00074 | G70-A002 | Antero Resources Corporation, Ruddy Alt Pad | Approved | CONSTRUCTION | 2/19/2014 |
| 017-00075 | G70-A003 | Antero Resources Corporation, McGill Wellpad | Approved | CONSTRUCTION | 1/7/2014 |
| 017-00077 | G70-A004 | Antero Resources Corporation, RJ Smith Wellpad | Approved | CONSTRUCTION | 1/13/2014 |
| 017-00078 | G70-A005 | Antero Resources Corporation, Hamilton Wellpad | Approved | CONSTRUCTION | 1/13/2014 |
| 017-00079 | 13-3163 | Crestwood Marcellus Midstream LLC, Banner Station | Approved | CONSTRUCTION | 1/24/2014 |
| 017-00080 | G70-A006 | Antero Resources Corporation, Trent Wellpad | Approved | CONSTRUCTION | 1/21/2014 |
| 017-00081 | G70-A008 | EQT Production Company, CPT-11 Pad | Approved | CONSTRUCTION | 1/27/2014 |
| 017-00082 | G70-A010 | Antero Resources Corporation, Swisher Wellpad | Approved | CONSTRUCTION | 2/19/2014 |
| 017-00083 | G70-A011 | Antero Resources Corporation, Maxwell Horizontal | Approved | CONSTRUCTION | 2/19/2014 |
| 017-00085 | G70-A015 | Antero Resources Corporation, Bee Lewis Wellpad | Approved | CONSTRUCTION | 3/17/2014 |
| 017-00088 | G70-A023 | Antero Resources Corporation, Richard Garry | Approved | CONSTRUCTION | 4/28/2014 |

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| 017-00089 | G70-A024 | Antero Resources Corporation, Delbert Leatherman | Approved | CONSTRUCTION | 4/21/2014 |
| 017-00090 | G70-A025 | Antero Resources Corporation, Hughes Wellpad | Approved | CONSTRUCTION | 5/1/2014 |
| 017-00091 | G70-A028 | Antero Resources Corporation, Primm Pad | Approved | CONSTRUCTION | 5/1/2014 |
| 017-00092 | G70-A030 | Antero Resources Corporation, Clarence Wellpad | Approved | CONSTRUCTION | 4/28/2014 |
| 017-00093 | G70-A032 | Antero Resources Corporation, Stewart Pad | Approved | CONSTRUCTION | 4/28/2014 |
| 017-00094 | G70-A033 | Antero Resources Corporation, Nash | Approved | CONSTRUCTION | 4/28/2014 |
| 017-00095 | G70-A039 | Antero Resources Corporation, Pennington North | Approved | CONSTRUCTION | 5/27/2014 |
| 017-00096 | G70-A040 | Antero Resources Corporation, Susie Jane Wellpad | Approved | CONSTRUCTION | 5/27/2014 |
| 017-00097 | G70-A041 | Antero Resources Corporation, Revival Wellpad | Approved | CONSTRUCTION | 5/27/2014 |
| 017-00100 | G60-C033 | Dominion Transmission, Inc., Schutte Station | Approved | CONSTRUCTION | 6/27/2011 |
| 017-00101 | G70-A036 | Antero Resources Corporation, Cline Wellpad | Approved | CONSTRUCTION | 5/16/2014 |

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| Ritchie County | | | | | |
| 085-00016 | G60-C040 | Dominion Transmission, Inc., Pullman, Sutton CS | Approved | CONSTRUCTION | 9/13/2011 |
| 085-00020 | G65-C292 | American Towers, Inc., Site #273632 | Approved | CONSTRUCTION | 5/26/2010 |
| 085-00021 | G35-A040 | Dominion Transmission, Inc., Spruce Run Station | Approved | CONSTRUCTION | 12/6/2010 |
| 085-00022 | 13-2997 | EQT Production Company, PEN-15 Pad | Approved | CONSTRUCTION | 2/11/2013 |
| 085-00023 | 13-3002 | Antero Resources Appalachian Corp, White Oak Stati | Approved | CONSTRUCTION | 3/11/2013 |
| 085-00023 | 13-3002A | Antero Resources Appalachian Corp, White Oak Stati | Approved | MODIFICATION | 2/18/2014 |
| 085-00024 | 13-3034 | Central Supply Company, Pennsboro Plant | Approved | CONSTRUCTION | 5/13/2013 |
| 085-00026 | 13-3118 | Antero Resources Corporation, John Campbell North | Approved | CONSTRUCTION | 12/3/2013 |
| 085-00027 | 13-3119 | Antero Resources Corporation, Yolanda Pad | Approved | CONSTRUCTION | 12/3/2013 |
| 085-00028 | 13-3128 | EQT Production Company, PEN-13 Pad | Approved | CONSTRUCTION | 1/6/2014 |
| 085-00029 | 13-3133 | EQT Production Company, PEN-16 Pad | Approved | CONSTRUCTION | 12/16/2013 |
| 085-00029 | 13-3133A | EQT Production Company, PEN-16 Pad | Approved | ADMINISTRATIVE | 4/17/2014 |
| 085-00034 | 13-3175 | Antero Resources Corporation, Edwin Wellpad | Approved | CONSTRUCTION | 5/5/2014 |
| 085-00035 | G70-A026 | Noble Energy, Inc., Pennsboro I | Approved | CONSTRUCTION | 4/15/2014 |

| Tyler County | | | | | | | | | |
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| 095-00001 | 13-2180C | MPM Silicones, LLC, Friendly | Approved | ADMINISTRATIVE | 4/24/2009 | | | | |
| 095-00001 | 13-2180D | MPM Silicones, LLC, Friendly | Approved | ADMINISTRATIVE | 1/8/2013 | | | | |
| 095-00001 | 13-2338H | MPM Silicones, LLC, Friendly | Approved | ADMINISTRATIVE | 2/27/2009 | | | | |
| 095-00001 | 13-2338I | MPM Silicones, LLC, Friendly | Approved | ADMINISTRATIVE | 12/15/2011 | | | | |
| 095-00001 | 13-2806 | MPM Silicones, LLC, Friendly | Approved | CONSTRUCTION | 10/5/2009 | | | | |
| 095-00001 | 13-2806A | MPM Silicones, LLC, Friendly | Approved | ADMINISTRATIVE | 3/12/2014 | | | | |
| 095-00001 | G60- C030 | MPM Silicones, LLC, Friendly | Approved | CONSTRUCTION | 1/18/2011 | | | | |
| 095-00007 | 13-1104E | Dominion Transmission, Inc., Deep Valley Station | Approved | MODIFICATION | 6/22/2010 | | | | |
| 095-00007 | G60- C029 | Dominion Transmission, Inc., Deep Valley Station | Approved | CONSTRUCTION | 2/10/2011 | | | | |
| 095-00011 | 13-1575B | Bay Area Metal Recycling, Inc., Bens Run | Approved | ADMINISTRATIVE | 6/30/2010 | | | | |
| 095-00014 | G65- C382 | Dominion Transmission, Inc., Ben's Run Terminal | Approved | CONSTRUCTION | 12/21/2012 | | | | |
| 095-00019 | G35- A065 | Jay-Bee Oil & Gas, Inc., Bunker Run Site | Approved | CONSTRUCTION | 11/28/2011 | | | | |
| 095-00021 | 13-3035 | Triad Hunter, LLC, Middlebourne | Approved | CONSTRUCTION | 4/8/2013 | | | | |
| 095-00022 | G35- A085 | Eureka Hunter Pipeline, LLC, Weese Station | Approved | CONSTRUCTION | 11/8/2012 | | | | |
| 095-00023 | G35- A089A | Jay-Bee Oil & Gas, Inc., Ketel Site | Approved | MODIFICATION | 5/23/2013 | | | | |
| 095-00024 | 13-3031 | Statoil USA Onshore Properties Inc., Ball Station | Approved | CONSTRUCTION | 10/8/2013 | | | | |
| 095-00025 | 13-3038 | Steve Simpson & Associates, Inc., Bens Run | Approved | CONSTRUCTION | 4/15/2013 | | | | |
| 095-00027 | G35- A102 | Jay-Bee Oil & Gas, Inc., Big Moses Site | Approved | CONSTRUCTION | 12/4/2013 | | | | |
| 095-00028 | 13-3077 | Antero Resources Appalachian Corp, Forest Well Sit | Approved | CONSTRUCTION | 9/9/2013 | | | | |
| 095-00030 | 13-3083A | Chesapeake Appalachia, LLC, Kirk Hadley Pad | Approved | ADMINISTRATIVE | 8/23/2013 | | | | |
| 095-00030 | 13-3083T | Chesapeake Appalachia, LLC, Kirk Hadley Pad | Approved | TEMPORARY | 7/5/2013 | | | | |
| 095-00031 | 13-3098 | Eureka Hunter Pipeline, LLC, Twin Hickory Station | Approved | CONSTRUCTION | 10/15/2013 | | | | |
| 095-00032 | G70- A007 | Antero Resources Corporation, Graff Wellpad | Approved | CONSTRUCTION | 2/10/2014 | | | | |
| 095-00034 | G70- A029 | Antero Resources Corporation, Pierpoint Pad | Approved | CONSTRUCTION | 5/1/2014 | | | | |