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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

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

January 11, 2017  
PERMIT MODIFICATION APPROVAL  
Horizontal 6A / Horizontal 6A Well - 1

ANTERO RESOURCES CORPORATION  
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for WESTERN UNIT 3H  
47-085-10295-00-00

**Lateral Extension**

ANTERO RESOURCES CORPORATION

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin  
Chief

Operator's Well Number: WESTERN UNIT 3H  
Farm Name: DARRELL A. NOLAND ET AL  
U.S. WELL NUMBER: 47-085-10295-00-00  
Horizontal 6A / Horizontal 6A Well - 1  
Date Issued: January 11, 2017

Promoting a healthy environment.

01/13/2017

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

1) Well Operator: Antero Resources Corporation 494507062 085 - Ritchie Clay Pennsboro 7.5'  
Operator ID County District Quadrangle

2) Operator's Well Number: Western Unit 3H Well Pad Name: Existing Noland Pad

3) Farm Name/Surface Owner: Darrell A. Noland, et al Public Road Access: CR 50/22

4) Elevation, current ground: 1143' Elevation, proposed post-construction: 1143'

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: 6500' TVD, Anticipated Thickness- 75 feet, Associated Pressure- 2800#

8) Proposed Total Vertical Depth: 6500' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 19600' MD

11) Proposed Horizontal Leg Length: 11470'

12) Approximate Fresh Water Strata Depths: 54', 135', 227'

13) Method to Determine Fresh Water Depths: Fresh Water Depths from Penns Park Unit 1H (API# 47-085-10099) on same pad.

14) Approximate Saltwater Depths: 1658', 1705', 1747'

15) Approximate Coal Seam Depths: 798', 1225'

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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**XWV Department of Environmental Protection**

**API# 47-085-10295 PERMIT MODIFICATION**

18)

**CASING AND TUBING PROGRAM**

<b>TYPE</b>	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</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#	2400'	2400'	CTS, 977 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	19600'	19600'	5012 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

<b>TYPE</b>	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	30"	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							

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**PACKERS**

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

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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."

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

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 18.62 acres

22) Area to be disturbed for well pad only, less access road (acres): 8.85 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

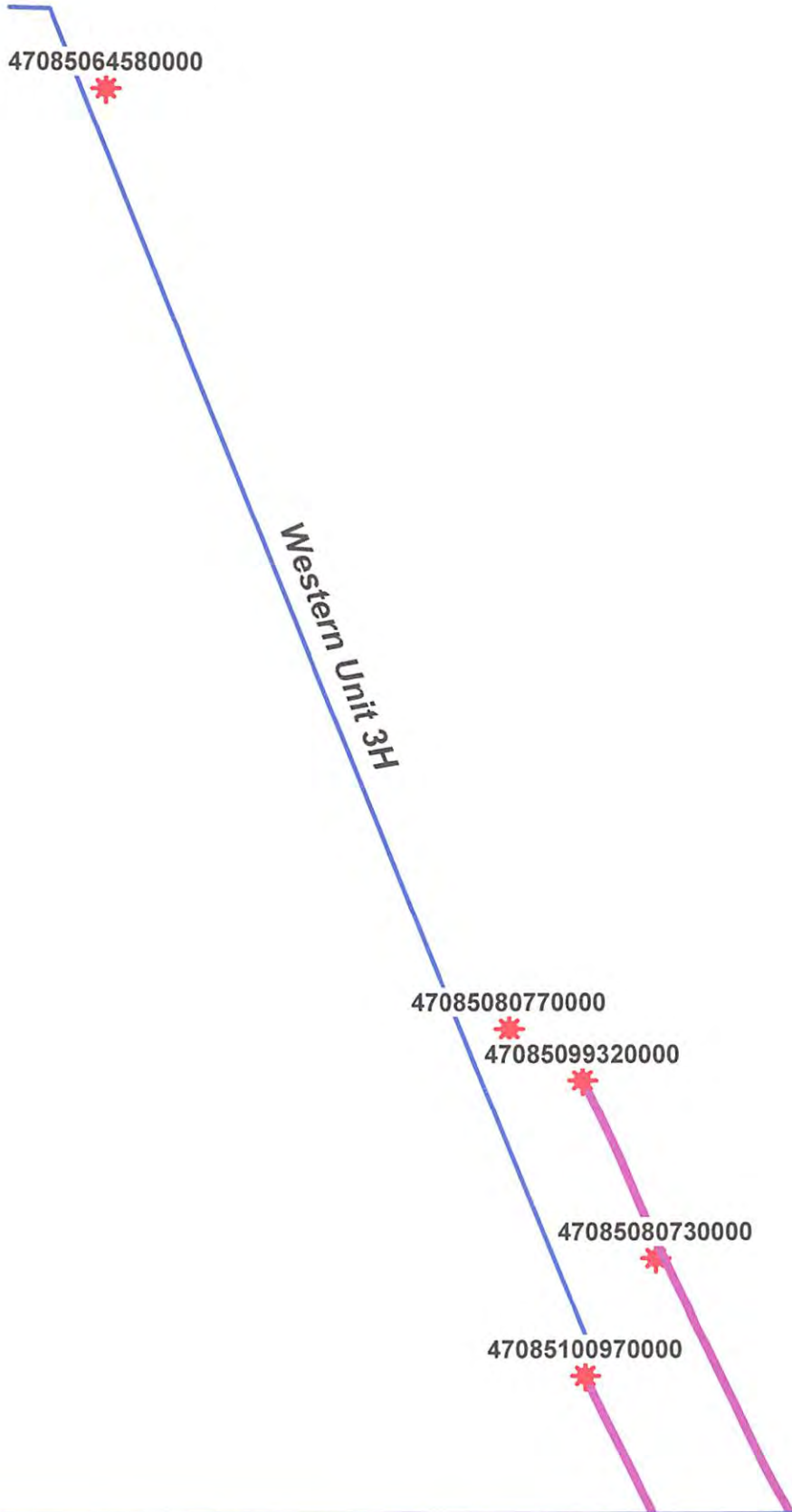
25) Proposed borehole conditioning procedures:

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.



# AOR Western-Piper Units



0 1,363  
FEET  
01/13/2017

WESTERN UNIT 3H (NOLAND PAD) - AREA OF REVIEW 35-8-5.11 PAGE 2

UWI (API/Num)	Well Name	Operator	TD	ELEV_GR	TD (SSTVD)	Gross Perf Interval (ft)	Producing Formations	Productive formations not Perf'd
47085099320000	TAYLOR	EQT PRODUCTION CO	11955	1116	-5250	6801-11873	Marcellus	Keener, Big Injun, Weir, Berea, Gordon, Warren, Speechley, Balltown, Bradford, Alexander, Riley, Benson
47085100970000	TAYLOR	EQT PRODUCTION CO	11279	1119	-5250	Not Reported	Marcellus	Keener, Big Injun, Weir, Berea, Gordon, Warren, Speechley, Balltown, Bradford, Alexander, Riley, Benson
47085064586000	HAZELBAKER BRENDEN	HARPER HYDRO ENERGY KA	5987	1144	-4843	4995-5810	Java, Angola, Rhinestreet	Keener, Big Injun, Weir, Berea, Gordon, Warren, Speechley, Balltown, Bradford, Alexander, Riley, Benson
47085080770000	BOYMAN ROBERT & OGDEN VIOLET	ENERGY CORP OF AMER	5488	1063	-4425	4554-5201	Riley, Benson, Alexander	Keener, Big Injun, Weir, Berea, Gordon, Warren, Speechley, Balltown, Bradford
47085080730000	TAYLOR ER HEIRS ETAL	ENERGY CORP OF AMER	5358	968	-4390	4473-5124	Riley, Benson, Alexander	Keener, Big Injun, Weir, Berea, Gordon, Warren, Speechley, Balltown, Bradford

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:

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<b><u>Mary V. Wedekamm Lease</u></b>			
Mary V. Wedekamm	Kepeco, Inc.	1/8	0161/0687
Kepeco, Inc.	Union Drilling, Inc.	Merger	Corporation Record 0004/0322
Union Drilling, Inc.	Equitable Resources Exploration, Inc.	Merger	Corporation Record 0004/0673
Equitable Resources Exploration, Inc.	Equitable Resources Energy Company	Confirmatory Deed & Assignment	0230/0047
Equitable Resources Energy Company	Mike Ross, Inc.	Assignment	0223/0575
Mike Ross, Inc.	Antero Resources Appalachian Corporation	Assignment	0262/0164
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b><u>The Haught Family Trust Lease</u></b>			
The Haught Family Trust, Ira M. Haught, Trustee	Antero Resources Corporation	1/8+	0272/0974
<b><u>Carroll Shinn, et al Lease</u></b>			
Carroll Shinn, et al	West Virginia Energies, Inc.	1/8	0149/0398
West Virginia Energies, Inc.	C & P Oil & Gas Company, Inc.	Assignment	0157/0296
C & P Oil & Gas Company, Inc.	Rare Earth Energy, Inc.	Assignment	0191/0762
Rare Earth Energy, Inc.	Stephen L. Thompson	Assignment	0236/0001
Stephen L. Thompson	Tri-County Oil & Gas, Inc.	Assignment	0236/0237
Tri-County Oil & Gas, Inc.	May Gas, Inc.	Assignment	0239/0229
May Gas, Inc.	Harper Crosby Holdings, LLC	Assignment	0265/0872
Harper Crosby Holdings, LLC	Piney Holdings, Inc.	Assignment	0265/0910
Piney Holdings, Inc.	Antero Resources Corporation	*Partial Assignment	0278/0625
<b><u>Richard Webb Lease</u></b>			
Richard Webb	Antero Resources Corporation	1/8+	0262/0963
<b><u>John J. Meyer III, et ux Lease</u></b>			
John J. Meyer III, et ux	Antero Resources Corporation	1/8+	0263/0699
<b><u>(A) Larry Gander Lease</u></b>			
Larry Gander	Antero Resources Corporation	1/8+	0268/0559
<b><u>(B) City of Pennsboro Lease</u></b>			
City of Pennsboro	Antero Resources Corporation	1/8+	0282/1018
<b><u>(C) Larry Gander Lease</u></b>			
Larry Gander	Antero Resources Corporation	1/8+	0297/0794

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\*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.

INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE  
Chapter 22, Article 6A, Section 5(a)(5)  
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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>(D) Paul D. Carman Lease</u> City of Pennsboro	Antero Resources Corporation	1/8+	0282/1018
<u>(E) Gale Tingler Lease</u> Gale Tingler	Antero Resources Corporation	1/8+	0274/0389
<u>(F) Matthew H. Rial Lease</u> Matthew H. Rial	Antero Resources Corporation	1/8+	0279/0136
<u>(G) Gail B. Cogar, et ux Lease</u> Gail B. Cogar, et ux	Antero Resources Corporation	1/8+	0270/0646
<u>(H) Jefferson, Boylen, et ux Lease</u> Jefferson Boylen, et ux	Antero Resources Corporation	1/8+	0277/0741
<u>(I) Gail B. Cogar, et ux Lease</u> Gail B. Cogar, et ux	Antero Resources Corporation	1/8+	0270/0646
<u>(J) Deward Richards Lease</u> Deward Richards	Antero Resources Corporation	1/8+	0272/0664
<u>(K &amp; L) Steven Hammond Lease</u> Steven Hammond	Antero Resources Corporation	1/8+	0300/0159
<u>(BJ &amp; BK) Charlene R. Sweeney Lease</u> Charlene R. Sweeney	Antero Resources Corporation	1/8+	0285/0649
<u>(M &amp; N) Gail B. Cogar, et ux Lease</u> Gail B. Cogar, et ux	Antero Resources Corporation	1/8+	0270/0646
<u>(O, P, Q) WB Properties, LLC Lease</u> WB Properties, LLC	Antero Resources Corporation	1/8+	0301/0601
<u>(BM &amp; BL) Board of Education Lease</u> Ritchie County Board of Education	Antero Resources Corporation	1/8+	0275/0246
<u>(T) Jay Bee Production Co. Lease</u> Jay Bee Production Co.	Antero Resources Corporation	1/8+	0303/0135

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<u>(U &amp; V) David A. Poling Lease</u> David A. Poling	Antero Resources Corporation	1/8+	0272/0661
<u>(W) Presbyterian Church of Pennsboro Lease</u> Presbyterian Church of Pennsboro	Antero Resources Corporation	1/8+	0303/0756
<u>(X, Y, Z) John K. Shaffer, et ux Lease</u> John K. Shaffer, et ux	Antero Resources Corporation	1/8+	0298/0604
<u>(AA) Margaret Michels Lease</u> Margaret Michaelis	Antero Resources Corporation	1/8+	0270/0794
<u>(AB &amp; AC) Gary A. McDaniels Lease</u> Gary A. McDaniels	Antero Resources Corporation	1/8+	0271/0245
<u>(AD) Paul Dodd Lease</u> Paul Dodd	Antero Resources Corporation	1/8+	0271/0245
<u>(AE, AG, AF) Charlene R. Sweeney Lease</u> Charlene R. Sweeney	Antero Resources Corporation	1/8+	0285/0043
<u>WVSRA Lease</u> West Virginia State Rail Authority	Antero Resources Corporation	1/8+	0253/0409
<u>(AH &amp; AI) Steven S. Taylor Lease</u> Steven S. Taylor	Antero Resources Corporation	1/8+	0287/0575
<u>(AK, AL, AM) Pennsboro Vol. Fire Dept. Lease</u> Pennsboro Volunteer Fire Department	Antero Resources Corporation	1/8+	0280/0573
<u>(AN) Anne E. Robinson Lease</u> Ann E. Robinson	Antero Resources Corporation	1/8+	0300/0446
<u>(AO, AP) Popcorn Properties, LLC Lease</u> Popcorn Properties, LLC	Antero Resources Corporation	1/8+	0300/0446
<u>(AQ) Willow Land Surveying, PLLC Lease</u> Willow Land Surveying	Antero Resources Corporation	1/8+	0301/0013

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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>(AR) Ritchie Petroleum Corporation, Inc. Lease</u> Ritchie Petroleum Corporation, Inc.	Antero Resources Corporation	1/8+	0270/0007
<u>(AS, AT) Frederick Humphrey, et ux Lease</u> Frederick Humphrey, et ux	Antero Resources Corporation	1/8+	0300/0897
<u>(AU, AV, AW, AX) Union Bank Lease</u> Union Bank	Antero Resources Corporation	1/8+	0271/0151
<u>(AY) Biff Spitz Lease</u> Biff Spitz	Antero Resources Corporation	1/8+	0283/0011
<u>(AZ) Teresa Poling, et al Lease</u> Teresa Poling, et al	Antero Resources Corporation	1/8+	0299/0520
<u>(BA) Harmony Lodge Lease</u> Harmony Lodge	Antero Resources Corporation	1/8+	0301/0827
<u>(BB, BC) Lease</u> Ritchie Petroleum Corporation, Inc.	Antero Resources Corporation	1/8+	0270/0007
<u>(BD) Marjorie C. Mahaney Lease</u> Marjorie C. Mahaney	Antero Resources Corporation	1/8+	0274/0619
<u>(BE) L &amp; M Investment Co. Lease</u> L & M Investment Co.	Antero Resources Corporation	1/8+	0301/0404
<u>(BF) Matthew J. Washington, et ux Lease</u> Matthew J. Washington, et ux	Antero Resources Corporation	1/8+	0301/0299
<u>(BG) Bobbie Riffle, et al Lease</u> Bobbie Riffle, et al	Antero Resources Corporation	1/8+	0282/0992
<u>(BH) Consumers Gas Utility, Co. Lease</u> Consumers Gas Utility Co.	Antero Resources Corporation	1/8+	0302/0671
<u>(BI) Freda Mossor, et al Lease</u> Freda Mossor, Linda Jeannine Mossor Smith & Donald E. Mossor, Jr.	Antero Resources Corporation	1/8+	0296/0853

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<b>John J. Meyer III, et ux Lease</b>			
John J. Meyer III, et ux	Antero Resources Corporation	1/8+	0263/0609
<b>Guy Wilson, et al Lease</b>			
Guy Wilson, et al	H.W. Stephan	1/8	0046/0139
H.W. Stephan	O.C. Pratt	Assignment	0059/0453
O.C. Pratt	Columbia I. Collins	Assignment	0069/0153
Columbia I. Collins	Edward E. Smyth	Assignment	0110/0027
Edward E. Smyth	Robert L. Williams	Assignment	0112/0226
Robert L. Williams	Willard Flanagan	Assignment	0114/0494
Willard Flanagan	Gary L. Riddle	Assignment	0193/0581
Gary L. Riddle	Ritchie Petroleum Corporation	Assignment	0245/0796
Ritchie Petroleum Corporation	Charity Gas, Inc.	Assignment	0222/0739
Charity Gas, Inc.	Antero Resources Appalachian Corporation	Assignment	0258/0439
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b>Violet Ogden Lease</b>			
Violet Ogden	Annie B. Haymond	1/8	0211/0670
Annie B. Haymond	Eastern American Energy Corporation	Assignment	0217/0383
Eastern American Energy Corporation	Energy Corporation of America	Assignment	0250/0393
Energy Corporation of America	Antero Resources Appalachian Corporation	Assignment	0257/0377
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b>Rosann Conley, et ux Lease</b>			
Rosann Conley, et ux	Antero Resources Corporation	1/8+	0263/0757
<b>Waco Oil &amp; Gas Company Lease</b>			
Waco Oil & Gas Co., Inc.	Antero Resources Corporation	1/8+	0299/0172
<b>Waco Oil &amp; Gas Company Lease</b>			
Waco Oil & Gas Co., Inc.	Antero Resources Corporation	1/8+	0299/0172

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Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
<u>Richard H. Barnard Lease</u>	Richard H. Barnard	Antero Resources Corporation	1/8+	0300/0156

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**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

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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.

NOV 29 2016  
WV Department of  
Environmental Protection

Well Operator: Antero Resources Corporation  
 By: Kevin Kilstrom  
 Its: Senior VP of Production

FORM WW-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 Barker, Manager  
Corporations Division  
IN THE OFFICE OF  
SECRETARY OF STATE  
Tel: (304)558-8000  
Fax: (304)558-8381  
Website: [www.wvsos.com](http://www.wvsos.com)  
E-mail: [business@wvsos.com](mailto:business@wvsos.com)

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

APPLICATION FOR  
AMENDED CERTIFICATE  
OF AUTHORITY

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

\*\*\*\* 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 Appalachian Corporation
- 2. Date Certificate of Authority was issued in West Virginia: 6/25/2008
- 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.)

Alvyn A. Schopp (303) 357-7310  
Contact Name Phone Number

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

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

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

**\*Important Legal Notice Regarding Signature:** Per West Virginia Code §31D-1-129. 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.

RECEIVED  
Office of Oil and Gas  
JUN 29 2016  
WV Department of  
Environmental Protection

LATITUDE 39°20'00"

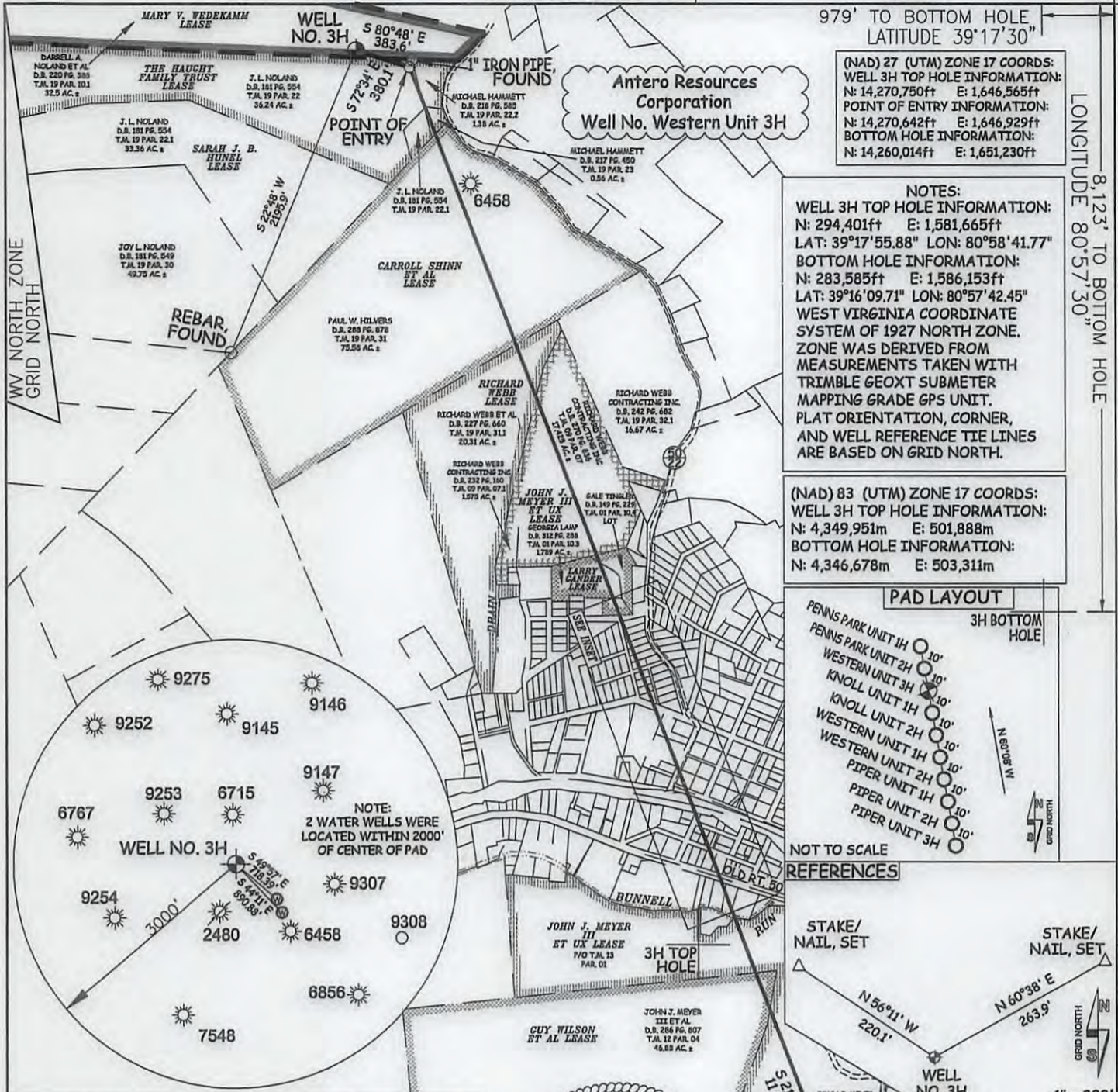
5,642'

797' TO BOTTOM HOLE  
LATITUDE 39°17'30"

LONGITUDE 80°57'30"

12,559'

LONGITUDE 80°57'30"

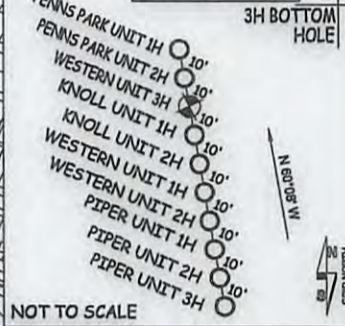


(NAD 27 (UTM) ZONE 17 COORDS:  
WELL 3H TOP HOLE INFORMATION:  
N: 14,270,750ft E: 1,646,565ft  
POINT OF ENTRY INFORMATION:  
N: 14,270,642ft E: 1,646,929ft  
BOTTOM HOLE INFORMATION:  
N: 14,260,014ft E: 1,651,230ft

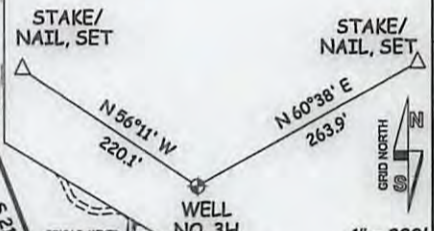
NOTES:  
WELL 3H TOP HOLE INFORMATION:  
N: 294,401ft E: 1,581,665ft  
LAT: 39°17'55.88" LON: 80°58'41.77"  
BOTTOM HOLE INFORMATION:  
N: 283,585ft E: 1,586,153ft  
LAT: 39°16'09.71" LON: 80°57'42.45"  
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH 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 3H TOP HOLE INFORMATION:  
N: 4,349,951m E: 501,888m  
BOTTOM HOLE INFORMATION:  
N: 4,346,678m E: 503,311m

PAD LAYOUT



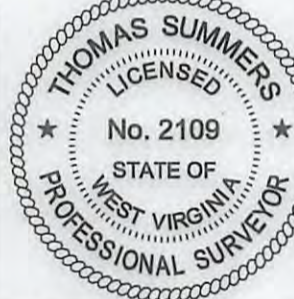
NOT TO SCALE REFERENCES



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



47 - 085 - 10295 MOD  
STATE COUNTY PERMIT

NOTES:  
1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY RUMSBERY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.  
2. THIS WELL BORE IS SUBJECT TO THAT 60 FOOT STRIP OF GROUND KNOWN AS THE OLD NORTHWESTERN TURNPIKE.

JOB # 16-022WA  
DRAWING # WESTERN3HR  
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 11/25/16  
OPERATOR'S WELL# WESTERN UNIT #3H

WELL TYPE: OIL \_\_\_ GAS X LIQUID INJECTION \_\_\_ WASTE DISPOSAL \_\_\_  
(IF "GAS") PRODUCTION X STORAGE \_\_\_ DEEP \_\_\_ SHALLOW X  
LOCATION: ELEVATION 1,159' ORIGINAL - 1,143' AS DRILLED WATERSHED NORTH FORK HUGHES RIVER  
QUADRANGLE PENNSBORO 7.5' DISTRICT CLAY COUNTY RITCHIE  
SURFACE OWNER DARRELL A. NOLAND ET AL ACREAGE 32.5 ACRES +/-  
OIL & GAS ROYALTY OWNER SEE ATTACHED PAGES FOR LEASE INFORMATION LEASE ACREAGE SEE ATTACHED PAGES

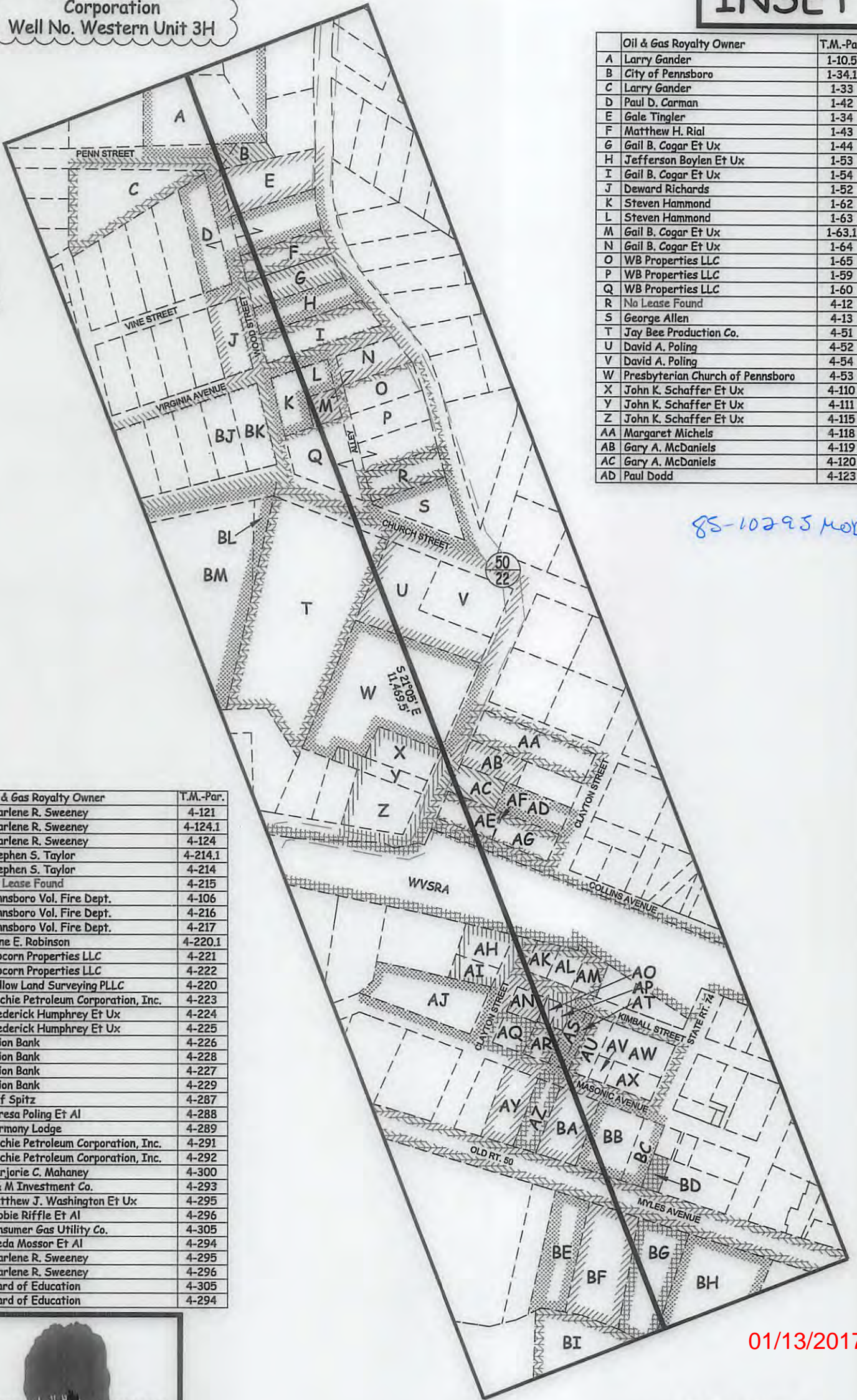
PROPOSED WORK: DRILL \_\_\_ CONVERT \_\_\_ DRILL DEEPER X REDRILL \_\_\_ FRACTURE OR STIMULATE X  
PLUG OFF OLD FORMATION \_\_\_ PERFORATE NEW FORMATION X OTHER PHYSICAL CHANGE IN WELL  
(SPECIFY) MOD-BHL PLUG & ABANDON CLEAN OUT & REPLUG  
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,500' TVD 19,600' MD  
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM  
ADDRESS 1615 WYNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD  
FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

01/13/2017

Antero Resources Corporation  
Well No. Western Unit 3H

# INSET

WV NORTH ZONE  
GRID NORTH



Oil & Gas Royalty Owner	T.M.-Par.
A Larry Gander	1-10.5
B City of Pennsboro	1-34.1
C Larry Gander	1-33
D Paul D. Carman	1-42
E Gale Tingler	1-34
F Matthew H. Rial	1-43
G Gail B. Cogar Et Ux	1-44
H Jefferson Boylen Et Ux	1-53
I Gail B. Cogar Et Ux	1-54
J Deward Richards	1-52
K Steven Hammond	1-62
L Steven Hammond	1-63
M Gail B. Cogar Et Ux	1-63.1
N Gail B. Cogar Et Ux	1-64
O WB Properties LLC	1-65
P WB Properties LLC	1-59
Q WB Properties LLC	1-60
R No Lease Found	4-12
S George Allen	4-13
T Jay Bee Production Co.	4-51
U David A. Poling	4-52
V David A. Poling	4-54
W Presbyterian Church of Pennsboro	4-53
X John K. Schaffer Et Ux	4-110
Y John K. Schaffer Et Ux	4-111
Z John K. Schaffer Et Ux	4-115
AA Margaret Michels	4-118
AB Gary A. McDaniels	4-119
AC Gary A. McDaniels	4-120
AD Paul Dodd	4-123

85-10295 MOD

Oil & Gas Royalty Owner	T.M.-Par.
AE Charlene R. Sweeney	4-121
AF Charlene R. Sweeney	4-124.1
AG Charlene R. Sweeney	4-124
AH Stephen S. Taylor	4-214.1
AI Stephen S. Taylor	4-214
AJ No Lease Found	4-215
AK Pennsboro Vol. Fire Dept.	4-106
AL Pennsboro Vol. Fire Dept.	4-216
AM Pennsboro Vol. Fire Dept.	4-217
AN Anne E. Robinson	4-220.1
AO Popcorn Properties LLC	4-221
AP Popcorn Properties LLC	4-222
AQ Willow Land Surveying PLLC	4-220
AR Ritchie Petroleum Corporation, Inc.	4-223
AS Frederick Humphrey Et Ux	4-224
AT Frederick Humphrey Et Ux	4-225
AU Union Bank	4-226
AV Union Bank	4-228
AW Union Bank	4-227
AX Union Bank	4-229
AY Biff Spitz	4-287
AZ Teresa Poling Et Al	4-288
BA Harmony Lodge	4-289
BB Ritchie Petroleum Corporation, Inc.	4-291
BC Ritchie Petroleum Corporation, Inc.	4-292
BD Marjorie C. Mahaney	4-300
BE L & M Investment Co.	4-293
BF Matthew J. Washington Et Ux	4-295
BG Bobbie Riffle Et Al	4-296
BH Consumer Gas Utility Co.	4-305
BI Freda Mossor Et Al	4-294
BJ Charlene R. Sweeney	4-295
BK Charlene R. Sweeney	4-296
BL Board of Education	4-305
BM Board of Education	4-294

01/13/2017



P.O. BOX 17  
PENNSBORO, WV 26415  
304-659-1717

SCALE: 1-INCH = 200-FEET



FILE: 16-022WA  
JOB: WESTERN3HR INSET LEASE  
DRAFTED BY: T.B.S. 11/25/16

LEGEND	
	Western 3H Lateral
	Interior Surface Tracts +/-

Antero Resources Corporation  
Well No. Western Unit 3H

INSET

WV NORTH ZONE  
GRID NORTH

	Surface Owner	D.B./PG.	T.M.-Par.
A	Robert F. Hayes	316/788	1-10.5
B	City of Pennsboro	217/462	1-34.1
C	Charles Miller	302/1077	1-33
D	Paul Carman	280/782	1-42
E	Gale Tingler	154/309	1-34
F	Matthew Rial	307/967	1-43
G	Gail Cogar	304/548	1-44
H	Jefferson Boylen	298/883	1-53
I	Gail Cogar	249/545	1-54
J	Deward Richards	262/360	1-52
K	Steven Hammond	238/367	1-62
L	Steven Hammond	238/367	1-63
M	Gail Cogar	269/895	1-63.1
N	Gail Cogar	249/545	1-64
O	WB Properties LLC	283/925	1-65
P	WB Properties LLC	283/925	1-59
Q	WB Properties LLC	283/925	1-60
R	Eugene Maple Family Trust	W40/382	4-12
S	George Allen	144/258	4-13
T	Board of Education	148/33	4-51
U	David Poling	297/668	4-52
V	David Poling	297/668	4-54
W	Presbyterian Cemetery	114/134	4-53
X	John Schaffer	272/896	4-110
Y	John Schaffer	249/720	4-111
Z	John Schaffer	249/718	4-115
AA	Margaret Michels	241/331	4-118
AB	Gary McDaniels	290/717	4-119
AC	Gary McDaniels	290/633	4-120
AD	Paul Dodd Sr.	311/101	4-123

85-10295 MOD

	Surface Owner	D.B./PG.	T.M.-Par.
AE	Charlene Sweeney	314/358	4-121
AF	Charlene Sweeney	184/294	4-124.1
AG	Charlene Sweeney	184/294	4-124
AH	Stephen Taylor	291/229	4-214.1
AI	Stephen Taylor	248/807	4-214
AJ	C Tan Investments LLC	322/490	4-215
AK	Pennsboro Vol. Fire Dept.	178/38	4-106
AL	Pennsboro Vol. Fire Dept.	188/257	4-216
AM	Pennsboro Vol. Fire Dept.	139/541	4-217
AN	James Robinson	301/639	4-220.1
AO	Brad Waite	304/428	4-221
AP	Brad Waite	304/428	4-222
AQ	Willow Land Surveying PLLC	311/146	4-220
AR	Ritchie Petroleum Inc.	293/724	4-223
AS	Frederick Humphrey	230/558	4-224
AT	Frederick Humphrey	230/558	4-225
AU	Union Bank Inc.	294/745	4-226
AV	Union Bank Inc.	294/745	4-228
AW	Union Bank Inc.	294/745	4-227
AX	Union Bank Inc.	294/745	4-229
AY	Biff Spitz	156/376	4-287
AZ	Schroeder Acquisitions LLC	286/348	4-288
BA	Lodge #59 A.F. & A.M.	25/199	4-289
BB	Ritchie Petroleum Corp.	265/27	4-291
BC	Ritchie Petroleum Corp.	265/27	4-292
BD	Marjorie Mahaney	263/560	4-300
BE	L & M Investment Co. LLC	318/605	4-293
BF	Joseph Wilson	319/485	4-295
BG	C I Realty LLC	301/191	4-296
BH	Consumer Gas Utility Co.	158/598	4-305
BI	Donald Mossor	280/403	4-294
BJ	Charlene Sweeney	W31/717	1-61.3
BK	Charlene Sweeney	W31/717	1-61.4
BL	Board of Education	148/33	4-50
BM	Board of Education	148/38	4-49



WILLOW  
LAND SURVEYING PLLC

P.O. BOX 17  
PENNSBORO, WV 26415  
304-659-1717

SCALE: 1-INCH = 200-FEET



LEGEND	
	Western 3H Lateral
	Interior Surface Tracts +/-

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