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west virginia department of environmental protection

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Office of Oil and Gas  
601 57<sup>th</sup> Street, S.E.  
Charleston, WV 25304  
(304) 926-0450  
Fax: (304) 926-0452

Austin Caperton, Cabinet Secretary  
dep.wv.gov

January 27, 2020

John S Smith  
133 Amberwoods Drive, Canonsburg PA 15317  
142 N. 6<sup>th</sup> Avenue, Paden City WV 26159

Re: Oil and Gas Permits for Antero Resources Corporation Fraley Uni 1H API 47-017-06896; Fraley Unit 2H API 47-017-06897; Peggy Unit 1H API 47-017-06898; Peggy Unit 2H API 47-017-06899; Russell Unit 1H API 47-017-06900; Russell Unit 2H API 47-017-06901; Whitehill Unit 1H API 47-017-06902; Whitehill Unit 2H API 47-017-06903

Mr. Smith,

The Office of Oil and Gas (OOG) has reviewed your comments concerning Antero Resources Corporation's permits for the above referenced wells. The comments were sent to the operator for its response. The operator has responded and the response is enclosed for your records.

After considering your comments and the applicant's response, the OOG has determined that the applications meet the requirements set forth in Article 6A Chapter 22 of the West Virginia Code and Legislative Rule Title 35 Series 8. Consequently, the OOG has issued the permits. For your information and convenience, we have already mailed a copy of the permits as issued.

Please contact me at (304) 926-0499, if you have any questions.

Sincerely,

Kelly Kees, PE  
WV DEP Office of Oil and Gas  
Permitting Section

Promoting a healthy environment.

January 14, 2020



West Virginia Department of Environmental Protection  
Office of Oil and Gas  
Attn: Mr. James Martin  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304

Antero Resources  
1615 Wynkoop Street  
Denver, CO 80202  
Office 303.357.7310  
Fax 303.357.7315

**RE: Response to Surface Owner Comments – John S. Smith**  
Fraleley Unit 1H & 2H, Russell Unit 1H & 2H, Whitehill Unit 1H & 2H and Peggy Unit 1H & 2H

Mr. Martin:

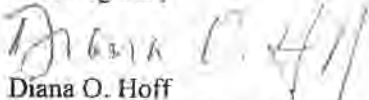
This letter provides Antero Resources Corporation's ("Antero") response to the comments submitted by John S. Smith ("Owner") and received by the West Virginia Department of Environmental Protection, Office of Oil & Gas ("DEP") on December 20, 2019. The Owner notes in his letter that he has "no objections" and does "fully support this project," thus Antero does not believe the comments were intending to oppose the well work permits, nor are they a valid basis for doing so. However, I offer the following in response to the Owner's concerns regarding the existing wells on the Owner's property and within the vicinity of the well pad.

Antero complies with the provisions of West Virginia Code § 22-6A and the Code of State Rules Title 35, Series 8 in conducting its operations. Per W. Va. Code R § 35-8-5.11, Antero identifies existing wells within a 500' radius of the surface location of Antero's well and a 500' radius of the lateral section that may have a potential for an unintended fracture propagation as required by. Antero then notifies the operators of the existing wells identified as having a potential for an unintended fracture propagation of Antero's planned completion operations. Antero attempts to work with the existing well operators to address any questions, comments, or concerns the operators may have in advance of Antero's completion operations and to quickly and safely address any changes in the existing well(s) that may occur during Antero's operations. Antero has advised Mr. Smith to notify the existing well operator and Antero if he notices any abnormalities during Antero's completion operations. Finally, Mr. Smith attached the plat for the Fraley Unit 1H to his letter, which is prepared pursuant to W. Va. Code R. § 35-8-6 and differs from the area of review prepared pursuant to § 35-8-5.11. Antero submitted the applicable Area of Review diagram with the permits for each of the wells referenced in Mr. Smith's letter.

Fraleley Unit 1H & 2H, Russell Unit 1H & 2H, Whitehill Unit 1H & 2H and Peggy Unit 1H & 2H applications submitted to the DEP comply with and meet all regulatory requirements as outlined in West Virginia Code § 22-6A and the Code of State Rules Title 35, Series 8. We therefore request that the DEP proceed with permitting the subject wells having given consideration to the Owner's comments.

If you have any questions please feel free to contact me at (303) 357-7182.

Best Regards,

  
Diana O. Hoff  
Senior Vice President--Operations  
Antero Resources Corporation

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Office of Oil and Gas

JAN 14 2020

WV Department of  
Environmental Protection

December 16<sup>th</sup>, 2019

TO: Secretary of the Department of Environmental Protection  
Attn: Horizontal Well Permit Section  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304

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WV Department of  
Environmental Protection

From: John S. Smith (Sam)  
133 Amberwoods Drive, Canonsburg, PA 15317  
142 N. 6<sup>th</sup> Avenue, Paden City, WV 26159  
412.427.1657 (c) 304.337.9067

**SUBJECT: 30-day reply to Notice of Intention to Drill Oil and/or Gas Well  
API No. 47-017-06896 (Fraley, Peggy, Russell & Whitehill Units),  
Doddridge County, WV Smithburg Quadrangle 7.5'**

SIR:

As sole surface landowner of this proposed project, I fully support this project and have no objections. (Encl 1)


The purpose of this correspondence to the WVDEP is to be assured of no gas interruption to my property.

Please find enclosed recent discussion with Jeff McLaughlin of your office (Encl 2 & 3). He was very helpful. Antero Resources has also been helpful in describing the actions they will take in avoiding any interruption when drilling and fracking begins.

There are several existing wells within 500' in the vicinity of the proposed well pad (Encl 4). The closest well is an Alexander sand well at approximately 5400' depth that supplies gas to my property (Encl 4). The other well is about 1000' away in a Big Injun sand at a shallower depth say 2000' that provides gas for heat. I do not show it here. These are traditional vertical wells that are supplying gas as part of original lease (Barnes) and lease agreement (Energy Production, Jane Lew, WV) for your information.

The key, as advised by your office, is to work with the Operator during drilling and fracking and to monitor my gas supply for adequate supply at that time and in the future. The worst case situation is to have low pressure and inadequate heat to the properties resulting from new drilling and fracking. I am optimistic present supply will never be affected.

Respectfully,

  
John S. Smith (Sam)

CF: Ms. Mallory Stanton, Permitting Supervisor, Denver Office  
Messrs. Mark Hutson & Dave Cava, Bridgeport Office

November 27, 2019

John S. and Peggy J. Smith  
142 N 6<sup>th</sup> Ave  
Paden City, WV 26159



Antero Resources  
1615 Wynkoop Street  
Denver, CO 80202  
Office 303.357.7310  
Fax 303.527.7115

VIA CERTIFIED MAIL

RE: **Notification of Intention to Drill Oil and/or Gas Well**  
Fraleley Unit 1H & 2H, Peggy Unit 1H & 2H, Russell Unit 1H & 2H and Whitehill Unit 1H & 2H  
Quadrangle: Smithburg 7.5'  
Doddridge County/West Union District, West Virginia

Dear Surface Owner:

You have been identified as the Surface Owner of a tract on which Antero Resources Corporation (Antero) is preparing to file a permit to drill the above named oil and/or gas well as agreed upon in the Surface Use Agreement signed and executed on January 5, 2016 (see attached). As required by Chapter 22, Article 6A, Section 10(b) and Section 16 of the Code of West Virginia, you are being notified by way of this correspondence of our intention to drill the subject horizontal shallow well.

Included with this notice we have attached for your review copies of the following information:

- Form WW-6AW – Voluntary Statement of No Objection
- Form WW-6B – Well Work Permit Application
- Form WW-9 – Construction and Reclamation Plan and Site Registration Application
  - Site Construction and Erosion and Sediment Control Plans and Drawings
- Water Management Plan
- Survey Plat showing the location of the proposed well
  - Topographic map showing the pad location
- WW-6A1 - Record of Oil & Gas Lease
- Form WW-PN – Public Notice and Proof of Legal Advertisement
- Form WW-6AC – Notice Certification
- Form WW-6A – Notice of Application
- Form WW-6A3 – Notice of Planned Operation
  - Memorandum of Surface Use Agreement
- Well Site Safety Plan and copies of Material Safety Data Sheets

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WV Department of  
Environmental Protection

Should you have any questions or concerns about the proposed well location or the site construction or reclamation plans, please contact the Secretary of the Department of Environmental Protection, Attn: Horizontal Well Permit Section, at 601 57th Street SE, Charleston, WV 25304 within the next 30 days per the procedures elaborated in Form WW-6A – Notice of Application. If you have no comments regarding Antero's drilling plans, we kindly request that you sign and return the attached Form WW-6AW - Voluntary Statement of No Objection enclosed herein. Any additional information regarding the proposed horizontal well may be obtained from the WVDEP Office of Oil & Gas website at <http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx>.

Sincerely,

Mallory Stappin  
Permitting Supervisor

Enclosures

ENC 1

**From:** JSS 12/15/2019  
**Sent:** Thursday, December 12, 2019 8:24 AM  
**To:** McLaughlin, Jeffrey W  
**Cc:** Antero Mark #1; js2721  
**Subject:** RE: API No. 47-017-06896 well plat  
**Importance:** High

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MR. McLAUGHLIN: Thank you very much for your prompt reply from our discussion yesterday (December 11, 2019).

The Peggy June well-pad and all of its proposed wells (Russell, Fraley, Whitehill and Peggy June) will be in very close proximity to existing wells in the Alexander and Big Injun sand supplying gas to my properties. You have identified 4 wells, one I recognize - API Well #47-017-05606 and is the closest. It supplies gas to my properties. The other is in the Big Injun sand about 1,000 feet away.

Discussions with Antero have been good as they are aware of the proximity of the wells and they will 'gyro' around them (D. Cava/M. Hutson). This is usual business for them – but the only source for heat and hot water for me.

Loss or interruptions must not occur (say, in the winter of 2020), and not is part of the original lease or agreement with present operators. Antero will or has notified other well operators that provide our gas of the upcoming fracking.

As you recommended, I will monitor and work with the well operator during the logging and subsequent fracking process. It is critical that we avoid interruption of the gas supply to the properties.

I am reviewing the well plats from Antero that I received last week and will comment within the 30-day comment period.

I support this project as the sole landowner of the well-pad site. Antero has been a good steward.

I have copied in my landman Mark Hutson of Antero.

Respectfully,

John S. Smith (Sam)  
133 Amberwoods Drive  
Canonsburg, PA 15317  
412.427.1657

142 N.6<sup>th</sup> Avenue  
Paden City WV  
304.337.8957

P.S. Water supply is not a concern. There are no water wells that I utilize. The area is served with municipal water supply.

ENC 3

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Environmental Protection

Sent from Mail for Windows 10

**From:** McLaughlin, Jeffrey W  
**Sent:** Wednesday, December 11, 2019 11:15 AM  
**To:** JS2721@verizon.net  
**Subject:** API No. 47-017-06896 well plat

Mr. John Smith,

Please find attached the well plat for the well work permit application for API No. 47-017-06896. On the plat you will find the plan view of the well bore diagram. It is highlighted. There are 4 existing wells within the 500' area of review. They are API Nos. 47-017-4748, 47-017-04784, 47-017-04775 and 47-017-05606. You may want to check to see if you are receiving gas from any of these wells.

Regards

*Jeffrey W. McLaughlin*

Jeff McLaughlin, B.S. Petroleum Eng.  
Technical Analyst, Office of Oil & Gas  
WV Dept. of Environmental Protection  
Phone: 304-926-0499 Ext. 1614

**From:** 14265@wv.gov <14265@wv.gov>  
**Sent:** Wednesday, December 11, 2019 11:01 AM  
**To:** McLaughlin, Jeffrey W <Jeffrey.W.McLaughlin@wv.gov>  
**Subject:** Message from KM\_C458

*ENCL 2*

N 297.287ft E: 1,646.096ft  
 LAT: 39°18'34.07" LON: 80°45'02.75"  
 WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIANGLE GEODT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:  
 WELL 1H TOP HOLE INFORMATION:  
 N: 4,350,467m E: 521,867m  
 BOTTOM HOLE INFORMATION:  
 N: 4,351,150m E: 521,802m

(NAD) 83 (UTM) ZONE 17 COORDS:  
 WELL 1H TOP HOLE INFORMATION:  
 N: 14,272,443ft E: 1,712,100ft  
 POINT OF ENTRY INFORMATION:  
 N: 14,272,856ft E: 1,711,689ft  
 BOTTOM HOLE INFORMATION:  
 N: 14,274,709ft E: 1,710,915ft

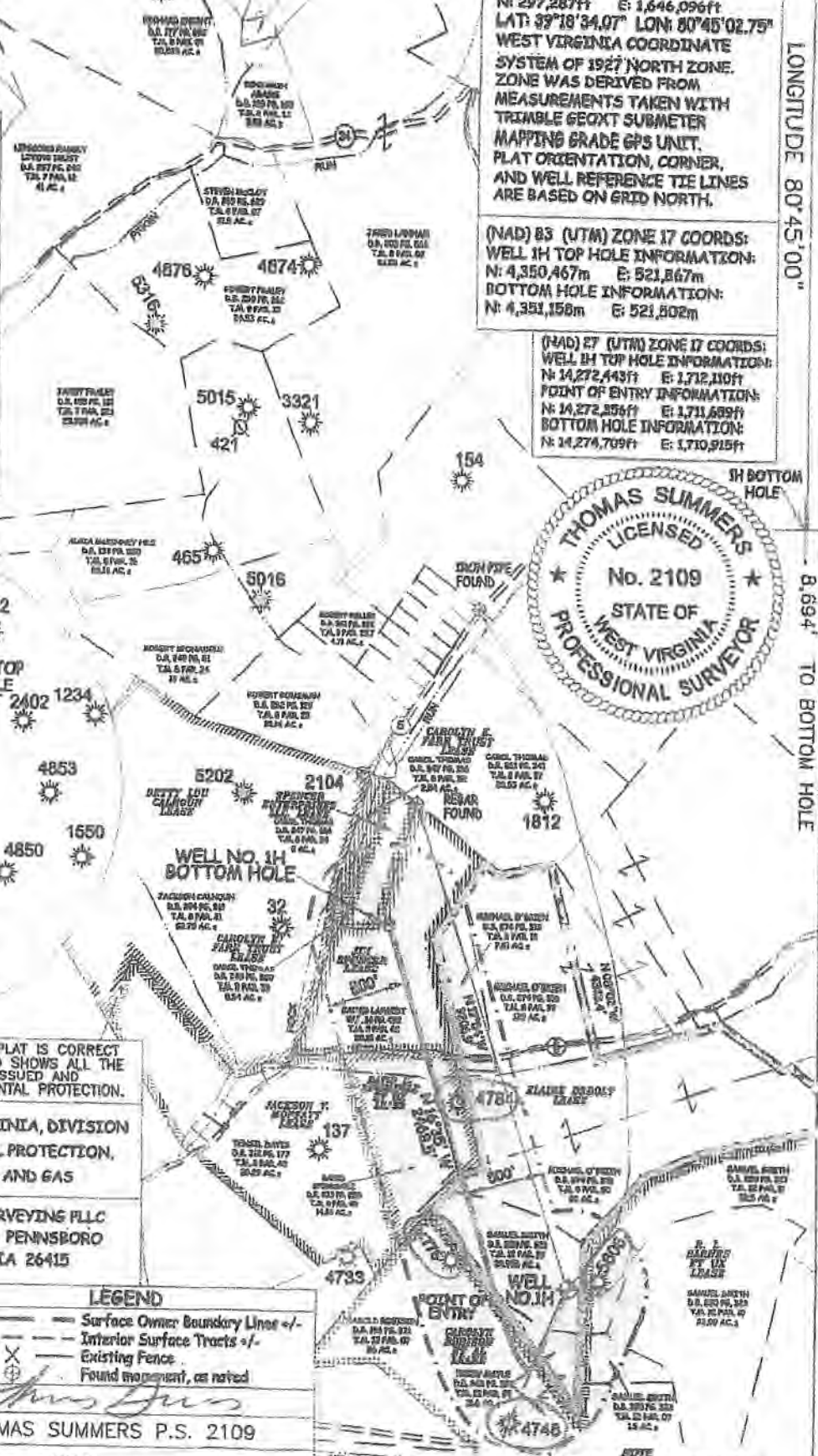
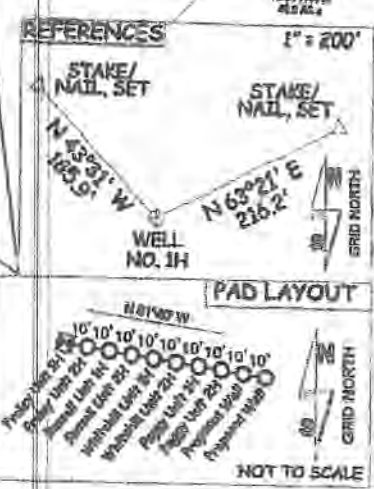
LONGITUDE 80°45'00"

10,965'

8,694' TO BOTTOM HOLE

LONGITUDE 80°42'30"

WV NORTH ZONE GRID NORTH



I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PERSCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

WILLOW LAND SURVEYING PLLC  
 220 MASONIC AVE, PENNSBORO WEST VIRGINIA 26415

JOB # 17-024WA  
 DRAWING # FRALEY/Hetherly  
 SCALE 1"=1000'  
 MINIMUM DEGREE OF ACCURACY SUBMETER  
 PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

LEGEND  
 - - - Surface Owner Boundary Line +/-  
 - - - Interior Surface Tracts +/-  
 - - - Existing Fence  
 - - - Found monument, as noted

THOMAS SUMMERS P.S. 2109

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

DATE 11/25/19  
 OPERATOR'S WELL# FRALEY UNIT 01H

WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL  
 (IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X  
 LOCATION: ELEVATION 1275' - AS BUILT WATERSHED HEADWATERS MIDDLE ISLAND CREEK  
 QUADRANGLE SH - SMITHBURG 7.5 BH - WEST UNION 7.5 DISTRICT WEST UNION COUNTY DODDRIDGE  
 SURFACE OWNER SAMUEL AND PEGGY SMITH  
 OIL & GAS ROYALTY OWNER ELAINE DEBOLT; CAROLYN ROBISON ET AL;  
 DAVID E. SPONAUGLER ET UX; JIM SPENCER

API WELL # 47 017 - 06896 WGA  
 STATE COUNTY PERMIT  
 ACREAGE 28.958 ACRES +/-  
 LEASE ACREAGE 84.8 ACRES +/- 26 ACRES +/-  
 14.75 ACRES +/- 20.16 ACRES +/-

COUNTY NAME

6/24



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west virginia department of environmental protection

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Office of Oil and Gas  
601 57<sup>th</sup> Street, S.E.  
Charleston, WV 25304  
(304) 926-0450  
fax: (304) 926-0452

Austin Caperton, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Tuesday, January 28, 2020  
WELL WORK PERMIT  
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION  
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit approval for FRALEY UNIT 1H  
47-017-06896-00-00

This well work permit is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to any additional specific conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas Inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin  
Chief

A blue ink signature of James A. Martin, written in a cursive style, is placed over the printed name and title.

Operator's Well Number: FRALEY UNIT 1H  
Farm Name: SAMUEL AND PEGGY SMITH  
U.S. WELL NUMBER: 47-017-06896-00-00  
Horizontal 6A New Drill  
Date Issued: 1/28/2020



## PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

### CONDITIONS

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1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than one hundred (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.
8. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.
9. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
10. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

## PERMIT CONDITIONS

11. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, completion of any other permitted well work, and completion of the well. Such notice shall be provided by sending an email to [DEPOOGNotify@wv.gov](mailto:DEPOOGNotify@wv.gov).

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
WELL WORK PERMIT APPLICATION

1) Well Operator: Antero Resources Corporation 494507062 017 - Doddri West Uni Smithburg 7.5'  
Operator ID County District Quadrangle

2) Operator's Well Number: Fraley Unit 1H Well Pad Name: Peggy June Pad

3) Farm Name/Surface Owner: Samuel and Peggy Smith Public Road Access: Smithton Rd (Old US-50)

4) Elevation, current ground: 1275' Elevation, proposed post-construction: \_\_\_\_\_

5) Well Type (a) Gas  Oil \_\_\_\_\_ Underground Storage \_\_\_\_\_

Other \_\_\_\_\_

(b) If Gas Shallow  Deep \_\_\_\_\_

Horizontal

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Marcellus Shale: 7400' TVD, Anticipated Thickness- 55 feet, Associated Pressure- 2950#

8) Proposed Total Vertical Depth: 7400' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 10,825' MD

11) Proposed Horizontal Leg Length: 2469'

12) Approximate Fresh Water Strata Depths: 145', 215', 320'

13) Method to Determine Fresh Water Depths: 4701708530000, 47017056060000, 47017013180000

14) Approximate Saltwater Depths: 1603'

15) Approximate Coal Seam Depths: 1601'

16) Approximate Depth to Possible Void (coal mine, karst, other): None Anticipated

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes \_\_\_\_\_ No

(a) If Yes, provide Mine Info: Name: \_\_\_\_\_  
Depth: \_\_\_\_\_  
Seam: \_\_\_\_\_  
Owner: \_\_\_\_\_

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Office of Oil and Gas

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WV Department of  
Environmental Protection

*Handwritten:* DJS  
12/4/19

18)

**CASING AND TUBING PROGRAM**

<b>TYPE</b>	<b>Size (in)</b>	<b>New or Used</b>	<b>Grade</b>	<b>Weight per ft. (lb/ft)</b>	<b>FOOTAGE: For Drilling (ft)</b>	<b>INTERVALS: Left in Well (ft)</b>	<b>CEMENT: Fill-up (Cu. Ft.)/CTS</b>
Conductor	20"	New	H-40	94#	80'	80'	CTS, 77 Cu. Ft.
Fresh Water	13-3/8"	New	J-55/H-40	54.5#/48#	370' *see #19	370' *see #19	CTS, 514 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2500'	2500'	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	10,825'	10825'	2570 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

<b>TYPE</b>	<b>Size (in)</b>	<b>Wellbore Diameter (in)</b>	<b>Wall Thickness (in)</b>	<b>Burst Pressure (psi)</b>	<b>Anticipated Max. Internal Pressure (psi)</b>	<b>Cement Type</b>	<b>Cement Yield (cu. ft./k)</b>
Conductor	20"	24"	0.438"	1530	50	Class A	1.18
Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	1000	Class A	1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A	1.18
Intermediate							
Production	5-1/2"	8-3/4" & 8-1/2"	0.361"	12,630	2500	Lead-H/POZ & Tail - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11,200			
Liners							

**PACKERS**

Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			

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Office of Oil and Gas

DAE  
12/14/19

DEC 06 2019

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill, perforate, fracture a new horizontal shallow well and complete Marcellus Shale.

\*Antero will be air drilling the fresh water string which makes it difficult to determine when fresh water is encountered. Therefore, we have built in a buffer for the casing setting depth which helps to ensure that all fresh water zones are covered.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Antero plans to pump Slickwater into the Marcellus Shale formation in order to ready the well for production. The fluid will be comprised of approximately 99 percent water and sand, with less than 1 percent special-purpose additives as shown in the attached "List of Anticipated Additives Used for Fracturing or Stimulating Well."

Anticipated Max Pressure - 9300 lbs  
Anticipated Max Rate - 80 bpm

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 40.52 Acres

22) Area to be disturbed for well pad only, less access road (acres): 8.89 Acres

23) Describe centralizer placement for each casing string:

Conductor: no centralizers  
Surface Casing: one centralizer 10' above the float shoe, one on the insert float collar and one every 4th joint spaced up the hole to surface.  
Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface.  
Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

24) Describe all cement additives associated with each cement type:

Conductor: no additives, Class A cement.  
Surface: Class A cement with 2-3% calcium chloride and 1/4 lb of flake  
Intermediate: Class A cement with 1/4 lb of flake, 5 gallons of clay treat  
Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51  
Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20

25) Proposed borehole conditioning procedures:

Conductor: blowhole clean with air, run casing, 10 bbls fresh water.  
Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.  
Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.  
Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

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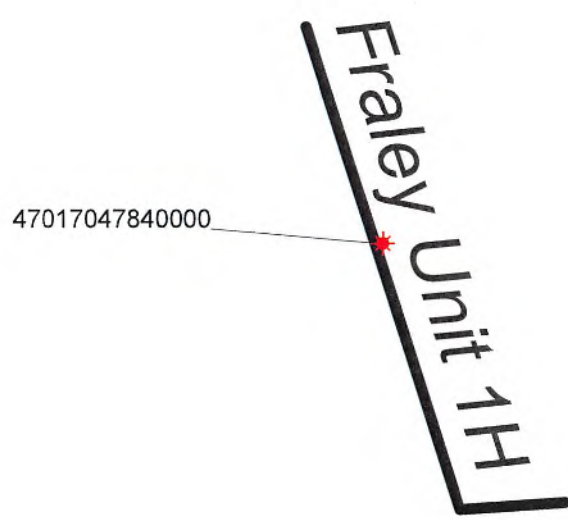
Office of Oil and Gas

\*Note: Attach additional sheets as needed.

DAR  
12/4/19

DEC 06 2019

Page 3 of 3



Antero Resources Corporation

Fraleley Unit 1H - AOR



WELL SYMBOLS  
Gas Well

November 25, 2019

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UWI (API Num)	Well Name	Well Number	Operator	Hist Oper	TD	Perforated Interval (shallowest, deepest)	Perforated Formation(s)	Produccible Formation(s) not perf'd
47017047840000	SPONAU GLED	1	KEY OIL COMPANY	KEY OIL COMPANY	5103	3122-5091	Warren, Speechley, Riley, Benson, Alexander	Big Injun, Gordon, Balltown

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WW-9  
(4/16)

API Number 47 - 017 - 06896  
Operator's Well No. Fraley Unit 1H

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL AND GAS

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Antero Resources Corporation OP Code 494507062

Watershed (HUC 10) Headwaters Middle Island Creek Quadrangle Smithburg 7.5', West Union 7.5'

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes  No

Will a pit be used? Yes  No

If so, please describe anticipated pit waste: No pit will be used at this site (Drilling and Flowback Fluids will be stored in tanks. Cuttings will be tanked and hauled off site.)

Will a synthetic liner be used in the pit? Yes  No  If so, what ml.? N/A

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection ( UIC Permit Number \*UIC Permit # will be provided on Form WR-34 )
- Reuse (at API Number Future permitted well locations when applicable. API# will be provided on Form WR-34 )
- Off Site Disposal (Supply form WW-9 for disposal location) (Meadowfill Landfill Permit #SWF-1032-98)
- Other (Explain Northwestern Landfill Permit #SWF-1025/ WV0109410)

Will closed loop system be used? If so, describe: Yes, fluids stored in tanks, cuttings removed offsite and taken to landfill.

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Surface - Air/Freshwater, Intermediate - Dust/Stiff Foam, Production - Water Based Mud or Synthetic Based Mud

-If oil based, what type? Synthetic, petroleum, etc. Synthetic

Additives to be used in drilling medium? Please See Attachment

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Drill cuttings stored in tanks, removed offsite and taken to landfill.

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) N/A

-Landfill or offsite name/permit number? Meadowfill Landfill (Permit #SWF-1032-98), Northwestern Landfill (Permit # SWF-1025/WV0109410)

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature Lisa Cathy Fox:  
Company Official (Typed Name) Gretchen Kohler  
Company Official Title SR Environmental and Regulatory Manager

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Subscribed and sworn before me this 27th day of NOVEMBER, 2019

My commission expires 3.13.2022

Notary Public  
MEGAN GRIFFITH  
NOTARY PUBLIC  
STATE OF COLORADO  
NOTARY ID 20184011666  
MY COMMISSION EXPIRES MARCH 13, 2022

WV Department of Environmental Protection



**Antero Resources Corporation**

Proposed Revegetation Treatment: Acres Disturbed 40.52 Prevegetation pH \_\_\_\_\_

Lime 2-4 Tons/acre or to correct to pH 6.5

Fertilizer type Hay or straw or Wood Fiber (will be used where needed)

Fertilizer amount 500 lbs/acre

Mulch 2-3 Tons/acre

Access Road "A" 4718' (21.22 acres) + Access Road "B" 141' (0.37 acres) + Staging Area (0.44 acres) + Well Pad (8.89 acres) + Excess/Topsoil Material Stockpiles (9.60 acres) = 40.52 Acres

**Seed Mixtures**

**Temporary**

**Permanent**

Seed Type	lbs/acre
Annual Ryegrass	40
Field Bromegrass	40

Seed Type	lbs/acre
Crownvetch	10-15
Tall Fescue	30

See attached Table IV-3 for additional seed type (Peggy June Pad Design)

See attached Table IV-4A for additional seed type (Peggy June Pad Design)

\*or type of grass seed requested by surface owner

\*or type of grass seed requested by surface owner

**Attach:**

Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, include dimensions (L x W x D) of the pit, and dimensions (L x W), and area in acreage, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: [Signature]

Comments: \_\_\_\_\_

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Environmental Protection

Title: Oil + Gas Inspector

Date: 12/4/19

Field Reviewed?  Yes  No

## *Form WW-9 Additives Attachment*

### SURFACE INTERVAL

1. Fresh Water
2. Soap –Foamer AC
3. Air

### INTERMEDIATE INTERVAL

#### *STIFF FOAM RECIPE:*

- 1) 1 ppb Soda Ash / Sodium Carbonate-Alkalinity Control Agent
- 2) 1 ppb Conqor 404 ( 11.76 ppg) / Corrosion Inhibitor
- 3) 4 ppb KLA-Gard ( 9.17 ppg) / Amine Acid Complex-Shale Stabilizer
- 4) 1ppb Mil Pac R / Sodium Carboxymethylcellulose-Filtration Control Agent
- 5) 12 ppb KCL / Potassium Chloride-inorganic Salt
- 6) Fresh Water 80 bbls
- 7) Air

### PRODUCTION INTERVAL

1. Alpha 1655  
Salt Inhibitor
2. Mil-Carb  
Calcium Carbonate
3. Cottonseed Hulls  
Cellulose-Cottonseed Pellets – LCM
4. Mil-Seal  
Vegetable, Cotton & Cellulose-Based Fiber Blend – LCM
5. Clay-Trol  
Amine Acid Complex – Shale Stabilizer
6. Xan-Plex  
Viscosifier For Water Based Muds
7. Mil-Pac (All Grades)  
Sodium Carboxymethylcellulose – Filtration Control Agent
8. New Drill  
Anionic Polyacrylamide Copolymer Emulsion – Shale Stabilizer
9. Caustic Soda  
Sodium Hydroxide – Alkalinity Control
10. Mil-Lime  
Calcium Hydroxide – Lime
11. LD-9  
Polyether Polyol – Drilling Fluid Defoamer
12. Mil Mica  
Hydro-Biotite Mica – LCM

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13. Escaid 110  
Drilling Fluid Solvent – Aliphatic Hydrocarbon
14. Ligco  
Highly Oxidized Leonardite – Filtration Control Agent
15. Super Sweep  
Polypropylene – Hole Cleaning Agent
16. Sulfatrol K  
Drilling Fluid Additive – Sulfonated Asphalt Residuum
17. Sodium Chloride, Anhydrous  
Inorganic Salt
18. D-D  
Drilling Detergent – Surfactant
19. Terra-Rate  
Organic Surfactant Blend
20. W.O. Defoam  
Alcohol-Based Defoamer
21. Perma-Lose HT  
Fluid Loss Reducer For Water-Based Muds
22. Xan-Plex D  
Polysaccharide Polymer – Drilling Fluid Viscosifier
23. Walnut Shells  
Ground Cellulosic Material – Ground Walnut Shells – LCM
24. Mil-Graphite  
Natural Graphite – LCM
25. Mil Bar  
Barite – Weighting Agent
26. X-Cide 102  
Biocide
27. Soda Ash  
Sodium Carbonate – Alkalinity Control Agent
28. Clay Trol  
Amine Acid complex – Shale Stabilizer
29. Sulfatrol  
Sulfonated Asphalt – Shale Control Additive
30. Xanvis  
Viscosifier For Water-Based Muds
31. Milstarch  
Starch – Fluid Loss Reducer For Water Based Muds
32. Mil-Lube  
Drilling Fluid Lubricant

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Environmental Protection

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**911 Address**  
**2045 Smithton Road**  
**West Union, WV 26456**

## **Well Site Safety Plan**

### **Antero Resources**

**Well Name:** Fraley Unit 1H & 2H, Russel Unit 1H & 2H,  
Whitehill Unit 1H & 2H and Peggy Unit 1H & 2H

**Pad Location:** PEGGY JUNE PAD  
Doddridge County/West Union District

#### **GPS Coordinates:**

**Entrance** - Lat 39°17'50.7258"/Long -80°44'38.6556" (NAD83)

**Pad Center** - Lat 39°18'11.7648"/Long -80°44'47.0178" (NAD83)

#### **Driving Directions:**

From Clarksburg: Drive west on US-50 W for approximately 22 miles. Turn left onto CO Rte 50/22, go 0.2 miles. Turn right onto Smithton Rd, go 1.3 miles. Access road will be on the right. Once on the access road, the Peggy June pad will be on the left.

#### **Alternate Route:**

From Parkersburg: Drive on US-50 E for 46.3 miles. Turn left onto WV-18 N, go 0.6 miles. Turn right onto Davis St/Smithton Rd, go 2.0 miles. Access road will be on the left. Once on the access road, the Peggy June pad will be on the left.

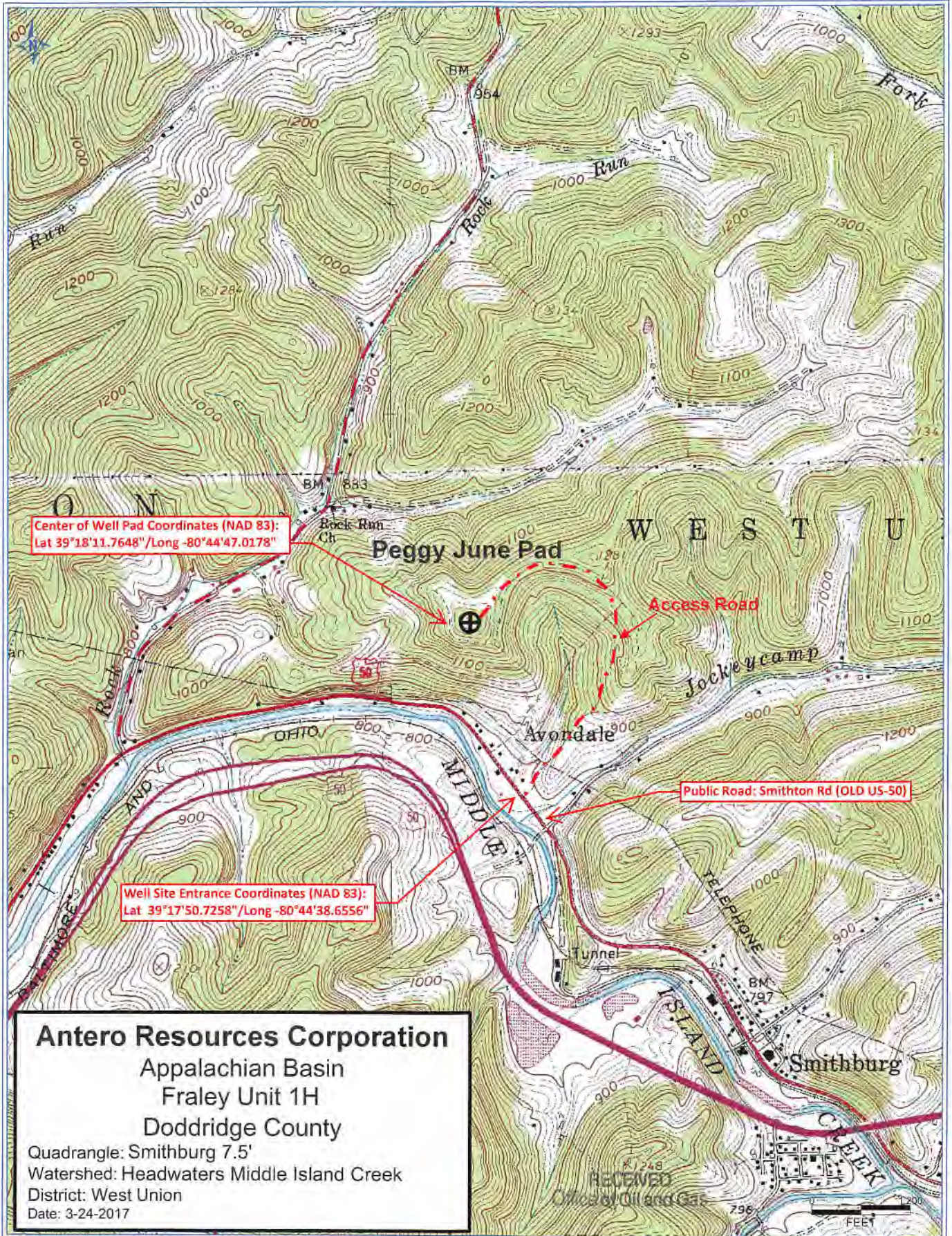
**EMERGENCY (24 HOUR) CONTACT 1-800-878-1373**

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*[Handwritten signature]*  
12/4/19

1



Center of Well Pad Coordinates (NAD 83):  
 Lat 39°18'11.7648"/Long -80°44'47.0178"

Well Site Entrance Coordinates (NAD 83):  
 Lat 39°17'50.7258"/Long -80°44'38.6556"

**Antero Resources Corporation**  
 Appalachian Basin  
 Fraley Unit 1H  
 Doddridge County

Quadrangle: Smithburg 7.5'  
 Watershed: Headwaters Middle Island Creek  
 District: West Union  
 Date: 3-24-2017

DEC 02 2019

LATITUDE 39°20'00"

10,818'

216' TO BOTTOM HOLE  
LATITUDE 39°20'00"

LONGITUDE 80°45'00"

10,965'

8,694' TO BOTTOM HOLE

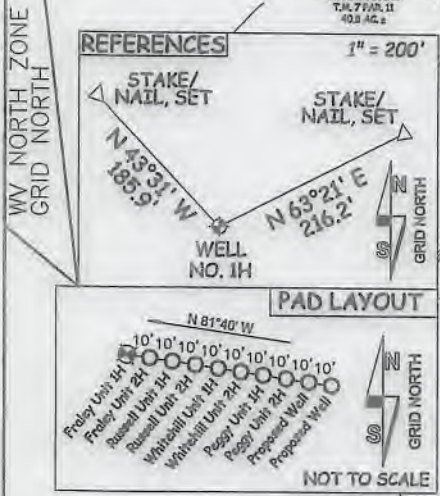
LONGITUDE 80°42'30"

**Antero Resources Corporation**  
**Well No. Fraley Unit 1H**

**NOTES:**  
**WELL 1H TOP HOLE INFORMATION:**  
 N: 295,000ft E: 1,647,253ft  
 LAT: 39°18'11.63" LON: 80°44'47.63"  
**BOTTOM HOLE INFORMATION:**  
 N: 297,287ft E: 1,646,096ft  
 LAT: 39°18'34.07" LON: 80°45'02.75"  
**WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE.**  
 ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

**(NAD) 83 (UTM) ZONE 17 COORDS:**  
**WELL 1H TOP HOLE INFORMATION:**  
 N: 4,350,467m E: 521,867m  
**BOTTOM HOLE INFORMATION:**  
 N: 4,351,158m E: 521,902m

**(NAD) 27 (UTM) ZONE 17 COORDS:**  
**WELL 1H TOP HOLE INFORMATION:**  
 N: 14,272,443ft E: 1,712,110ft  
**POINT OF ENTRY INFORMATION:**  
 N: 14,272,356ft E: 1,711,659ft  
**BOTTOM HOLE INFORMATION:**  
 N: 14,274,709ft E: 1,710,915ft



I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PERSCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

WILLOW LAND SURVEYING PLLC  
 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

JOB # 17-024WA  
 DRAWING # FRALEY1Hahory  
 SCALE 1" = 1000'  
 MINIMUM DEGREE OF ACCURACY SUBMETER  
 PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

**LEGEND**

Surface Owner Boundary Lines +/-  
 Interior Surface Tracts +/-  
 Existing Fence  
 Found monument, as noted

THOMAS SUMMERS P.S. 2109

DATE 11/25/19

OPERATOR'S WELL# FRALEY UNIT #1H

WELL TYPE: OIL \_\_\_ GAS X LIQUID INJECTION \_\_\_ WASTE DISPOSAL \_\_\_  
 (IF "GAS") PRODUCTION X STORAGE \_\_\_ DEEP \_\_\_ SHALLOW X

LOCATION: ELEVATION 1,275' - AS BUILT WATERSHED HEADWATERS MIDDLE ISLAND CREEK

QUADRANGLE SH - SMITHBURG 7.5' BH - WEST UNION 7.5' DISTRICT WEST UNION COUNTY DODDRIDGE

SURFACE OWNER SAMUEL AND PEGGY SMITH ACREAGE 28.956 ACRES +/-  
 OIL & GAS ROYALTY OWNER ELAINE DEBOLT; CAROLYN ROBISON ET AL; DAVID E. SPONAUGLE ET UX; JIM SPENCER LEASE ACREAGE 84.8 ACRES±; 26 ACRES±; 14.75 ACRES±; 20.16 ACRES±

API WELL # 47-017-06896

STATE COUNTY PERMIT

PROPOSED WORK: DRILL X CONVERT \_\_\_ DRILL DEEPER \_\_\_ REDRILL \_\_\_ FRACTURE OR STIMULATE X  
 PLUG OFF OLD FORMATION \_\_\_ PERFORATE NEW FORMATION X OTHER PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_ PLUG & ABANDON \_\_\_ CLEAN OUT & REPLUG \_\_\_

TARGET FORMATION MARCELLUS ESTIMATED DEPTH 7,400' TVD 10,825' MD

WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER  
 ADDRESS 1615 WYNKOOP STREET ADDRESS CT CORPORATION SYSTEM  
 FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

COUNTY NAME

PERMIT

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE  
Chapter 22, Article 6A, Section 5(a)(5)  
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

(1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;

(2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

<u>Grantor, lessor, etc.</u>	<u>Grantee, lessee, etc.</u>	<u>Royalty</u>	<u>Book/Page</u>
<u>Elaine Debolt Lease</u>			
Elaine Debolt	Antero Resources Corporation	1/8+	433/306
<u>Carolyn Robinson et al Lease</u>			
Carolyn Robinson et al	Key Oil Company	1/8	195/272
Key Oil Company	Antero Resources Appalachian Corporation	Assignment	256/285
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Elaine Debolt Lease</u>			
Elaine Debolt	Antero Resources Corporation	1/8+	433/306
<u>David E. Sponaugle et ux Lease</u>			
David E. Sponaugle et ux	Key Oil Company	1/8	0195/0447
Key Oil Company	Antero Resources Appalachian Corporation	Assignment	0276/0526
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1

\*Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.

WW-6A1  
(5/13)

Operator's Well No. Fraley Unit 1H

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE  
Chapter 22, Article 6A, Section 5(a)(5)  
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

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- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
<u>Jim Spencer Lease</u>	Jim Spencer	Antero Resources Corporation	1/8+	0368/0122

\*Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.

**Acknowledgement of Possible Permitting/Approval  
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: Antero Resources Corporation  
 By: Tim Rady  
 Its: VP of Land



4701706896

FORM WV-6A1  
EXHIBIT 1

FILED

JUN 10 2013

Natalie E. Tennant  
Secretary of State  
1900 Kanawha Blvd E  
Bldg 1, Suite 157-K  
Charleston, WV 25305



Penney Barber, Manager  
Corporations Division  
Tel: (304)558-8000  
Fax: (304)558-8381  
Website: [www.wvscd.com](http://www.wvscd.com)  
E-mail: [business@wvscd.com](mailto:business@wvscd.com)

APPLICATION FOR  
AMENDED CERTIFICATE  
OF AUTHORITY

Office Hours: Monday - Friday  
8:30 a.m. - 5:00 p.m. ET

FILE ONE ORIGINAL  
(Two if you want a filed  
stamped copy returned to you)  
FEE: \$25.00

\*\*\* In accordance with the provisions of the West Virginia Code, the undersigned corporation hereby \*\*\*  
applies for an Amended Certificate of Authority and submits the following statement:

- 1. Name under which the corporation was authorized to transact business in WV: Antero Resources Appalachia Corporation
- 2. Date Certificate of Authority was issued in West Virginia: 6/26/2009
- 3. Corporate name has been changed to: Antero Resources Corporation  
(Attach one Certified Copy of Name Change as filed in home State of incorporation.)
- 4. Name the corporation elects to use in WV: Antero Resources Corporation  
(due to home state name not being available)
- 5. Other amendments: \_\_\_\_\_  
(attach additional pages if necessary)

6. Name and phone number of contact person. (This is optional; however, if there is a problem with the filing, listing a contact person and phone number may avoid having to return or reject the document.)

Alvin A. Schopp (305) 367-7310  
Contact Name Phone Number

7. Signature information (See below \*Important Legal Notice Regarding Signatures\*):

Print Name of Signer: Alvin A. Schopp Title/Capacity: Authorized Person

Signature: *Alvin A. Schopp* Date: June 10, 2013

**\*Important Legal Notice Regarding Signatures\*** For West Virginia Code §11D-1-12. Penalty for signing false document. Any person who signs a document he or she knows is false in any material respect and knows that the document is to be delivered to the secretary of state for filing is guilty of a misdemeanor and, upon conviction thereof, shall be fined not more than one thousand dollars or confined in the county or regional jail not more than one year, or both.

Form CP-1

Issued by the Office of the Secretary of State

Revised 4/13

WV-6A1 - 06/16/2013 Website Name: Online

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Office of Oil and Gas

DEC 02 2019

WV Department of  
Environmental Protection



Antero Resources  
1615 Wynkoop Street  
Denver, CO 80202  
Office 303.357.7310  
Fax 303.357.7315

November 25, 2019

West Virginia Department of Environmental Protection  
Chief, Office of Oil and Gas  
Attn: Mr. James Martin  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304

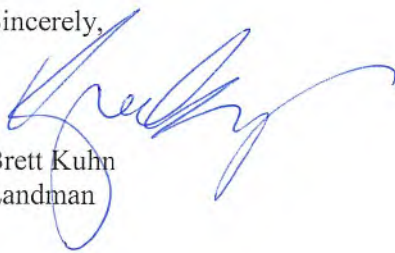
RE: Fraley Unit 1H  
Quadrangle: Smithburg 7.5' / West Union 7.5'  
Doddridge County/West Union District, West Virginia

Mr. Martin:

Antero Resources Corporation (Antero) is submitting the following application for a new well work permit for the Fraley Unit 1H horizontal shallow well. As an authorized representative, I certify that Antero has the right to extract, produce or market the oil or gas for all leases through which the Fraley Unit 1H horizontal lateral will drill through including any and all roads crossed under as identified on the attached survey plat.

Sincerely,

Brett Kuhn  
Landman



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WV Department of  
Environmental Protection

**STATE OF WEST VIRGINIA**  
**DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS**  
**NOTICE CERTIFICATION**

Date of Notice Certification: 11/26/2019

API No. 47- 017 -

Operator's Well No. Fralely Unit 1H

Well Pad Name: Peggy June Pad

**Notice has been given:**

Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83	Easting: <u>521867m</u>
County: <u>Doddridge</u>		Northing: <u>4350467m</u>
District: <u>West Union</u>	Public Road Access: <u>Smithton Rd (Old US-50)</u>	
Quadrangle: <u>Smithburg 7.5'</u>	Generally used farm name: <u>Samuel and Peggy Smith</u>	
Watershed: <u>Headwaters Middle Island Creek</u>		

Pursuant to West Virginia Code § 22-6A-7(b), every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information: (14) A certification from the operator that (i) it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section ten of this article, the information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was deemed satisfied as a result of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article six-a; or (iii) the notice requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner; and Pursuant to West Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice requirements of section ten of this article have been completed by the applicant.

Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:

\*PLEASE CHECK ALL THAT APPLY

- 1. NOTICE OF SEISMIC ACTIVITY or  NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED
- 2. NOTICE OF ENTRY FOR PLAT SURVEY or  NO PLAT SURVEY WAS CONDUCTED
- 3. NOTICE OF INTENT TO DRILL or  NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or  WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)
- 4. NOTICE OF PLANNED OPERATION
- 5. PUBLIC NOTICE
- 6. NOTICE OF APPLICATION

**OOG OFFICE USE ONLY**

- RECEIVED/ NOT REQUIRED
- RECEIVED
- RECEIVED/ NOT REQUIRED
- RECEIVED
- RECEIVED
- RECEIVED

RECEIVED  
Office of Oil and Gas

DEC 02 2019

WV Department of  
Environmental Protection

**Required Attachments:**

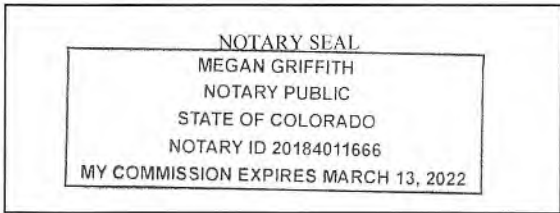
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication date verification or the associated Affidavit of Publication. The attached Notice Forms and Certifications of Notice shall serve as proof that the required parties have been noticed as required under West Virginia Code § 22-6A. Pursuant to West Virginia Code § 22-6A-11(b), the Certification of Notice to the person may be made by affidavit of personal service, the return receipt card or other postal receipt for certified mailing.

**Certification of Notice is hereby given:**

THEREFORE, I Maria Henry, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator: Antero Resources Corporation  
By: Maria Henry  
Its: Vice President - Geology  
Telephone: 303-357-7310

Address: 1615 Wynkoop Street  
Denver, CO 80202  
Facsimile: 303-357-7315  
Email: mstanton@anteroresources.com



Subscribed and sworn before me this 27<sup>th</sup> day of NOVEMBER 19  
[Signature] Notary Public  
My Commission Expires 3-13-2022

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).

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WV Department of  
Environmental Protection

**STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE OF APPLICATION**

**Notice Time Requirement:** notice shall be provided no later than the **filing date of permit application.**

**Date of Notice:** 11/27/2019 **Date Permit Application Filed:** 11/27/2019

**Notice of:**

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

**Delivery method pursuant to West Virginia Code § 22-6A-10(b)**

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice  WSSP Notice  E&S Plan Notice  Well Plat Notice is hereby provided to:

SURFACE OWNER(s)

Name: Rocky E. Mayle  
Address: 357 Main Street  
West Union, WV 26456

Name: John Samuel & Peggy June Smith  
Address: 142 N 6th Ave  
Paden City, WV 26159

SURFACE OWNER(s) (Road and/or Other Disturbance)

Name: PLEASE SEE ATTACHMENT  
Address: \_\_\_\_\_

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

SURFACE OWNER(s) (Impoundments or Pits)

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

COAL OWNER OR LESSEE

Name: NO DECLARATIONS ON RECORD WITH COUNTY  
Address: \_\_\_\_\_

COAL OPERATOR

Name: NO DECLARATIONS ON RECORD WITH COUNTY  
Address: \_\_\_\_\_

WATER PURVEYOR(s)/OWNER(s) OF WATER WELL, SPRING OR OTHER WATER SUPPLY SOURCE

Name: NONE IDENTIFIED WITHIN 1500'  
Address: \_\_\_\_\_

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

\*Please attach additional forms if necessary

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**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

**This Notice Shall Include:**

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and or water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Well Location Restrictions**

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

WW-6A  
(8-13)

API NO. 47-017 **4701706896**  
OPERATOR WELL NO. Fraley Unit 1H  
Well Pad Name: Peggy June Pad

examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

**Water Well Testing:**

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

**Water Testing Laboratories:**

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

**Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:**

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggrieved under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

**Written Comment:**

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas  
Department of Environmental Protection  
601 57<sup>th</sup> St. SE  
Charleston, WV 25304  
(304) 926-0450

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Such persons may request, at the time of submitting written comments, notice of the permit decision. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

**Time Limits and Methods for Filing Comments.**

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

**Comment Requirements**

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Disclaimer: All comments received will be placed on our web site <http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx> and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

**Permit Denial or Condition**

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

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WW-6A  
(8-13)

470170689F  
API NO. 47-017 -  
OPERATOR WELL NO. Fraley Unit 1H  
Well Pad Name: Peggy June Pad

*Maria Henry*

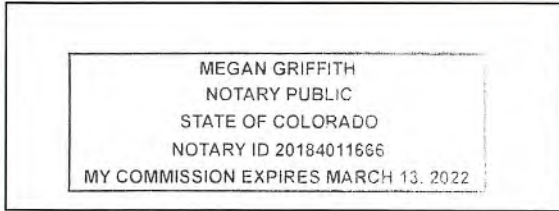
**Notice is hereby given by:**

Well Operator: Antero Resources Corporation  
Telephone: (303) 357-7310  
Email: mstanton@anteroresources.com

Address: 1615 Wynkoop Street  
Denver, CO 80202  
Facsimile: 303-357-7315

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at [deprivacyofficer@wv.gov](mailto:deprivacyofficer@wv.gov).



Subscribed and sworn before me this 27<sup>th</sup> day of NOVEMBER, 19  
*[Signature]*  
Notary Public  
My Commission Expires 3.13.2022

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**WW-6A Notice of Application Attachment (Fraley Unit 1H – Peggy June Pad):****List of Surface Owner(s) with Proposed Disturbance associated with Peggy June Well Pad:**

**WELL PAD** – These owners were notified of all well work permit applications and have executed signed Surface Use Agreements with Antero Resources Corporation.

**TM 12 PCL 11****TM 12 PCL 10****TM 12 PCL 99****TM 12 PCL 9**

**Owner:** John S. and Peggy J. Smith (2<sup>nd</sup> Address)

**Address:** 142 N 6<sup>th</sup> Ave  
Paden City, WV 26159

**TM 12 PCL 98**

**Owner:** Carol E. & Cecilia A. Mayle

**Address:** 357 Main St  
West Union, WV 26456

**ROAD AND/OR OTHER DISTURBANCE** – These owners has executed a signed Agreement with Antero Resources Corporation. However, they were only notified if their tract is overlying the oil and gas leasehold being developed by the proposed well work as outlined in WV Code 22-6A-10(b)(2).

**TM 12 PCL 16**

**Owner:** Janice K. Brooks

**Address:** PO Box 3378  
Palmer, AK 99645

**TM 12 PCL 17**

**Owner:** George M. & Sandra A. Wyckoff

**Address:** 191 Jockeycamp Run  
West Union, WV 26456

\*Please note that existing disturbance located within WVDOH right-of-way is covered by Antero's approved permit with WVDOH.

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**STATE OF WEST VIRGINIA**  
**DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS**  
**NOTICE OF INTENT TO DRILL**

Pursuant to W. Va. Code § 22-6A-16(b), the Notice of Intent to Drill is only required if the notice requirements of W. Va. Code § 22-6A-10(a) have NOT been met or if the Notice of Intent to Drill requirement has NOT been waived in writing by the surface owner.

**Notice Time Requirement:** Notice shall be provided at least **TEN (10)** days prior to filing a permit application.

**Date of Notice:** 09/27/2019      **Date Permit Application Filed:** 11/27/2019

**Delivery method pursuant to West Virginia Code § 22-6A-16(b)**

- HAND DELIVERY       CERTIFIED MAIL RETURN RECEIPT REQUESTED

Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: *Provided*, That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner: *Provided, however*, That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

**Notice is hereby provided to the SURFACE OWNER(s):**

Name: Rocky E. Mayle  
Address: 357 Main Street  
West Union, WV 26456

Name: John Samuel & Peggy June Smith  
Address: 142 N. 6th Avenue  
Paden City, WV 26159

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**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-16(b), notice is hereby given that the undersigned well operator has an intent to enter upon the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: West Virginia      UTM NAD 83      Easting: 521867  
County: Doddridge      Northing: 4350467  
District: West Union      Public Road Access: Old US-50  
Quadrangle: Smithburg 7.5'      Generally used farm name: John Samuel Smith & Peggy June Smith  
Watershed: Headwaters Middle Island Creek

**This Notice Shall Include:**

Pursuant to West Virginia Code § 22-6A-16(b), this notice shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Notice is hereby given by:**

Well Operator: Antero Resources Corporation  
Address: 1615 Wynkoop St.  
Denver, CO 80202  
Telephone: 303-357-7223  
Email: mgriffith@anteroresources.com  
Facsimile: 303-357-7315

Authorized Representative: Megan Griffith  
Address: 1615 Wynkoop St.  
Denver, CO 80202  
Telephone: 303-357-7223  
Email: mgriffith@anteroresources.com  
Facsimile: 303-357-7315

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).





4701706896

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

**Division of Highways**

1900 Kanawha Boulevard East • Building Five • Room 110  
Charleston, West Virginia 25305-0430 • (304) 558-3505

Byrd E. White, III  
Secretary of Transportation/  
Commissioner of Highways

October 24, 2019

Jimmy Wriston, P. E.  
Deputy Secretary/  
Deputy Commissioner

James A. Martin, Chief  
Office of Oil and Gas  
Department of Environmental Protection  
601 57<sup>th</sup> Street, SE  
Charleston, WV 25304

Subject: DOH Permit for the Peggy June Pad, Doddridge County  
Fraleley 1H Well Site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #04-2016-0698 which has been issued to Antero Resources for access to the State Road for a well site located off Doddridge County Route 50/30 SLS.

This operator is in compliance with §22-6A-20 of the WV Code. Operator has signed a STATEWIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated October 1, 2018.

Very Truly Yours,

Gary K. Clayton, P.E.  
Regional Maintenance Engineer  
Central Office O&G Coordinator

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Cc: Megan Griffith  
Antero Resources  
CH, OM, D-4  
File

# List of Anticipated Additives Used for Fracturing or Stimulating Well

4701706896

Additives	Chemical Abstract Service Number (CAS #)
Fresh Water	7732-18-5
2 Phosphobutane 1,2,4 tricarboxylic acid	37971-36-1
Ammonium Persulfate	7727-54-0
Anionic copolymer	Proprietary
Anionic polymer	Proprietary
BTEX Free Hydrotreated Heavy Naphtha	64742-48-9
Cellulase enzyme	Proprietary
Demulsifier Base	Proprietary
Ethoxylated alcohol blend	Mixture
Ethoxylated Nonylphenol	68412-54-4
Ethoxylated oleylamine	26635-93-8
Ethylene Glycol	107-21-1
Glycol Ethers	111-76-2
Guar gum	9000-30-0
Hydrogen Chloride	7647-01-0
Hydrotreated light distillates, non-aromatic, BTEX free	64742-47-8
Isopropyl alcohol	67-63-0
liquid, 2,2-dibromo-3-nitrilopropionamide	10222-01-2
Microparticle	Proprietary
Petroleum Distillates (BTEX Below Detect)	64742-47-8
Polyacrylamide	57-55-6
Propargyl Alcohol	107-19-7
Propylene Glycol	57-55-6
Quartz	14808-60-7
Sillica, crystalline quartz	7631-86-9
Sodium Chloride	7647-14-5
Sodium Hydroxide	1310-73-2
Sugar	57-50-1
Surfactant	68439-51-0
Suspending agent (solid)	14808-60-7
Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7
Solvent Naphtha, petroleum, heavy aliph	64742-96-7
Soybean Oil, Me ester	67784-80-9
Copolymer of Maleic and Acrylic Acid	52255-49-9
DETA phosphonate	15827-60-8
Hexamethylene Triamine Penta	34690-00-1
Phosphino Carboxylic acid polymer	71050-62-9
Hexamethylene Diamine Tetra	23605-75-5
2-Propenoic acid, polymer with 2 propenamide	9003-06-9
Hexamethylene diamine penta (methylene phosphonic acid)	23605-74-5
Diethylene Glycol	111-46-6
Methenamine	100-97-0
Polyethylene polyamine	68603-67-8
Coco amine	61791-14-8
2-Propyn-1-olcompound with methyloxirane	38172-91-7

RECEIVED  
 Office of Oil and Gas  
 WV Department of  
 Environmental Protection  
 DEC 02 2019

**LOCATION COORDINATES:**  
 ACCESS ROAD ENTRANCE  
 LATITUDE: 39.297424 LONGITUDE: -80.744071 (NAD 83)  
 LONGITUDE: 39.297341 LONGITUDE: -80.744245 (NAD 27)  
 N 4349814.10 E 5282068.25 (UTM ZONE 17 METERS)  
 CENTER OF PAD  
 LATITUDE: 39.303268 LONGITUDE: -80.746304 (NAD 83)  
 LONGITUDE: 39.303184 LONGITUDE: -80.746307 (NAD 27)  
 N 4356482.10 E 5218661.18 (UTM ZONE 17 METERS)  
 CENTER OF TANK  
 LATITUDE: 39.303434 LONGITUDE: -80.746679 (NAD 83)  
 LONGITUDE: 39.303350 LONGITUDE: -80.746853 (NAD 27)  
 N 4356480.44 E 521941.93 (UTM ZONE 17 METERS)

**APPROVED  
 MODIFICATION  
 WVDPE 008**  
 10/31/2019

**GENERAL DESCRIPTION:**

THE ACCESS ROADS, AND WELL PAD HAVE BEEN CONSTRUCTED AND HAVE BEEN UPGRADED TO AID IN THE DEVELOPMENT OF INDIVIDUAL MARCELLUS SHALE GAS WELLS.

**FLOODPLAIN NOTES:**

THE SITE IS LOCATED WITHIN FEMA FLOOD ZONE "X" PER FEMA FLOOD MAP #54017C010C.

**MISS UTILITY STATEMENT:**

ANTERO RESOURCES CORPORATION HAS NOTIFIED MISS UTILITY OF WEST VIRGINIA FOR THE LOCATING OF UTILITIES PRIOR TO THIS PROJECT DESIGN. TICKET #1521293016. IN ADDITION, MISS UTILITY WILL BE CONTACTED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION FOR THIS PROJECT.

**ENTRANCE PERMIT:**

ANTERO RESOURCES CORPORATION HAS OBTAINED AN ENCROACHMENT PERMIT (FORM MM-108) FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

**ENVIRONMENTAL NOTES:**

STREAM AND WETLAND DELINEATIONS WERE PERFORMED IN JANUARY, OCTOBER, & NOVEMBER 2014, JULY & DECEMBER 2015, & JANUARY 2017 BY ALLSTAR ECOLOGY TO REVIEW THE SITE FOR WATERS AND WETLANDS THAT ARE MOST LIKELY WITHIN THE REGULATORY JURISDICTION OF THE U.S. ARMY CORPS OF ENGINEERS (USACE) AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP). THE INFORMATION AND WETLAND DELINEATION INDEX MAPS WERE PREPARED BY ALLSTAR ECOLOGY AND SUMMARIZES THE RESULTS OF THE FIELD DELINEATION. THE MAP DOES NOT, IN ANY WAY, REPRESENT A JURISDICTIONAL DETERMINATION OF THE LANDWARD LIMITS OF WATERS AND WETLANDS WHICH MAY BE REGULATED BY THE USACE OR THE WVDEP.

**GEOTECHNICAL NOTES:**

A SUBSURFACE INVESTIGATION OF THE SITE WAS PERFORMED BY PENNSYLVANIA SOIL & ROCK, INC. ON DECEMBER 2-10, 2015. THE REPORT PREPARED BY PENNSYLVANIA SOIL & ROCK, INC. DATED JANUARY 16, 2016 REVISED MARCH 27, 2017, REFLECTS THE RESULTS OF THE SUBSURFACE INVESTIGATION. THE INFORMATION AND RECOMMENDATIONS CONTAINED IN THIS REPORT WERE USED IN THE PREPARATION OF THESE PLANS. PLEASE REFER TO THE SUBSURFACE INVESTIGATION REPORT BY PENNSYLVANIA SOIL & ROCK, INC. FOR ADDITIONAL INFORMATION, AS NEEDED.

**PROJECT CONTACTS:**

**OPERATOR:**  
 ANTERO RESOURCES CORPORATION  
 630 WHITE OAKS BLVD  
 BRIDGEPORT, WV 26330  
 PHONE: (304) 842-4100  
 FAX: (304) 842-4102

**ELI WAGONER - ENVIRONMENTAL ENGINEER & REGULATORY MANAGER**  
 OFFICE: (304) 842-4066 CELL: (304) 476-9770

**JOY McNEVES - DIRECTOR COMPLETIONS OPERATIONS**  
 OFFICE: (304) 357-0799 CELL: (304) 808-2423

**AARON KUNTZLER - CONSTRUCTION MANAGER**  
 CELL: (304) 842-4191

**ROBERT WIRSS - DESIGN MANAGER**  
 OFFICE: (304) 842-4100 CELL: (304) 827-7450

**CHARLES R. COMPTON, III - UTILITY COORDINATOR**  
 CELL: (304) 719-6449

**MARK HUTSON - LAND AGENT**  
 CELL: (304) 568-8315

**ENGINEER/SURVEYOR:**  
 NAVITUS ENGINEERING, INC.  
 CTRYS & SCAMP, PC - PROJECT MANAGER/ENGINEER  
 OFFICE: (888) 662-4185 CELL: (540) 886-6747

**ENVIRONMENTAL:**  
 ALLSTAR ECOLOGY, LLC  
 RYAN L WARD - ENVIRONMENTAL SCIENTIST  
 (866) 213-2666 CELL: (304) 892-7477

**GEOTECHNICAL:**  
 PENNSYLVANIA SOIL & ROCK, INC.  
 CHRISTOPHER W. SAMIOS - PROJECT ENGINEER  
 OFFICE: (412) 372-4050 CELL: (412) 569-0662

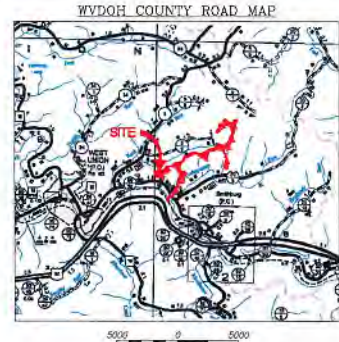
**NOTES:**

- ALL BMP'S MUST REMAIN IN PLACE AND FUNCTIONAL UNTIL ALL AREAS WITHIN THE LIMIT OF DISTURBANCE ARE COMPLETELY AND PERMANENTLY STABILIZED. MAINTENANCE MUST INCLUDE INSPECTION OF ALL EROSION AND SEDIMENT CONTROLS AFTER EACH RUNOFF EVENT IN EXCESS OF 0.5" AND ON A BIWEEKLY BASIS.
- THE CONSTRUCTION SITE SHOULD BE STABILIZED AS SOON AS POSSIBLE AFTER COMPLETION. ESTABLISHMENT OF FINAL STABILIZATION MUST BE INITIATED NO LATER THAN 7 DAYS AFTER REACHING FINAL GRADE. FINAL STABILIZATION MEANS THAT ALL SOIL-DISTURBING ACTIVITIES ARE COMPLETED, AND THAT EITHER A PERMANENT VEGETATIVE COVER WITH A DENSITY OF 70% OR GREATER HAS BEEN ESTABLISHED OR THAT THE SURFACE HAS BEEN STABILIZED BY HARD COVER SUCH AS PAVEMENT OR BUILDINGS. IT SHOULD BE NOTED THAT THE 70% REQUIREMENT REFERS TO THE TOTAL AREA VEGETATED AND NOT JUST A PERCENT OF THE SITE.
- ALL PERMANENT SEDIMENT CONTROL MEASURES CAN BE REMOVED AFTER THE SITE IS PERMANENTLY STABILIZED AND APPROVAL IS RECEIVED FROM THE WVDEP.
- ANY AREAS DISTURBED BY REMOVAL OF CONTROLS SHALL BE REPAIRED, STABILIZED, AND PERMANENTLY SEEDING.
- THE AS-BUILT INFORMATION SHOWN HEREON REFLECTS FIELD DATA COLLECTED RELATING TO THE FINAL GRADING OF THE DISTURBED AREA AS OF JUNE 4, 2019. NAVITUS ENGINEERING IS NOT RESPONSIBLE FOR ANY CHANGES MADE TO THE SITE AFTER THE ABOVE MENTIONED DATES.
- THE EXISTING CONTAINMENT BERM AROUND THE WELL PAD SHALL BE REPAIRED AS NECESSARY TO ENSURE 100% CONTAINMENT OF ALL FLUIDS PRIOR TO DRILLING OPERATIONS.
- THE EXISTING EGRESS TO THE WELL PAD SHALL HAVE THE MOUNTABLE BEAMS REPAIRED AS NECESSARY TO ENSURE 100% CONTAINMENT OF ALL FLUIDS PRIOR TO DRILLING OPERATIONS.

# PEGGY JUNE WELL PAD AS-BUILT EROSION & SEDIMENT CONTROL IMPROVEMENT PLANS

WEST UNION DISTRICT, DODDRIDGE COUNTY COUNTY, WEST VIRGINIA  
 NUTTER FORK-MIDDLE ISLAND CREEK WATERSHED

USGS 7.5 SMITHBURG & WEST UNION QUAD MAPS



**AS-BUILT CERTIFICATIONS:**  
 THE DRAWINGS, CONSTRUCTION NOTES, AND REFERENCE DIAGRAMS ATTACHED HERETO HAVE BEEN PREPARED IN ACCORDANCE WITH THE WEST VIRGINIA CODE OF STATE RULES, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF CIVIL AND GAS CHS 28-B.

**REPRODUCTION NOTE**  
 THESE PLANS WERE CREATED TO BE PLOTTED ON 22"x34" (ANSI D) PAPER. HALF SCALE DRAWINGS ARE ON 11"x17" (ANSI B) PAPER.  
 THESE PLANS WERE CREATED FOR COLOR PLOTTING AND ANY REPRODUCTIONS IN GRAY SCALE OR COLOR MAY RESULT IN A LOSS OF INFORMATION AND SHOULD NOT BE USED FOR CONSTRUCTION PURPOSES.

MISS UTILITY of West Virginia  
 1-800-245-4846  
 West Virginia State Law  
 (Section XIV, Chapter 24-C)  
 Requires that you call two business days before you dig in the state of West Virginia.  
 IT'S THE LAW!!

WEST VIRGINIA STATE PLANT COORDINATE SYSTEM  
 ESTABLISHED BY SURVEY ORIGIN: UTM & OPUS  
 POST-PROCESSING

**SHEET INDEX:**

- COVER SHEET
- LEGEND
- OVERALL PLAN SHEET INDEX
- ACCESS ROAD AS-BUILT PLAN
- ACCESS ROAD & WELL PAD AS-BUILT PLAN
- ACCESS ROAD AS-BUILT PROFILES
- WELL PAD & STOCKPILE AS-BUILT SECTIONS

**PEGGY JUNE LIMITS OF DISTURBANCE AREA (AC)**

Total 9th	Total 10th
Access Road "A" (4,716)	21.22
Access Road "B" (1411)	0.37
Staging Area	0.44
Well Pad	8.89
Excess/Topsoil Material Stockpiles	9.80
Total Affected Area	40.52
Total Wooded Acres Disturbed	29.44
Impacts to County Route 5920 R.O.W.	
Access Road "A" (28)	0.08
Staging Area	0.08
Total Affected Area	0.16
Total Wooded Acres Disturbed	0.00
Impacts to Janitor K. Brooks TM 12-16	
Access Road "A" (2,584)	10.99
Staging Area	0.36
Excess/Topsoil Material Stockpiles	2.01
Total Affected Area	13.33
Total Wooded Acres Disturbed	10.33
Impacts to John S. & Peggy J. Smith TM 10-11	
Access Road "A" (1,625)	7.36
Access Road "B" (1411)	1.35
Well Pad	1.35
Excess/Topsoil Material Stockpiles	3.40
Total Affected Area	12.51
Total Wooded Acres Disturbed	6.85
Impacts to Dennis M. & Sandra A. Wyckoff 12-17	
Access Road "A"	0.18
Excess/Topsoil Material Stockpiles	1.72
Total Affected Area	1.90
Total Wooded Acres Disturbed	1.33
Impacts to John S. & Peggy J. Smith TM 12-17	
Access Road "A" (2,717)	2.55
Well Pad	0.56
Excess/Topsoil Material Stockpiles	2.47
Total Affected Area	5.80
Total Wooded Acres Disturbed	4.05
Impacts to John S. & Peggy J. Smith TM 12-18	
Well Pad	0.02
Total Affected Area	0.02
Total Wooded Acres Disturbed	0.02
Impacts to Carol E. & Cecilia A. Mayle TM 12-25	
Well Pad	0.42
Total Affected Area	0.42
Total Wooded Acres Disturbed	0.42
Impacts to John S. & Peggy J. Smith TM 12-29	
Access Road "A" (101)	0.09
Well Pad	6.49
Total Affected Area	6.58
Total Wooded Acres Disturbed	5.64

Proposed Well Name	NAD 27	NAD 83	UTM (METERS)	NAD 83 Lat & Long
Fraley	N 29499 85	N 29502 44	N 435047 15	LAT 39-18-11 9291
Unit 1H	E 1842282 85	E 1815811 71	E 521801 54	LONG -80-44-47 0215
Fraley	N 29499 40	N 29503 09	N 435046 76	LAT 39-18-11 9191
Unit 2H	E 1842282 85	E 1815811 60	E 521801 50	LONG -80-44-46 8754
Russell	N 29499 90	N 29502 34	N 435046 37	LAT 39-18-11 6031
Unit 1H	E 1842272 74	E 1815821 50	E 521872 58	LONG -80-44-46 7493
Russell	N 29499 30	N 29503 19	N 435046 99	LAT 39-18-11 8902
Unit 2H	E 1842282 84	E 1815811 39	E 521872 09	LONG -80-44-46 9291
Whitehill	N 29499 05	N 29502 54	N 435046 59	LAT 39-18-11 8772
Unit 1H	E 1842292 83	E 1815851 29	E 521876 03	LONG -80-44-46 4970
Whitehill	N 29492 60	N 29502 20	N 435046 20	LAT 39-18-11 8643
Unit 2H	E 1842292 43	E 1815851 16	E 521881 85	LONG -80-44-46 3709
Peggy	N 29499 15	N 29502 75	N 435046 81	LAT 39-18-11 8517
Unit 1H	E 1842212 32	E 1815811 08	E 521884 67	LONG -80-44-46 2448
Peggy	N 29489 70	N 29502 30	N 435046 42	LAT 39-18-11 8383
Unit 2H	E 1842222 22	E 1815896 67	E 521887 69	LONG -80-44-46 1187
Open	N 29498 20	N 29502 85	N 435046 03	LAT 39-18-11 8254
Slot	E 1842222 11	E 1815896 87	E 521892 71	LONG -80-44-46 9629
Open	N 29488 81	N 29502 40	N 435046 43	LAT 39-18-11 8124
Slot	E 1842342 00	E 1815900 76	E 521893 74	LONG -80-44-46 3064
As-Built Well Pad Elevation	1,274.7			

**PEGGY JUNE EPHEMERAL STREAM IMPACT (LINEAR FEET)**

Stream and Impact Cause	Permanent Impacts		Temp. Impacts	Temp. Disturb.	Total Impact (LF)
	Culvert / #R (LF)	Inlets/Outlets Structures (LF)			
Stream 03 (Access Road "A")	0	0	2	14	112
Stream 04 (Access Road "A")	0	0	2	14	2
Stream 05 (Access Road "A")	18	0	20	12	38

**PEGGY JUNE INTERMITTENT STREAM IMPACT (LINEAR FEET)**

Stream and Impact Cause	Permanent Impacts		Temp. Impacts	Temp. Disturb.	Total Impact (LF)
	Culvert / #R (LF)	Inlets/Outlets Structures (LF)			
Stream 2 (Access Road "A")	83	0	42	22	165

**NAVITUS**  
 ENERGY ENGINEERING

REVISION

DATE	REVISION
09/27/2019	REVISED PER IMPACT 5ST



THIS DOCUMENT WAS PREPARED FOR ANTERO RESOURCES CORPORATION

COVER SHEET  
 PEGGY JUNE WELL PAD  
 WEST UNION DISTRICT, DODDRIDGE COUNTY, WEST VIRGINIA



DATE: 05/09/2019  
 SCALE: AS SHOWN  
 SHEET 1 OF 10

