



**west virginia** department of environmental protection

Office of Oil and Gas  
601 57th Street SE  
Charleston, WV 25304  
(304) 926-0450  
(304) 926-0452 fax

Earl Ray Tomblin, Governor  
Randy C. Huffman, Cabinet Secretary  
www.dep.wv.gov

November 13, 2014

**WELL WORK PERMIT**

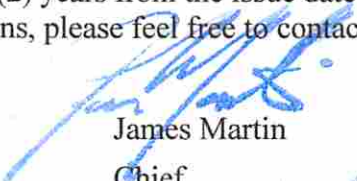
**Horizontal 6A Well**

This permit, API Well Number: 47-8510144, issued to ANTERO RESOURCES CORPORATION, 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 all 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 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.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-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) 926-0499 ext. 1654.



James Martin  
Chief

Operator's Well No: ERICSON UNIT 3H  
Farm Name: LANDRUM, EDDY F.  
**API Well Number: 47-8510144**  
**Permit Type: Horizontal 6A Well**  
Date Issued: 11/13/2014

## 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. Operator shall take additional measures with this permitted activity to avoid communication with offset wells. Such additional measures are described in the attached addendum. This addendum is part of the terms of the well work permit, and includes a description of depth and completed formations of offset wells. Also included is a description of monitoring activities that will take place during fracturing operations of the permitted well work.
1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACOE). Through this permit, you are hereby being advised to consult with USACOE 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 fifty (50) 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.

## PERMIT CONDITIONS

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. 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.
8. 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.
9. Operator shall provide the Office of Oil & Gas notification of the date that drilling commenced on this well. Such notice shall be provided by sending an email to [DEPOOGNotify@wv.gov](mailto:DEPOOGNotify@wv.gov) within 30 days of commencement of drilling.



***Addendum for Antero pads in Ritchie County, WV***

Ericson Unit 1H	Annie Horizontal Pad
Ericson Unit 2H	Annie Horizontal Pad

The following outlines the process to be undertaken by Antero Resources prior to and during completion process of wells in Ritchie County.

- Investigate all wells within 1320' of new wells - for all identified Marcellus vertical wells and any existing well(s) with an interval that is less than 1500 feet from the deepest formation drilled (including, but not specific to the Alexander formation) to the top of Marcellus:
  - Contact operator of all wells
  - Confirm well status, producing horizon, well completion/stimulation information
  - Discuss plans to stimulate the horizontal Marcellus wells and the plans for monitoring potential impact on shallow wells
  - Make sure all vertical wells (with an interval that is less than 1500 feet from the deepest formation drilled to the top of Marcellus) have adequate wellhead equipment, including pressure gauges
  - Provide shallow well operator with frac dates and develop plan for monitoring during stimulation
  - If well waters out during frac, shut it in until after stimulation, and install adequate well control equipment prior to swabbing in the impacted shallow well
- Control fracturing parameters during job to limit fracture height growth
  - Limit rate and limit pressures for each segment of fracturing stages
- Tracers demonstrate that we rarely reach offset wells at 660' offset
  - Will use tracers at each lateral



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

1 539

1) Well Operator: Antero Resources Corporation 494488557 085 - Ritchie Clay Pennsboro 7.5'  
Operator ID County District Quadrangle

2) Operator's Well Number: Ericson Unit 3H Well Pad Name: Existing Annie Horizontal Pad

3) Farm Name/Surface Owner: Landrum, Eddy F. Public Road Access: CR 74

4) Elevation, current ground: 1004' Elevation, proposed post-construction: 1004'

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 Associated Pressure(s):  
Marcellus Shale: 6600' TVD, Anticipated Thickness- 75 feet, Associated Pressure- 2800#

8) Proposed Total Vertical Depth: 6600' TVD

9) Formation at Total Vertical Depth: Marcellus Shale

10) Proposed Total Measured Depth: 13,800' MD

11) Proposed Horizontal Leg Length: 6753'

12) Approximate Fresh Water Strata Depths: 79'

13) Method to Determine Fresh Water Depths: Belle Unit 2H (API# 47-085-10028) on same pad

14) Approximate Saltwater Depths: 846', 1492'

15) Approximate Coal Seam Depths: 674'

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: \_\_\_\_\_ RECEIVED  
Seam: \_\_\_\_\_ Office of Oil and Gas  
Owner: \_\_\_\_\_ JUL 16 2014

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WW-6B  
(9/13)

18)

**CASING AND TUBING PROGRAM**

<u>TYPE</u>	<u>Size</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling</u>	<u>INTERVALS: Left in Well</u>	<u>CEMENT: Fill-up (Cu. Ft.)</u>
Conductor	20"	New	H-40	94#	40'	40'	CTS, 38 Cu. Ft.
Fresh Water	13-3/8"	New	J-55/H-40	54.5#/48#	300'	300'	CTS, 417 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2475'	2475'	CTS, 1008 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	13,800'	13,800'	3395 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		7,100	
Liners							

<u>TYPE</u>	<u>Size</u>	<u>Wellbore Diameter</u>	<u>Wall Thickness</u>	<u>Burst Pressure</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	20"	24"	0.438"	1530	Class A	1.18
Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	Class A	1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	Class A	1.18
Intermediate						
Production	5-1/2"	8-3/4" & 8-1/2"	0.361"	12630	Lead-H/POZ & Tail - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11200		
Liners						

**PACKERS**

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

*Full 8-24-14*

WW-6B  
(9/13)

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.

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."

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 17.99 acres

22) Area to be disturbed for well pad only, less access road (acres): 2.22 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.

\*Note: Attach additional sheets as needed.

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

**CONSTRUCTION AND RECLAMATION PLAN AND SITE REGISTRATION APPLICATION FORM  
GENERAL PERMIT FOR OIL AND GAS PIT WASTE DISCHARGE**

Operator Name Antero Resources Corporation OP Code 494488557

Watershed North Fork Hughes River Quadrangle Pennsboro 7.5'

Elevation 1004' County Ritchie District Clay

Description of 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.)

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

Will a synthetic liner be used in the pit? N/A If so, what mil.? N/A

Proposed Disposal Method For Treated Pit Wastes:  
 Land Application  
 Underground Injection ( UIC Permit Number \_\_\_\_\_ )  
 Reuse (at API Number Future permitted well locations when applicable. API# will be provided on Form WR-34)  
 Off Site Disposal (Meadowfill Landfill Permit #SWF-1032-98)  
 Other (Explain \_\_\_\_\_)

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. Surface - Air/Freshwater, Intermediate - Cust/Suff Foam, Production - Water Based Mud  
-If oil based, what type? Synthetic, petroleum, etc. N/A

Additives to be used? Please See Attachment

Will closed loop system be used? Yes

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Removed offsite and taken to landfill  
-If left in pit and plan to solidify what medium will be used? Cement, lime, N/A  
-Landfill or offsite name/permit number? Meadowfill Landfill (Permit #SWF-1032-98)

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 [Signature]

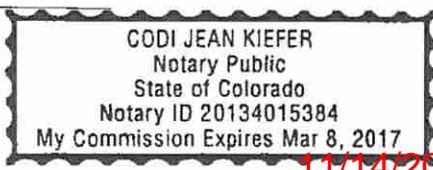
Company Official (Typed Name) Evan Foster

Company Official Title Environmental Representative

Subscribed and sworn before me this 11<sup>th</sup> day of July, 20 14

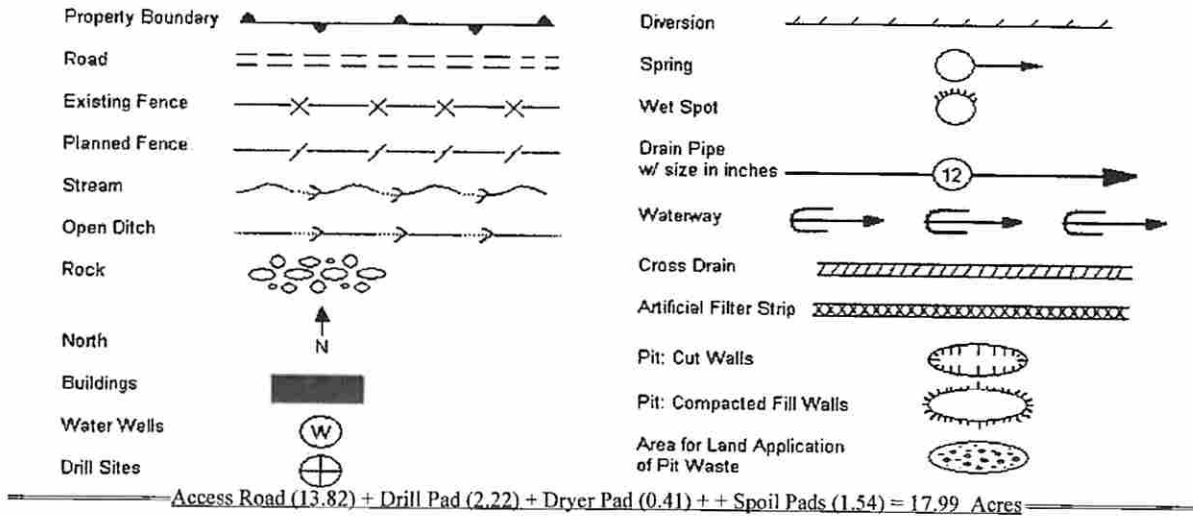
[Signature] Notary Public

My commission expires 3/8/2017



11/14/2014





Proposed Revegetation Treatment: Acres Disturbed 17.99 Prevegetation pH 6.0

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

Fertilizer (10-20-20 or equivalent) 500 lbs/acre (500 lbs minimum)

Mulch 2-3 Tons/acre Hay or straw or Wood Fiber (will be used where needed)

Seed Mixtures

Seed Type	Area I (Temporary) lbs/acre	Seed Type	Area II (Permanent) lbs/acre
Tall Fescue	45	Tall Fescue	45
Perennial Rye Grass	20	Perennial Rye Grass	20
*or type of grass seed requested by surface owner		*or type of grass seed requested by surface owner	

Attach:  
Drawing(s) of road, location, pit and proposed area for land application.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: [Signature]

Comments: preserved & mulch all out area no less than 2  
ton per acre maintain all P&S during operation

Title: air gas suspicio Date: 8-4-14

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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11/14/2014

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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JUL 16 2014

WV Department of  
Environmental Protection

11/14/2014

4708510144



## Well Site Safety Plan

### Antero Resources

**Well Name:** Belle Unit 1H, Belle Unit 2H, Belle Unit 3H,  
Chandos Unit 1H, Ericson Unit 1H, Ericson Unit  
2H and **Ericson Unit 3H**

**Pad Location:** ANNIE HORIZONTAL PAD  
Ritchie County/ Clay District

**GPS Coordinates:** Lat 39°19'38.74"/Long 80°55'31.49" (NAD83)

#### Driving Directions:

From the intersection of W Virginia 74 N and US-50 E near the town of Pennsboro head north on 74 for 0.5 miles. Turn left onto E Myles Ave/Old US 50 E for 0.6 miles. Turn right onto Grey St for 0.1 miles. Slight left to stay on Grey st for 0.1 miles. Take a sharp left onto E Penn Ave for 0.1 miles. Take the 2<sup>nd</sup> right onto 1<sup>st</sup> st for 446 feet. Slight right onto W Virginia 74 N/Mountain Dr, continue to follow W Virginia 74 N for 4.8 miles. Lease road for the Eddy and Annie Horizontal pads will be on the right.

RECEIVED  
**EMERGENCY (24 HOUR) CONTACT 1-800-878-1373**  
Office of Oil and Gas

OCT 17 2014

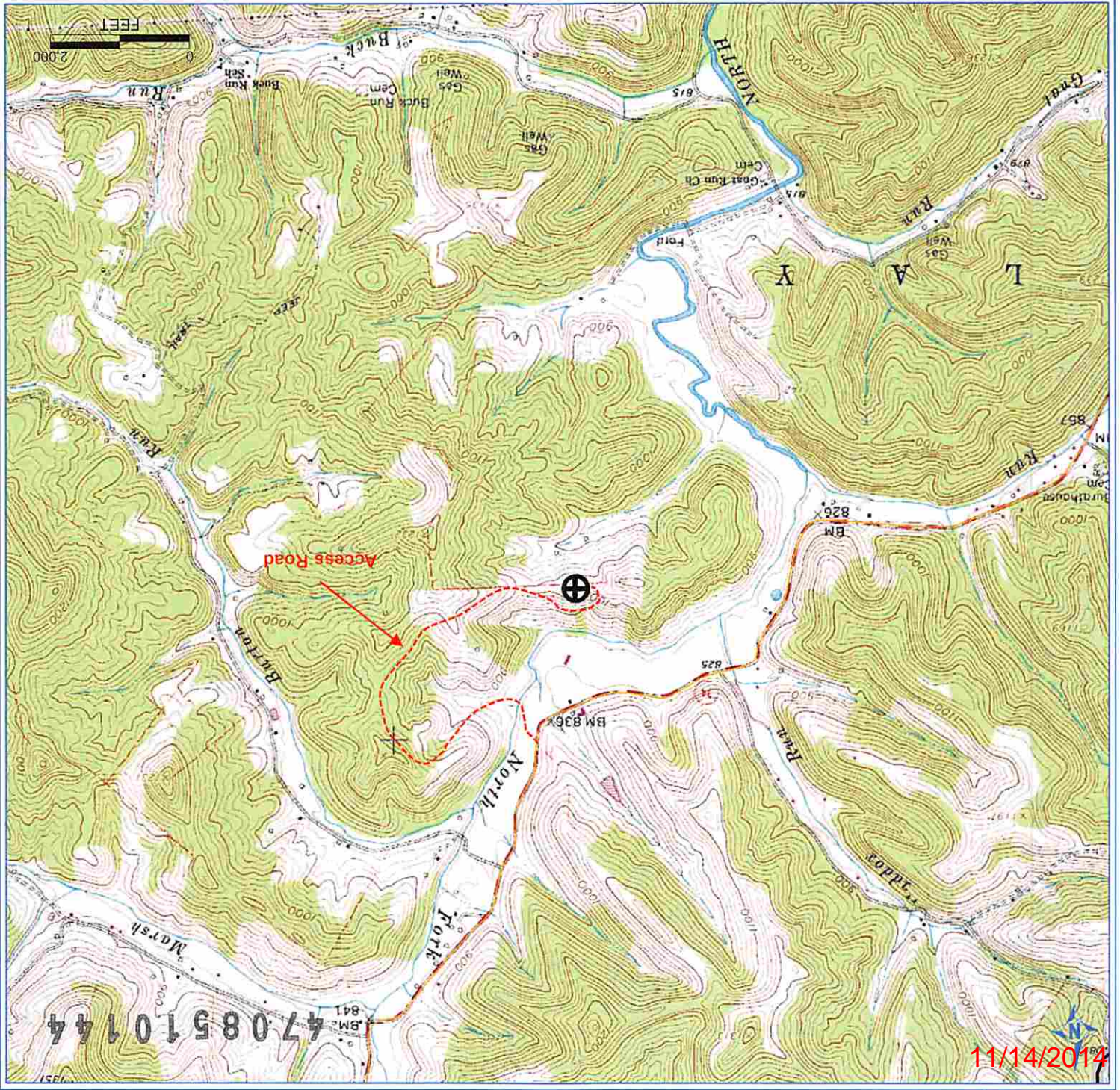
WV Department of  
Environmental Protection

A handwritten signature in black ink, appearing to read "D. J. ...".

10-16-14 11/14/2014

SSP Page 1





Antero Resources Corporation

APPALACHIAN BASIN

Ericson Unit 318A

Ritchie County

JUL 16 2014

Environmental Protection

Quadrangle: Pennsboro  
Watershed: North Fork Hughes  
District: Clay

Date: 1/30/2013



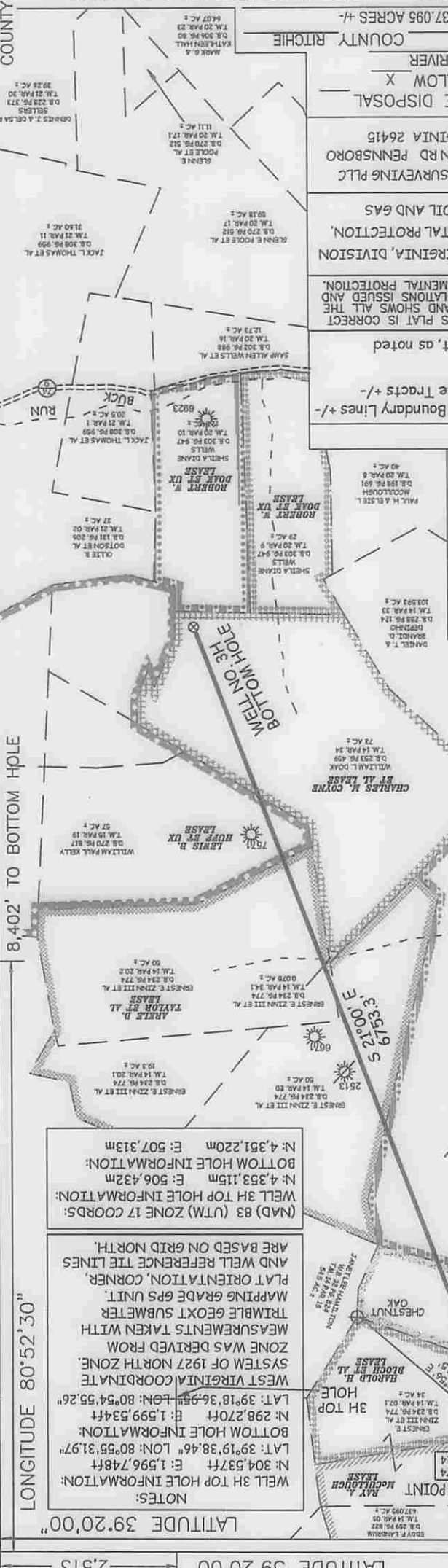
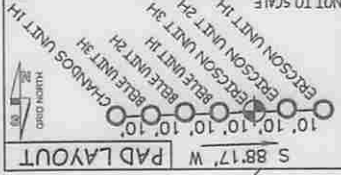
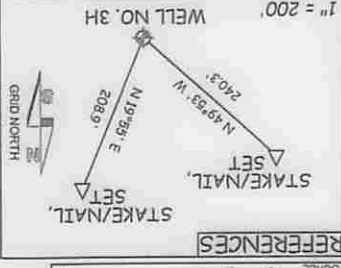
WELL OPERATOR ANTERO RESOURCES CORPORATION  
 ADDRESS 1615 WYNNCOOP ST. DENVER, CO 80202  
 DESIGNATED AGENT DIANNA STAMPER  
 ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313  
 TARGET FORMATION MARCELLUS  
 ESTIMATED DEPTH 6,600' TVD 13,800' MD  
 PERMIT COUNTY NAME

OIL & GAS ROYALTY OWNER: HAMMOND ET UX: RAY A. MACULLOUGH; HAROLD H. BLOCH ET AL.  
 SURFACE OWNER: EDDY F. LANDRUM  
 ACREAGE 637.096 ACRES +/-  
 COUNTY RITCHIE  
 QUADRANGLE PENNSBORO 7.5  
 DISTRICT CLAY  
 LOCATION: ELEVATION 1,004' WATERSHED NORTH FORK HUGHES RIVER  
 WASTE DISPOSAL (IF "GAS") PRODUCTION X STORAGE X DEEP X SHALLOW X  
 WELL TYPE: OIL X GAS X LIQUID INJECTION X  
 DIVISION OF OIL AND GAS  
 STATE OF WEST VIRGINIA  
 DEPARTMENT OF ENERGY  
 SUBMITTER MAPPING GRADE GPS  
 PROVEN SOURCE OF ELEV. SUBMETER  
 ACCURACY SUBMETER  
 MINIMUM DEGREE OF SCALE 1" = 1000'  
 DRAWING # ERICSON3H  
 JOB # 12-129WA  
 I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAN IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND DESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



STATE COUNTY PERMIT  
 47 - 085 - 10144  
 API WELL #  
 OPERATOR'S WELL # ERICSON UNIT 3H  
 DATE 07/10/14  
 DOUGLAS R. ROWE P.S. 2202

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



NOTES:  
 WELL 3H TOP HOLE INFORMATION:  
 LAT: 39°19'38.46" N; LONG: 80°55'31.97" W  
 BOTTOM HOLE INFORMATION:  
 LAT: 39°18'36.95" N; LONG: 80°54'55.26" W  
 WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIANGLE GEODX 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 3H TOP HOLE INFORMATION:  
 N: 4,353,115m E: 506,432m  
 BOTTOM HOLE INFORMATION:  
 N: 4,351,220m E: 507,313m

Antero Resources Corporation  
 Well No. Ericson Unit 3H

LATITUDE 39°20'00" LONGITUDE 80°52'30" LONGITUDE 80°55'00" LATITUDE 39°20'00" LONGITUDE 80°52'30" LONGITUDE 80°55'00"