



west virginia department of environmental protection

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

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Monday, July 22, 2019
PERMIT MODIFICATION APPROVAL
Horizontal 6A / Horizontal 6A Well - 1

ANTERO RESOURCES CORPORATION
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for PIPER UNIT 3H
47-085-10296-00-00

Modified Well Bore Design

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: PIPER UNIT 3H
Farm Name: DARRELL A. NOLAND ET AL
U.S. WELL NUMBER: 47-085-10296-00-00
Horizontal 6A Horizontal 6A Well - 1
Date Modification Issued: July 22, 2019

Promoting a healthy environment.

API# 47-085-10296 PERMIT MODIFICATION

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: Piper Unit 3H Well Pad Name: 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: 6429' TVD, Anticipated Thickness- 75 feet, Associated Pressure- 2800#

8) Proposed Total Vertical Depth: 6429' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 14961' MD

11) Proposed Horizontal Leg Length: 7594'

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 **RECEIVED**
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(a) If Yes, provide Mine Info: Name: _____
Depth: _____
Seam: _____
Owner: _____

API# 47-085-10296 PERMIT MODIFICATION

18)

CASING AND TUBING PROGRAM

TYPE	<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#	2500'	2500'	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	14961'	14961'	3707 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

TYPE	<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							

PACKERS

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

WW-6B
(10/14)

API NO. 47-085 - 10296 MOD

OPERATOR WELL NO. Piper Unit 3H

Well Pad Name: Noland Pad

API# 47-085-10296 PERMIT MODIFICATION

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

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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.

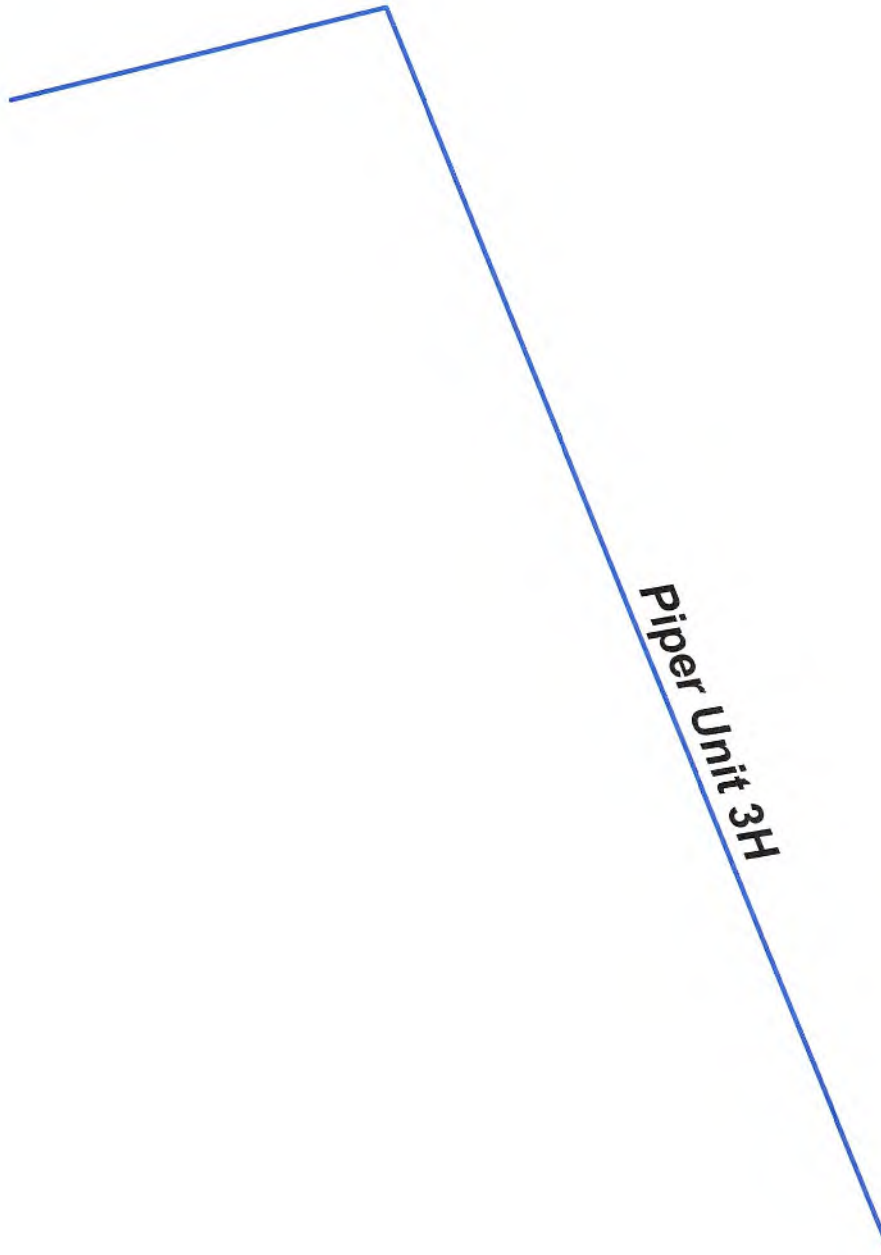
*Note: Attach additional sheets as needed.

AOR 85-10296 MOD



API# 47-085-10296 PERMIT MODIFICATION

AOR Western-Piper Units- no wells



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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:

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>The Haught Family Trust Lease</u>			
The Haught Family Trust, Ira M. Haught, Trustee	Antero Resources Corporation	1/8+	0272/0974
<u>Mary V. Wedekamm Lease</u>			
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
<u>C.E. Giebell Lease</u>			
C.E. Giebell	Gene Stalnaker	1/8	0161/0644
Gene Stalnaker	Angus Energy, Inc.	Assignment	0212/0137
Angus Energy, Inc.	Stalnaker Energy, Inc.	Merger/Name Change	CR 0006/0225
Stalnaker Energy, Inc.	Antero Resources Appalachian Corporation	Assignment	0263/1065
Antero Resources Appalachian Corporation	Antero Resources Appalachian Corporation	Name Change	Exhibit 1
<u>David L. Maple Lease</u>			
David L. Maple	Key Oil Company	1/8	0237/0176
Key Oil Company	Antero Resources Appalachian Corporation	Partial Assignment of Oil and Gas Leases	0253/0747
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Steven Edge Lease</u>			
Steven Edge	Antero Resources Corporation	1/8+	0278/0790
<u>James E. Vogt, et ux Lease</u>			
James Vogt, et ux	Antero Resources Corporation	1/8+	0276/0421
<u>Byron Taylor, et al Lease</u>			
Byron Taylor, et al	Key Oil Company	1/8	0239/0402
Key Oil Company	Antero Resources Appalachian Corporation	*Partial Assignment	0253/0747
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Orma Johnson Trust Lease</u>			
Orma M. Wilson Johnson Declaration of Trust by Orma M. Wilson Johnson, Trustee	Antero Resources Corporation	1/8+	0282/0154

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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.

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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>John C. Heuer Lease</u> John C. Heuer	Antero Resources Corporation	1/8+	0269/0900
<u>Cinda Fleming Lease</u> Cinda Fleming	Antero Resources Corporation	1/8+	0290/0708
<u>Betty R. Horner Lease</u> Betty R. Horner	Antero Resources Corporation	1/8+	0270/1066
<u>Larry Horner Lease</u> Larry Horner	Antero Resources Corporation	1/8	0268/0848
<u>Kenneth E. Sellers, et ux Lease</u> Kenneth E. Sellers, et ux	Antero Resources Corporation	1/8+	0277/0475
<u>Leta V. Bennett, et al Lease</u> Leta V. Bennett, et al	Antero Resources Corporation	1/8+	0272/0746
<u>Jon Lyn Bonnell, et ux Lease</u> Jon L. Bonnell, et ux	Antero Resources Corporation	1/8+	0295/0958
*PLEASE NOTE: We are not drilling through "Lisa J. Yanero Lease" (TM 8-2-87). The Piper Unit 3H wellbore is located 13' from this lease.			
<u>Russell I. Gray Lease</u> Russell I. Gray	Antero Resources Corporation	1/8+	0270/0436
<u>Amber Dawn Stull Lease</u> Amber Dawn Stull	Antero Resources Corporation	1/8+	0300/0556
<u>Steven F. Reed, et ux Lease</u> Steven F. Reed, et ux	Antero Resources Corporation	1/8+	0268/0851
<u>Ronald D. Ingram Lease</u> Ronald D. Ingram	Antero Resources Corporation	1/8+	0271/0617
<u>Edwin J. McKinney Lease</u> Edwin J. McKinney	Antero Resources Corporation	1/8+	0269/0157

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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>Donnie Leggett, et ux Lease</u> Donnie Leggett, et ux	Antero Resources Corporation	1/8+	0268/0681
<u>Mole Hill, LLC Lease</u> Mole Hill, LLC	Antero Resources Corporation	1/8+	0282/0799
<u>Lester L. Jewell, et ux Lease</u> Lester L. Jewell, et ux	Antero Resources Corporation	1/8+	0270/1025
<u>Candice R. Gamache Lease</u> Candice R. Gamache	Antero Resources Corporation	1/8+	0267/0961
<u>Betty Horner Lease</u> Betty Horner	Antero Resources Corporation	1/8+	0270/1066
<u>Lawrence E. Dotson Lease</u> Lawrence E. Dotson	Antero Resources Corporation	1/8+	0298/0810
<u>Patrick D. Collins Lease</u> Patrick D. Collins	Antero Resources Corporation	1/8+	0300/0551
<u>Janie I. Thomas Lease</u> Janie I. Thomas	Antero Resources Corporation	1/8+	0273/0619
<u>Kenneth O. Ramsey Lease</u> Kenneth O. Ramsey	Antero Resources Corporation	1/8+	0271/0727
<u>Kenneth O. Ramsey Lease</u> Kenneth O. Ramsey	Antero Resources Corporation	1/8+	0299/0862
<u>Beverly Smith Hornish Lease</u> Beverly Smith Hornish	Antero Resources Corporation	1/8+	0299/0919
<u>James D. Summers Lease</u> James D. Summers	Antero Resources Corporation	1/8+	0272/1075
<u>Haught Family Trust, et al Lease</u> Haught Family Trust, et al	Antero Resources Corporation	1/8+	0300/0884
<u>Charlie M. Stull Lease</u> Charlie M. Stull	Antero Resources Corporation	1/8+	0300/0001

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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>Mark A. Jackson, et ux Lease</u> Mark A. Jackson, et ux	Antero Resources Corporation	1/8+	0275/0422
<u>Charlene R. Sweeney Lease</u> Charlene R. Sweeney	Antero Resources Corporation	1/8+	0285/0043
<u>Mary E. Mahaney Lease</u> Mary E. Mahaney	Antero Resources Corporation	1/8+	0285/0043
<u>Gene Shuman, et ux Lease</u> Gene Shuman, et ux	Antero Resources Corporation	1/8+	0267/0956
<u>Nancy A. Emery Lease</u> Nancy A. Emery	Antero Resources Corporation	1/8+	0301/0501

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Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
<u>WVSRA Lease</u>	West Virginia State Rail Authority Antero Resources Appalachian Corporation	Antero Resources Appalachian Corporation Antero Resources Corporation	1/8+ Name Change	0253/0409 Exhibit 1

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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:

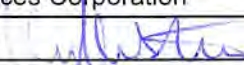
- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

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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.

Well Operator: Antero Resources Corporation
 By: Kevin Kilstrom 
 Its: Senior Vice President - 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
Tel: (304)558-8000
Fax: (304)558-8381
Website: www.wvsos.com
E-mail: business@wvsos.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 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

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7. Signature information (See below Important Legal Notice Regarding Signature):
Print Name of Signer: Alvyn A. Schopp Title/Capacity: Authorized Person
Signature: [Handwritten Signature] Date: June 10, 2013

***Important Legal Notice Regarding Signature:** Per West Virginia Code §311D-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.

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47-085-10296 County Ritchie District Clay
Quad Pennsboro 7.5' Pad Name Noland Pad Field/Pool Name -----
Farm name Darrell A. Noland et al Well Number Piper Unit 3H
Operator (as registered with the OOG) Antero Resources Corporation
Address 1615 Wynkoop Street City Denver State CO Zip 80202

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4349941m Easting 501907m
Landing Point of Curve Northing 4350069m Easting 502566m
Bottom Hole Northing 4347925m Easting 503464m

Elevation (ft) 1143' GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine

Mud Type(s) and Additive(s)
Air - Foam & 4% KCL

Mud - Polymer

Date permit issued 09/07/2016 Date drilling commenced 10/20/2016 Date drilling ceased 4/27/2017
Date completion activities began 7/25/2017 Date completion activities ceased 11/09/2017
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 43', 124', 216' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1112' Void(s) encountered (Y/N) depths No
Coal depth(s) ft None Identified Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by:

API 47-085 - 10296 Farm name Darrell A. Noland et al Well number Piper Unit 3H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	24"	20"	65'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	366'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2615'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	14961'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6961'		4.7#, N-80		
Packer type and depth set		N/A					

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	102 sx	15.6	1.18	120	0'	8 Hrs.
Surface	Class A	480sx	15.6	1.19	571	0'	8 Hrs.
Coal							
Intermediate 1	Class A	989sx	15.6	1.18	1167	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	905 sx (Lead) 1248 sx (Tail)	13.6 (Lead), 15.2 (Tail)	1.44 (Lead), 1.87 (Tail)	3637	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 14961' MD, 6429' TVD (BHL), 11013' (Deepest Point Drilled) Loggers TD (ft) 14961' MD

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 6396'

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____

Conductor - 0

Surface - 1 above guide shoe, 1 above insert float, 1 every 4th joint to surface

Intermediate - 1 above float joint, 1 above float collar, 1 every 4th joint to surface

Production - 1 above float joint, 1 below float collar, 1 every 3rd joint to top of cement

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED N/A

LATITUDE 39°20'00"

5,579'

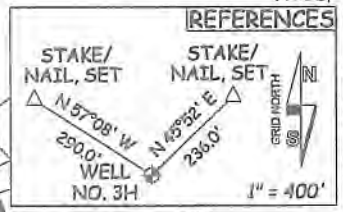
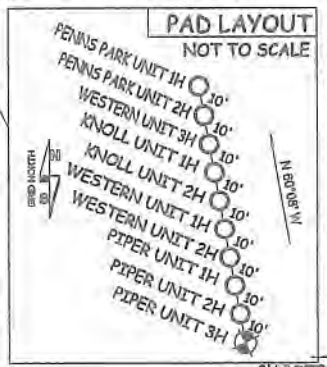
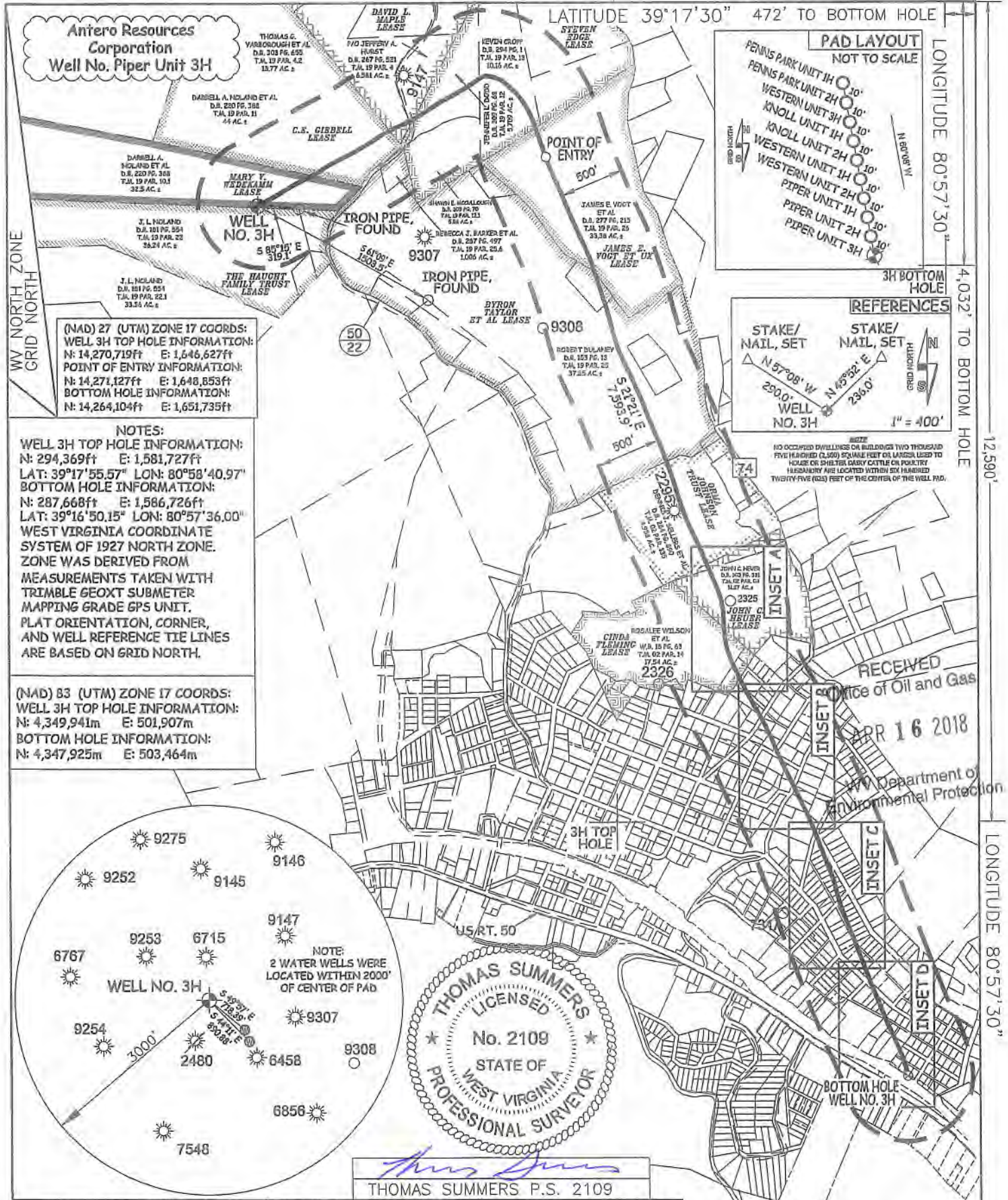
LATITUDE 39°17'30" 472' TO BOTTOM HOLE

LONGITUDE 80°57'30"

4,032' TO BOTTOM HOLE

12,590'

LONGITUDE 80°57'30"



Antero Resources Corporation
Well No. Piper Unit 3H

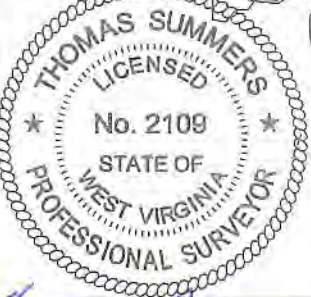
(NAD) 27 (UTM) ZONE 17 COORDS:
WELL 3H TOP HOLE INFORMATION:
N: 14,270,719ft E: 1,646,627ft
POINT OF ENTRY INFORMATION:
N: 14,271,127ft E: 1,648,853ft
BOTTOM HOLE INFORMATION:
N: 14,264,104ft E: 1,651,735ft

NOTES:
WELL 3H TOP HOLE INFORMATION:
N: 294,369ft E: 1,581,727ft
LAT: 39°17'55.57" LON: 80°58'40.97"
BOTTOM HOLE INFORMATION:
N: 287,668ft E: 1,586,726ft
LAT: 39°16'50.15" LON: 80°57'36.00"
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: 4,349,941m E: 501,907m
BOTTOM HOLE INFORMATION:
N: 4,347,925m E: 503,464m



NOTE:
2 WATER WELLS WERE LOCATED WITHIN 2000' OF CENTER OF PAD



Thomas Summers
THOMAS SUMMERS P.S. 2109

JOB # 16-005WA	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 PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.	 STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS WILLOW LAND SURVEYING PLLC 266 HUSHERS RUN RD PENNSBORO WEST VIRGINIA 26415	LEGEND --- Surface Owner Boundary Lines +/- --- Interior Surface Tracts +/- X Existing Fence  Rebar, Found
DRAWING # PIPER3HMOD			
SCALE 1" = 1000'	STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS	OPERATOR'S WELL# PIPER UNIT 3H	API WELL # 47 - 085 - 10296 (mod)
MINIMUM DEGREE OF ACCURACY SUBMETER	WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___	STATE COUNTY PERMIT	STATE COUNTY PERMIT
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS	(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X	DATE	DATE
STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS	LOCATION: ELEVATION 1,143' AS DRILLED	WATERSHED NORTH FORK HUGHES RIVER	QUADRANGLE PENNSBORO 7.5
WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___	QUADRANGLE PENNSBORO 7.5	DISTRICT CLAY	COUNTY RITCHIE
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X	SURFACE OWNER DARRELL A. NOLAND ET AL	ACREAGE 32.5 ACRES +/-	LEASE ACREAGE SEE ATTACHED PAGES
LOCATION: ELEVATION 1,143' AS DRILLED	OIL & GAS ROYALTY OWNER SEE ATTACHED PAGES FOR LEASE INFORMATION	LEASE ACREAGE SEE ATTACHED PAGES	
WATERSHED NORTH FORK HUGHES RIVER	PROPOSED WORK: DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___	PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) MOD-POE	PLUG & ABANDON CLEAN OUT & REPLUG
QUADRANGLE PENNSBORO 7.5	TARGET FORMATION MARCELLUS	ESTIMATED DEPTH 6,429' TVD 14,961 MD	
DISTRICT CLAY	WELL OPERATOR ANTERO RESOURCES CORP.	DESIGNATED AGENT DIANNA STAMPER	CT CORPORATION SYSTEM
COUNTY RITCHIE	ADDRESS 1615 WYNKOOP STREET	ADDRESS 5400 D BIG TYLER ROAD	CHARLESTON, WV 25313
PERMIT	FORM WW-6	DENVER, CO 80202	

INSET A

ORMA
JOHNSON
TRUST LEASE
8-2-135

Antero Resources
Corporation
Well No. Piper Unit 3H

WV NORTH ZONE
GRID NORTH

57,956.15
52,921.15
E

JOHN C.
HEUER
LEASE
8-2-4

CINDA FLEMING
LEASE
8-2-14

8-2-15
ROBERT
WHITEHAIR
LEASE

ROBERT
WHITEHAIR
LEASE
8-2-16

8-2-14.1

8-2-48

8-2-49
LARRY HORNER
LEASE

8-2-50

8-2-14.2

8-2-45
BETTY R.
HORNER
LEASE

LARRY
HORNER JR.
LEASE

8-2-51
MICHAEL J.
SHEPHERD
LEASE

KENNETH F. SELLERS
ET UX LEASE

8-2-46

8-2-47

8-2-86

JACKLYN C.
PERKINS
LEASE

FILE: 16-005WA
JOB: PIPER3H INSETA MOD
DRAFTED BY: T.B.S. 02/01/18



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

SCALE: 1-INCH = 100-FEET

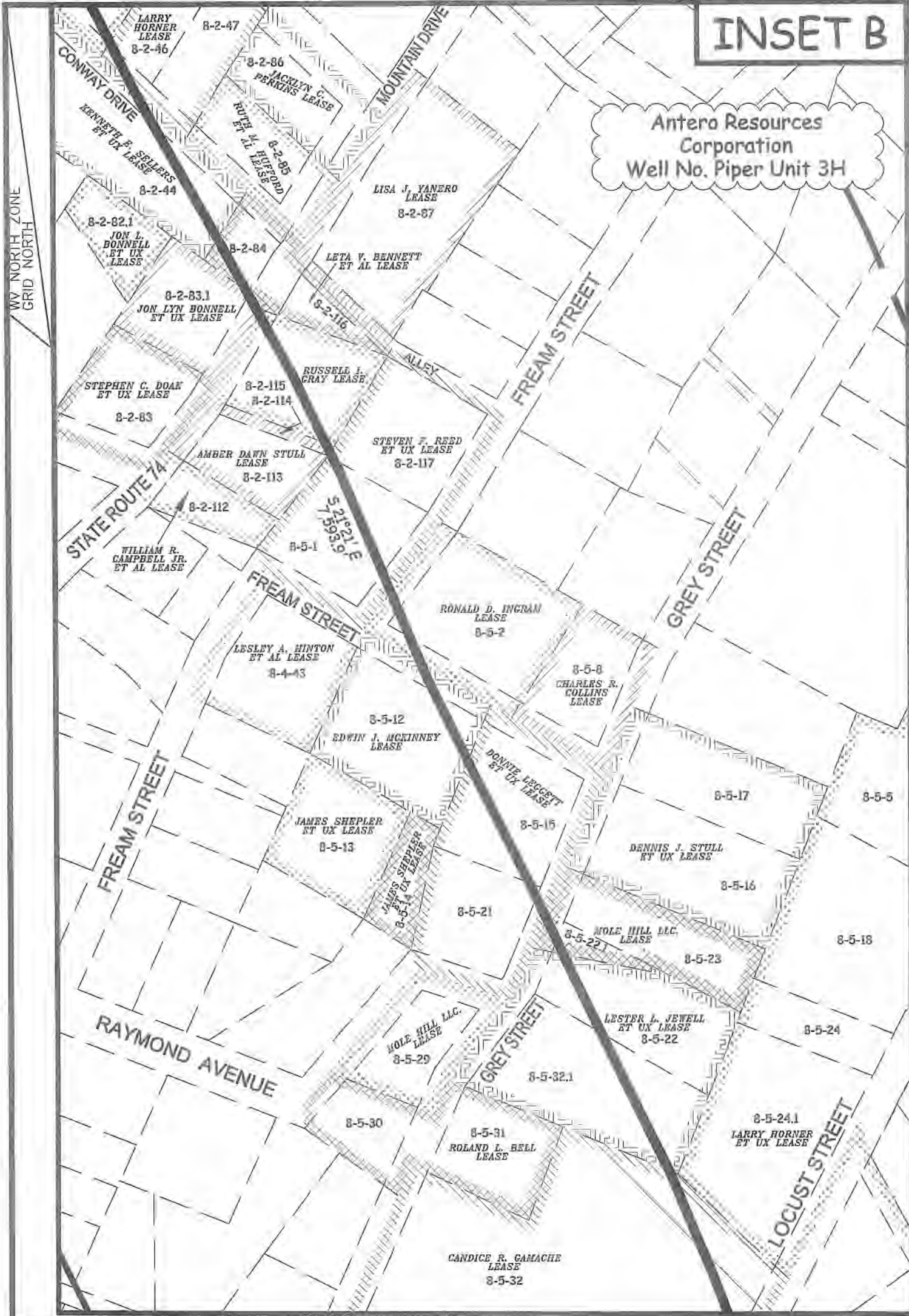


LEGEND

- Piper 3H Lateral
- Interior Surface Tracts +/-

INSET B

Antero Resources Corporation
Well No. Piper Unit 3H



WILLOW
LAND SURVEYING PLLC
P.O. BOX 17
PENNSBORO, WV 26415
304-659-1717

SCALE: 1-INCH = 100-FEET

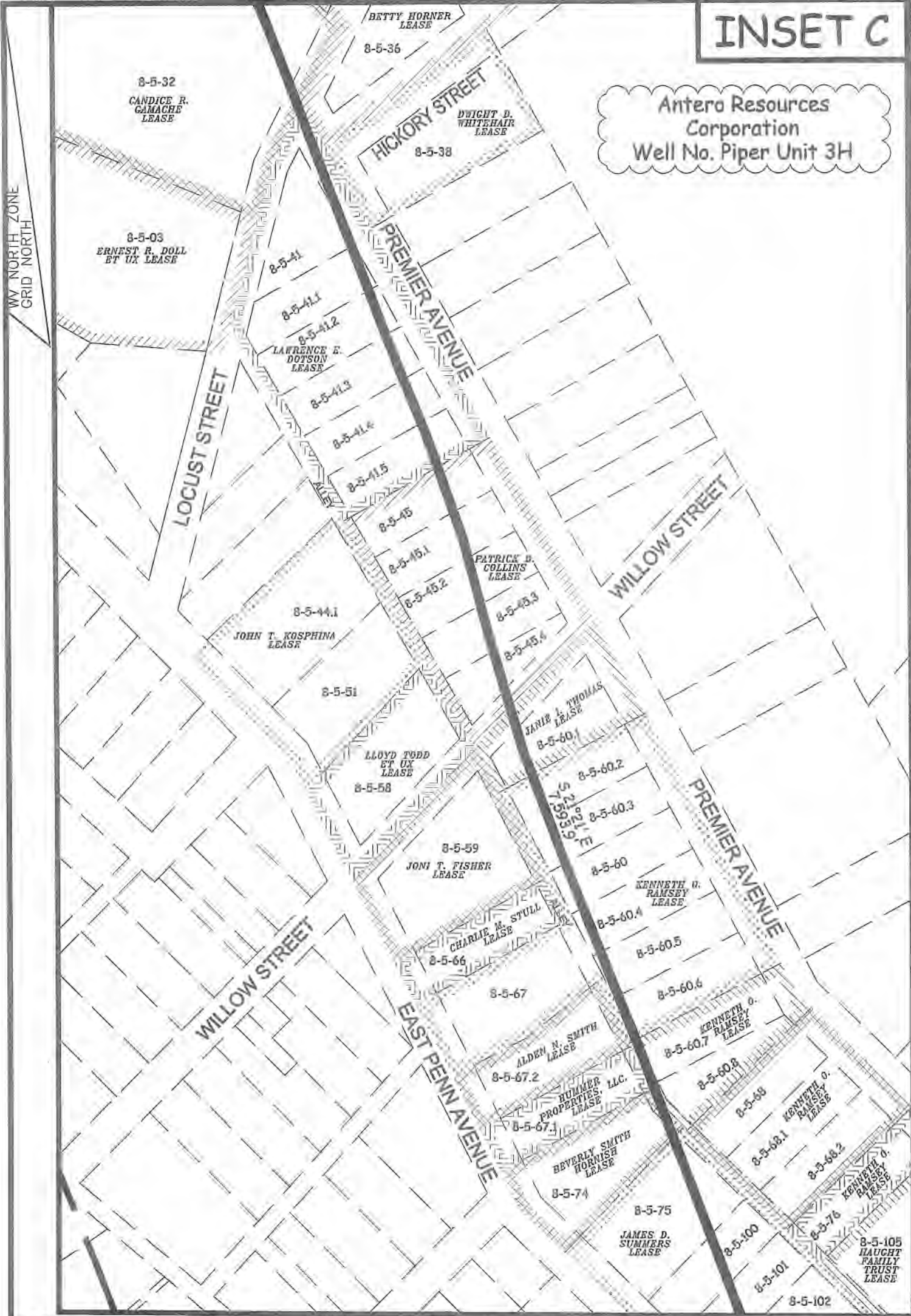


FILE: 16-005WA
JOB: PIPER3H INSETB MOD
DRAFTED BY: T.B.S. 02/01/18

LEGEND	
	Piper 3H Lateral
	Interior Surface Tracts +/-

INSET C

Antero Resources Corporation
Well No. Piper Unit 3H



WILLOW
• LAND SURVEYING PLLC •

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

SCALE: 1-INCH = 100-FEET



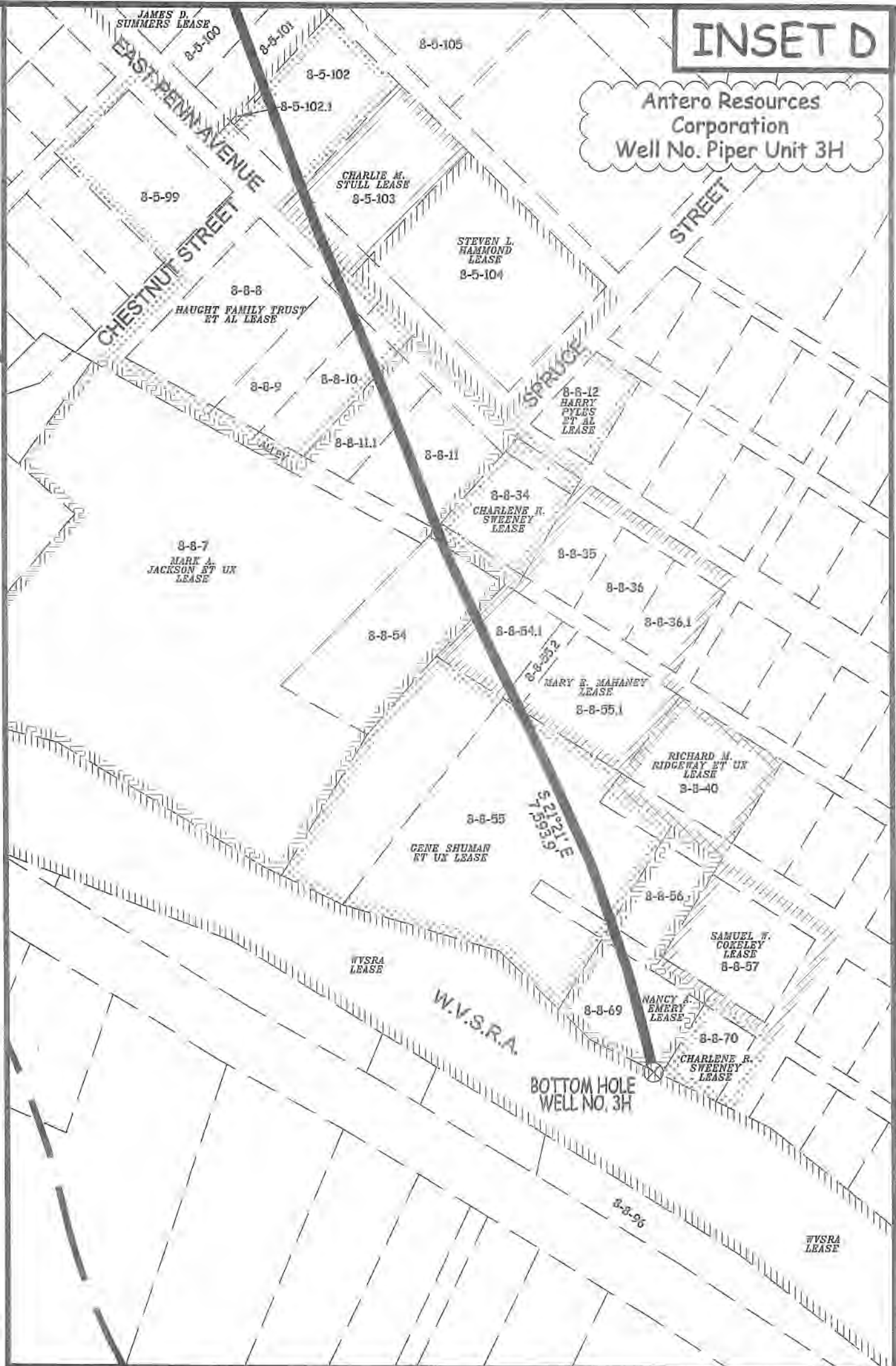
FILE: 16-005WA
JOB: PIPER3H INSETC MOD
DRAFTED BY: T.B.S. 02/01/18

LEGEND	
	Piper 3H Lateral
	Interior Surface Tracts +/-

INSET D

Antero Resources Corporation
Well No. Piper Unit 3H

WV NORTH ZONE
GRID NORTH



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

SCALE: 1-INCH = 100-FEET



FILE: 16-005WA
JOB: PIPER3H INSETD MOD
DRAFTED BY: T.B.S. 02/01/18

LEGEND

- Piper 3H Lateral
- Interior Surface Tracts +/-

LATITUDE 39°20'00"

5,579'

LATITUDE 39°17'30"

472' TO BOTTOM HOLE

LONGITUDE 80°57'30"

4,032' TO BOTTOM HOLE

LONGITUDE 80°57'30"

LONGITUDE 80°57'30"

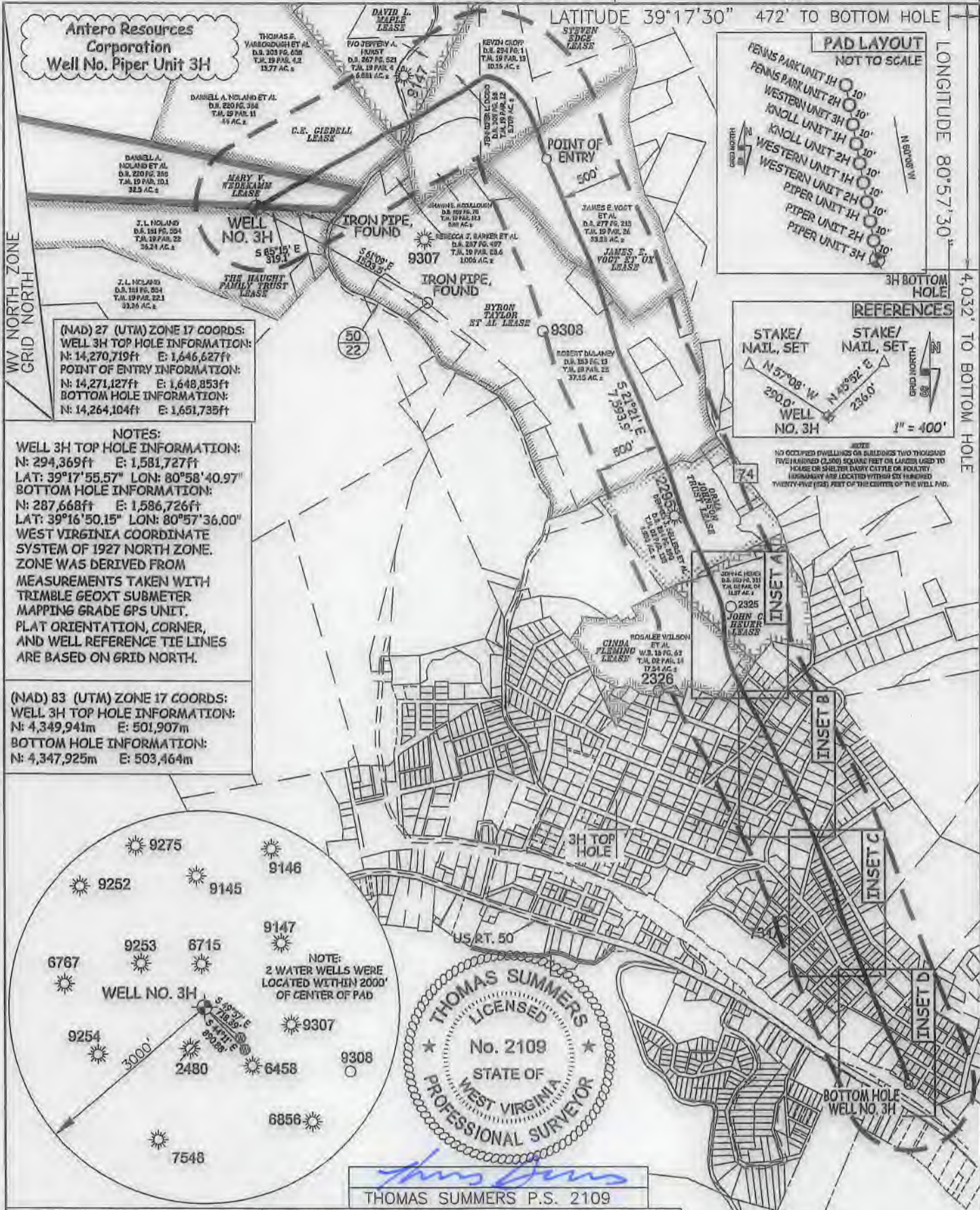
LONGITUDE 80°57'30"

LONGITUDE 80°57'30"

LONGITUDE 80°57'30"

LONGITUDE 80°57'30"

LONGITUDE 80°57'30"



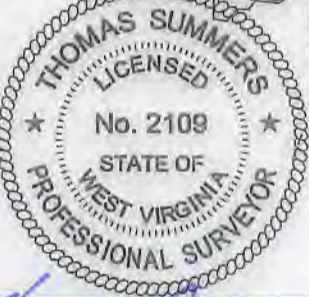
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 POINT OF ENTRY INFORMATION:
 N: 14,271,127ft E: 1,648,853ft
 BOTTOM HOLE INFORMATION:
 N: 14,264,104ft E: 1,651,735ft




NOTE:
 NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND
 FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO
 HOUSE OR SHELTER DAIRY CATTLE OR HOUSING
 USUALLY ARE LOCATED WITHIN 500 FEET RADIUS
 TWENTY-FIVE (25) FEET OF THE CENTER OF THE WELL PAD.

NOTES:
 WELL 3H TOP HOLE INFORMATION:
 N: 294,369ft E: 1,581,727ft
 LAT: 39°17'55.57" LON: 80°58'40.97"
 BOTTOM HOLE INFORMATION:
 N: 287,668ft E: 1,586,726ft
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 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:
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 N: 4,349,941m E: 501,907m
 BOTTOM HOLE INFORMATION:
 N: 4,347,925m E: 503,464m



THOMAS SUMMERS P.S. 2109

JOB # 16-005WA	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.	
DRAWING # PIPER3HMOD	 STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS WILLOW LAND SURVEYING PLLC 266 HUSHERS RUN RD PENNSBORO WEST VIRGINIA 26415	LEGEND - - - Surface Owner Boundary Lines +/- - - - Interior Surface Tracts +/- - - - Existing Fence ⊕ Rebar, Found
SCALE 1" = 1000'		DATE 01/18/18
MINIMUM DEGREE OF ACCURACY SUBMETER	OPERATOR'S WELL# PIPER UNIT 3H	API WELL # 47 - 085 - 10296
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS	STATE COUNTY PERMIT	STATE COUNTY PERMIT
STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS	WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___	STATE COUNTY PERMIT
WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___	(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X	STATE COUNTY PERMIT
LOCATION: ELEVATION 1,143' AS DRILLED	WATERSHED NORTH FORK HUGHES RIVER	STATE COUNTY PERMIT
QUADRANGLE PENNSBORO 7.5'	DISTRICT CLAY COUNTY RITCHIE	STATE COUNTY PERMIT
SURFACE OWNER DARRELL A. NOLAND ET AL	ACREAGE 32.5 ACRES +/-	STATE COUNTY PERMIT
OIL & GAS ROYALTY OWNER SEE ATTACHED PAGES FOR LEASE INFORMATION	LEASE ACREAGE SEE ATTACHED PAGES	STATE COUNTY PERMIT
PROPOSED WORK: DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___	PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) MOD-POE	STATE COUNTY PERMIT
TARGET FORMATION MARCELLUS	ESTIMATED DEPTH 6,429' TVD 14,961 MD	STATE COUNTY PERMIT
WELL OPERATOR ANTERO RESOURCES CORP.	DESIGNATED AGENT DIANNA STAMPER	STATE COUNTY PERMIT
ADDRESS 1615 WYNKOOP STREET	ADDRESS 5400 D BIG TYLER ROAD	STATE COUNTY PERMIT
FORM WW-6 DENVER, CO 80202	CHARLESTON, WV 25313	STATE COUNTY PERMIT

INSET A

ORMA
JOHNSON
TRUST LEASE
8-2-135

Antero Resources
Corporation
Well No. Piper Unit 3H

WV NORTH ZONE
GRID NORTH

S 21° 21' E
1,593.9'

JOHN C.
HEUER
LEASE
8-2-4

CINDA FLEMING
LEASE
8-2-14

ROBERT
WHITEHAIR
LEASE
8-2-16

8-2-15
ROBERT
WHITEHAIR
LEASE

8-2-14.1

8-2-48

8-2-49
LARRY HORNER
LEASE

8-2-50

8-2-14.2

8-2-45
BETTY R.
HORNER
LEASE

LARRY
HORNER JR.
LEASE

8-2-51
MICHAEL J.
SHEPHERD
LEASE

KENNETH E. SELLERS
ET UX LEASE

8-2-44

8-2-46

8-2-47

8-2-86

JACLYN C.
PERKINS
LEASE

FILE: 16-005WA
JOB: PIPER3H INSETA MOD
DRAFTED BY: T.B.S. 02/01/18

47-085-10296 MOD



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

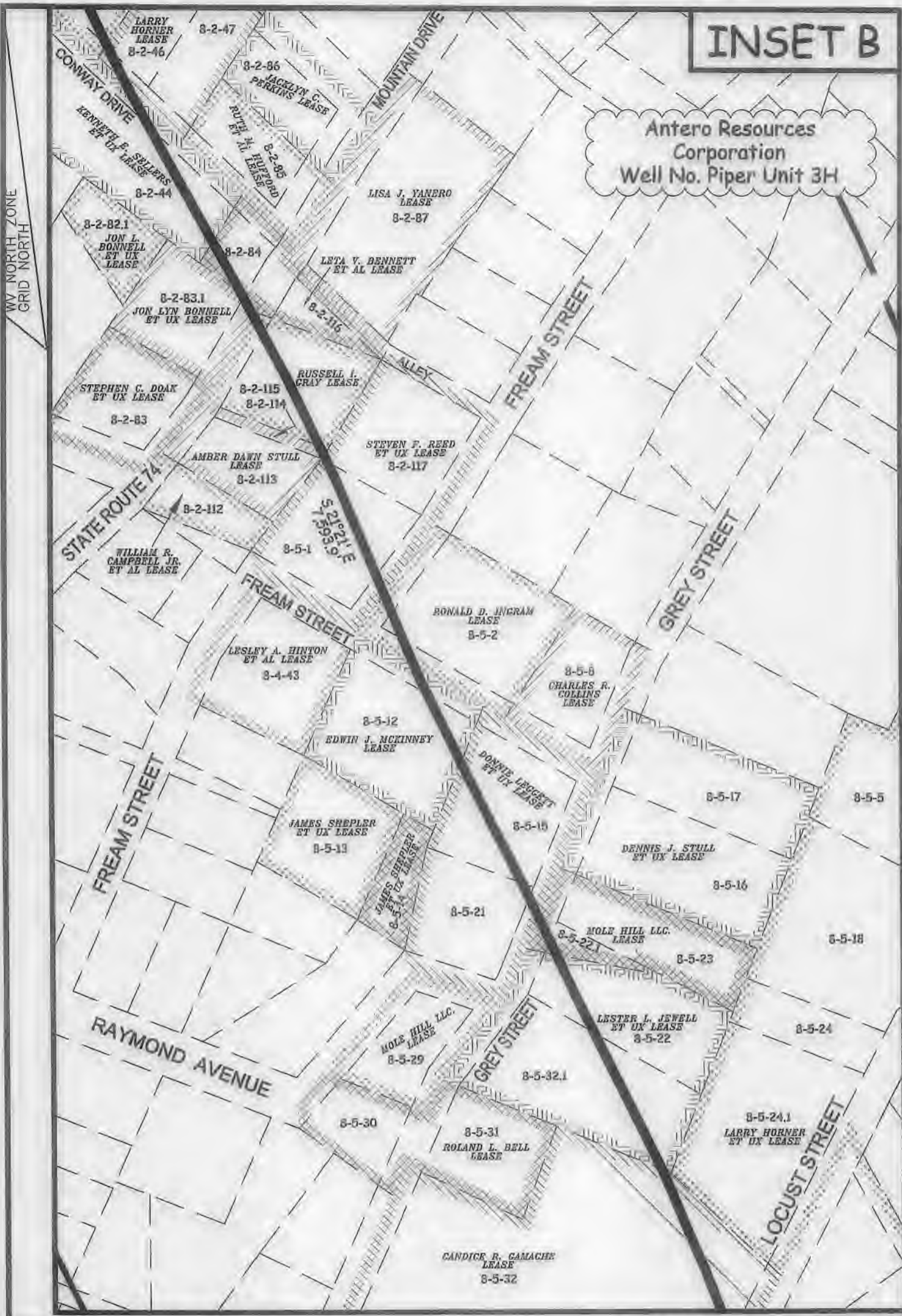
SCALE: 1-INCH = 100-FEET



LEGEND	
	Piper 3H Lateral
	Interior Surface Tracts +/-

INSET B

Antero Resources Corporation
Well No. Piper Unit 3H



47-685-10296



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

SCALE: 1-INCH = 100-FEET

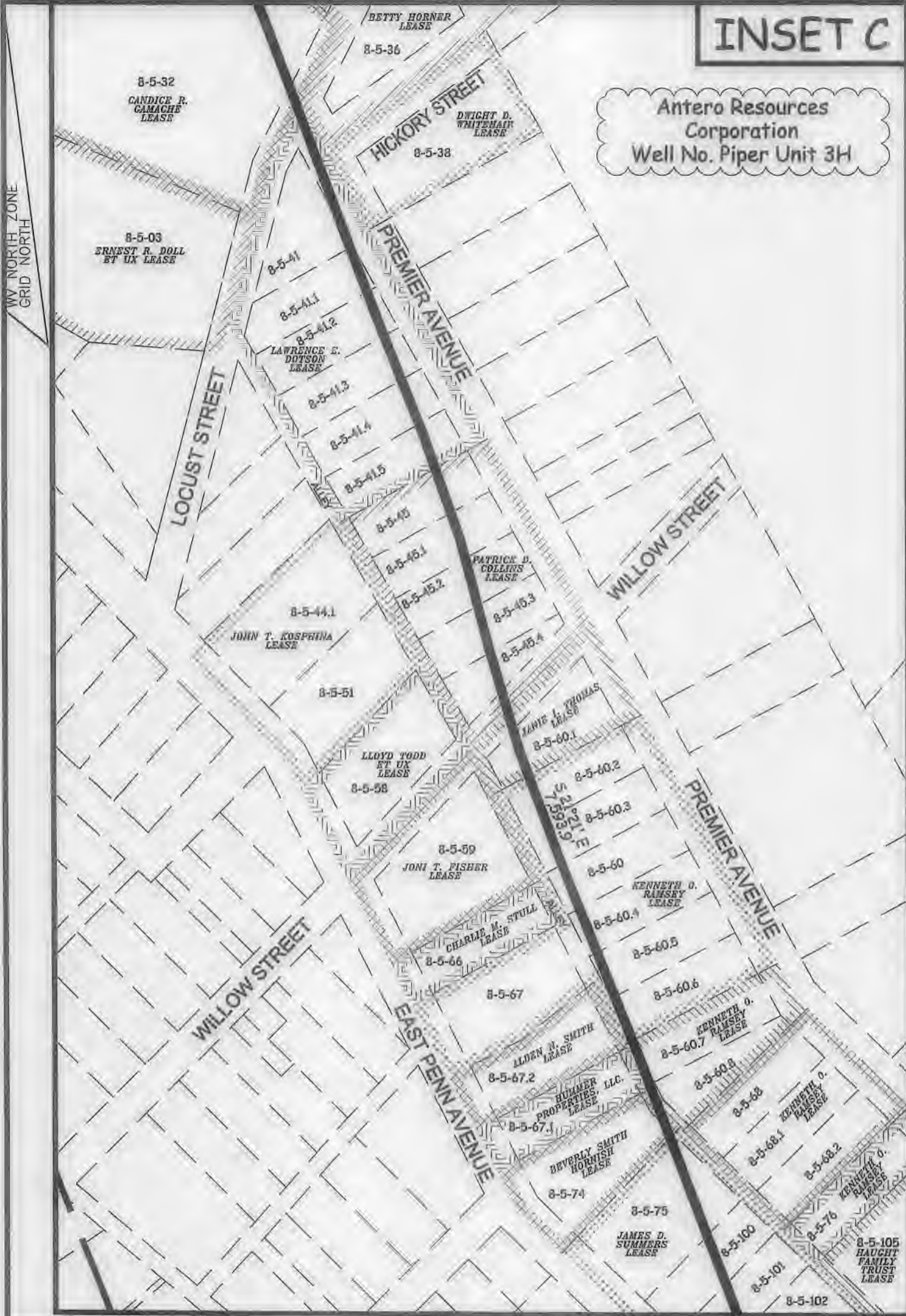


FILE: 16-005WA
JOB: PIPER3H INSETB MOD
DRAFTED BY: T.B.S. 02/01/18

LEGEND	
	Piper 3H Lateral
	Interior Surface Tracts +/-

INSET C

Antero Resources Corporation
Well No. Piper Unit 3H



WV NORTH ZONE
GRID NORTH

47-085-10296MOD



P.O. BOX 17
PENNABORO, WV 26115
304-859-1717

SCALE: 1-INCH = 100-FEET

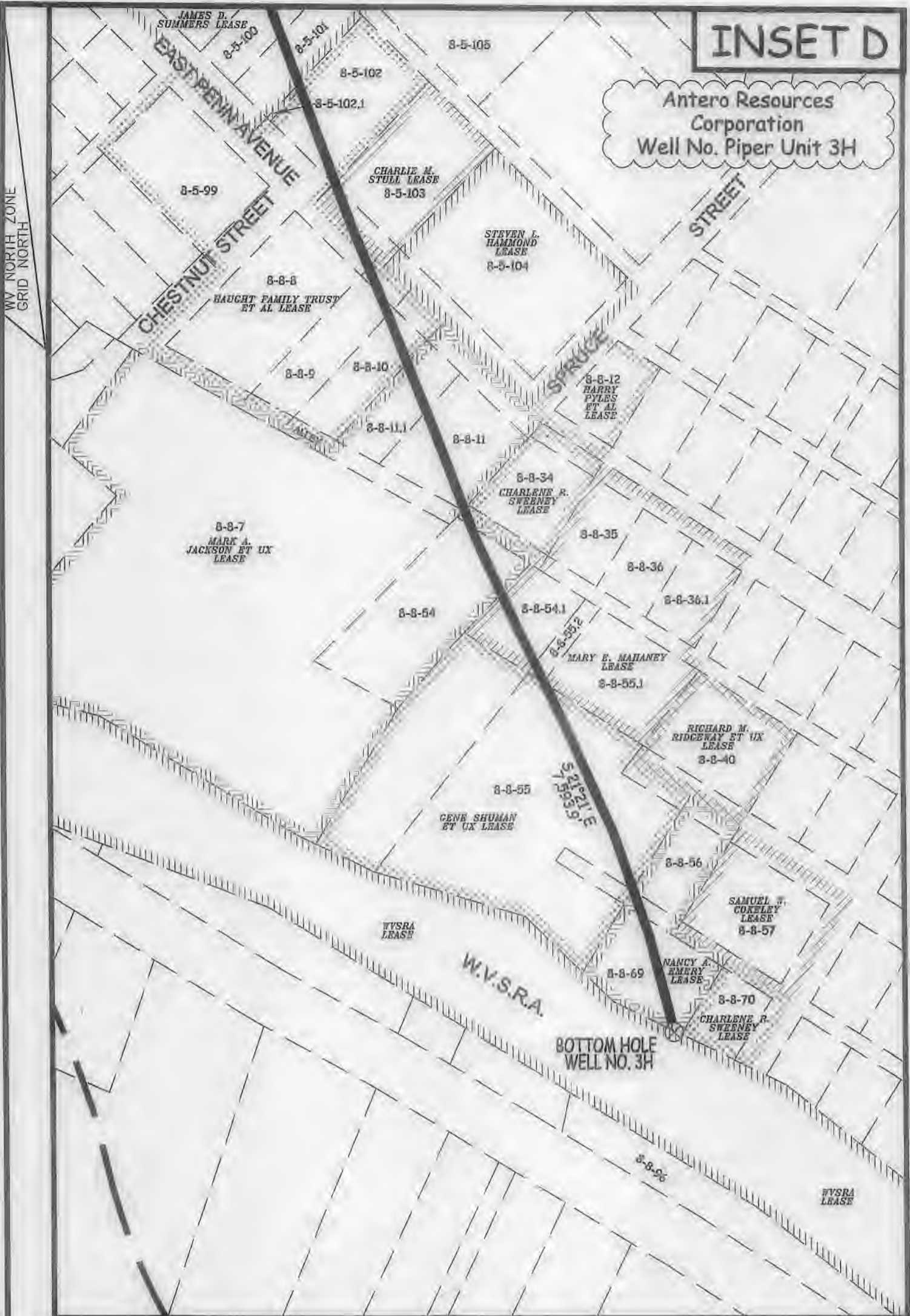


FILE: 18-005WA
JOB: PIPER3H INSETC MOD
DRAFTED BY: T.B.S. 02/01/18

LEGEND	
	Piper 3H Lateral
	Interior Surface Tracts +/-

INSET D

Antero Resources Corporation
Well No. Piper Unit 3H



47-085-10216MOD



P.O. BOX 17
PENNSBORO, WV 26415
304-639-1717

SCALE: 1-INCH = 100-FEET



FILE: 16-005WA
JOB: PIPER3H INSET MOD
DRAFTED BY: T.B.S. 02/01/18

LEGEND	
	Piper 3H Lateral
	Interior Surface Tracts +/-



April 13, 2018

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

West Virginia Department of Environmental Protection
Office of Oil and Gas
Attn: Ms. Laura Adkins
601 57th Street
Charleston, WV 25304

RECEIVED
Office of Oil and Gas
APR 13 2018
WV Department of
Environmental Protection

Ms. Adkins:

Antero Resources Corporation (Antero) would like to submit the following permit modification for four approved wells on the existing Noland Pad. We are requesting to change the point of entry which will change the horizontal leg length, total measured depth, and total vertical depth of the of the Western Unit 3H (API# 47-085-10295), Piper 1H (API# 47-085-10291), Piper 2H (API# 47-085-10292), and Piper 3H (API# 47-085-10296)

Attached you will find the following documents:

- REVISED Form WW-6B, which shows the revised Horizontal Leg Length, Measured Depth and Production Casing/Cement Program
- REVISED Mylar Plat, which shows the new wellbore path.
- REVISED Form WW-6A1, which shows the new leases we will be drilling into

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

Thank you in advance for your consideration.

Sincerely,

Mallory Stanton
Permitting Supervisor
Antero Resources Corporation

RECEIVED
Office of Oil and Gas
APR 13 2018
WV Department of
Environmental Protection

Enclosures

RECEIVED
Office of Oil and Gas
APR 16 2018
WV Department of
Environmental Protection



west virginia department of environmental protection

Office of Oil and Gas
601 57th 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 10, 2017
PERMIT MODIFICATION APPROVAL
Horizontal 6A / Horizontal 6A Well - 1

ANTERO RESOURCES CORPORATION
1615 WYNKOOP STREET

DENVER, CO 80202

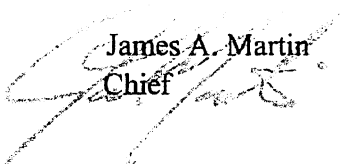
Re: Permit Modification Approval for PIPER UNIT 3H
47-085-10296-00-00

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: PIPER UNIT 3H
Farm Name: DARRELL A. NOLAND ET AL
U.S. WELL NUMBER: 47-085-10296-00-00
Horizontal 6A / Horizontal 6A Well - 1
Date Issued: January 10, 2017

Promoting a healthy environment.

WW-6B
(04/15)

API NO. 47-085 - 10296
OPERATOR WELL NO. Piper Unit 3H
Well Pad Name: Existing Noland Pad

API# 47-085-10296 PERMIT MODIFICATION

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

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

2) Operator's Well Number: Piper 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: 16000' MD

11) Proposed Horizontal Leg Length: 7805'

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: _____

RECEIVED
Office of Oil and Gas

NOV 14 2016

WV Department of
Environmental Protection

WW-6B
(04/15)

API NO. 47- 085 - 10296

OPERATOR WELL NO. Piper Unit 3H

Well Pad Name: Existing Noland Pad

API# 47-085-10296 PERMIT MODIFICATION

18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
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#	2500'	2500'	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	16000'	16000'	3992 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
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-HPOZ & 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			

RECEIVED
Office of Oil and Gas

NOV 14 2016

WV Department of
Environmental Protection

WW-6B
(10/14)

API NO. 47- 085 - 10296

OPERATOR WELL NO. Piper Unit 3H

Well Pad Name: Existing Noland Pad

API# 47-085-10296 PERMIT MODIFICATION

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.

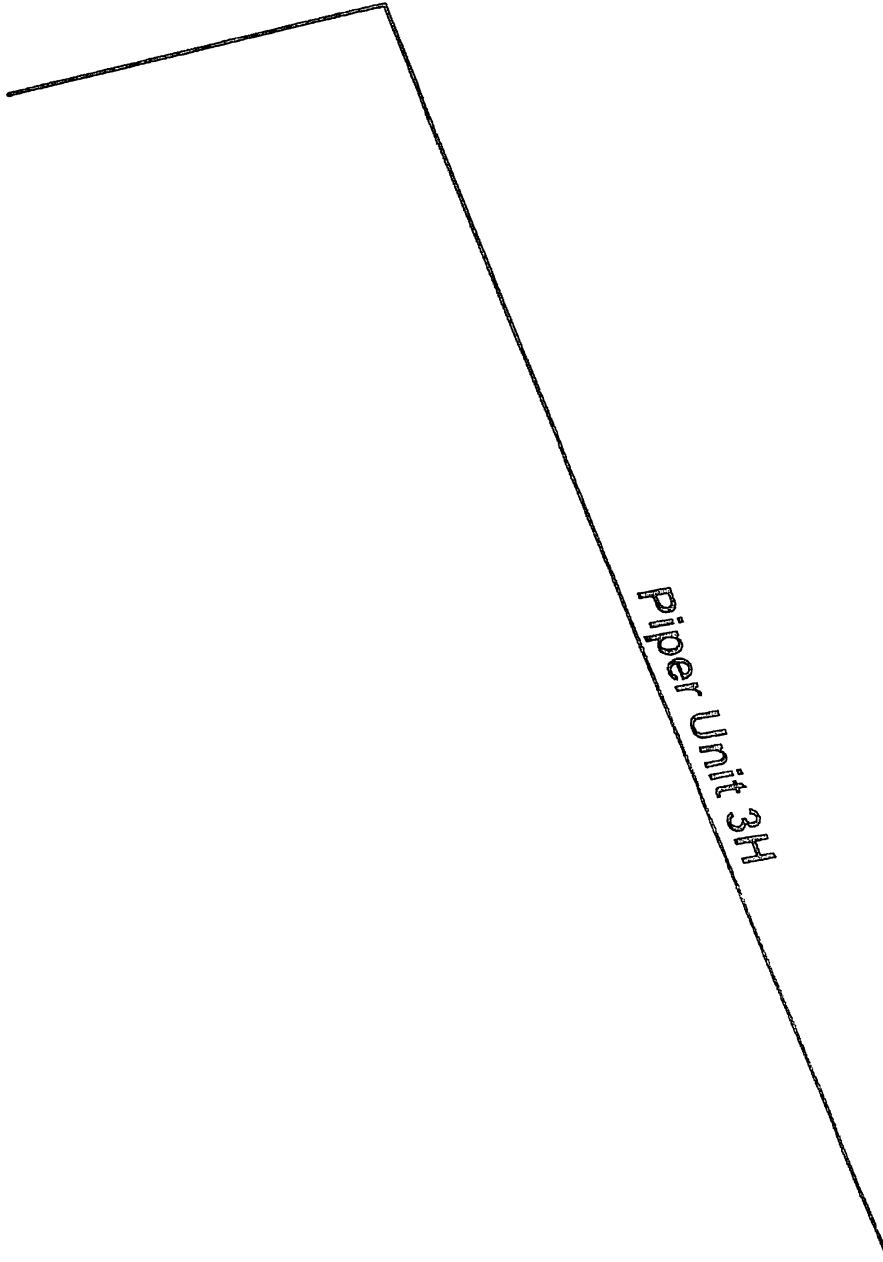
Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

*Note: Attach additional sheets as needed.

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AOR Western-Piper Units- no wells



INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>The Haught Family Trust Lease</u>			
The Haught Family Trust, Ira M. Haught, Trustee	Antero Resources Corporation	1/8+	0272/0974
<u>Mary V. Wedekamm Lease</u>			
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
<u>C.E. Giebell Lease</u>			
C.E. Giebell	Gene Stalnaker	1/8	0161/0644
Gene Stalnaker	Angus Energy, Inc.	Assignment	0212/0137
Angus Energy, Inc.	Stalnaker Energy, Inc.	Merger/Name Change	CR 0006/0225
Stalnaker Energy, Inc.	Antero Resources Appalachian Corporation	Assignment	0263/1065
Antero Resources Appalachian Corporation	Antero Resources Appalachian Corporation	Name Change	Exhibit 1
<u>Byron Taylor, et al Lease</u>			
Byron Taylor, et al	Key Oil Company	1/8	0239/0402
Key Oil Company	Antero Resources Appalachian Corporation	* Partial Assignment	0253/0747
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Steven Edge Lease</u>			
Steven Edge	Antero Resources Corporation	1/8+	0278/0790
<u>James E. Vogt, et ux Lease</u>			
James Vogt, et ux	Antero Resources Corporation	1/8+	0276/0421
<u>Orma Johnson Trust Lease</u>			
Orma M. Wilson Johnson Declaration of Trust by Orma M. Wilson Johnson, Trustee	Antero Resources Corporation	1/8+	0282/0154
<u>John C. Heuer Lease</u>			
John C. Heuer	Antero Resources Corporation	1/8+	0269/0900

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WW-6A1

Operator's Well Number

Piper Unit 3H

PERMIT MODIFICATION API# 47-085-10296

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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>Cinda Fleming Lease</u> Cinda Fleming	Antero Resources Corporation	1/8+	0290/0708
<u>Robert Whitehair Lease</u> Robert Whitehair	Antero Resources Corporation	1/8+	0277/0478
<u>Larry Horner Lease</u> Larry Horner	Antero Resources Corporation	1/8+	0268/0848
<u>Betty R. Horner Lease</u> Betty R. Horner	Antero Resources Corporation	1/8+	0270/1066
<u>Larry Horner, Jr. Lease</u> Larry Horner, Jr.	Antero Resources Corporation	1/8+	0280/0809
<u>Michael J. Shepherd Lease</u> Michael J. Shepherd	Antero Resources Corporation	1/8+	0275/0018
<u>Jacklyn C. Perkins Lease</u> Jacklyn C. Perkins	Antero Resources Corporation	1/8+	0268/0628
<u>Ruth M. Hufford, et al Lease</u> Ruth M. Hufford, et al	Antero Resources Corporation	1/8+	0268/0631
<u>Kenneth E. Sellers, et ux Lease</u> Kenneth E. Sellers, et ux	Antero Resources Corporation	1/8+	0277/0475
<u>Jon L. Bonnell, et ux Lease</u> Jon L. Bonnell, et ux	Antero Resources Corporation	1/8+	0295/0958
<u>Leta V. Bennett, et al Lease</u> Leta V. Bennett, et al	Antero Resources Corporation	1/8+	0272/0746
<u>Russell I. Gray Lease</u> Russell I. Gray	Antero Resources Corporation	1/8+	0270/0436

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*PLEASE NOTE: We are not drilling through "Lisa J. Yanero Lease" (TM 8-2-87). The Piper Unit 3H wellbore is located 13' from this lease.

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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>Steven F. Reed, et ux Lease</u> Steven F. Reed, et ux	Antero Resources Corporation	1/8+	0268/0851
<u>Ronald D. Ingram Lease</u> Ronald D. Ingram	Antero Resources Corporation	1/8+	0271/0617
<u>Lesley A. Hinton, et al</u> Lesley A. Hinton & Sherry L. Hinton	Antero Resources Corporation	1/8+	0282/1049
<u>Edwin J. McKinney Lease</u> Edwin J. McKinney	Antero Resources Corporation	1/8+	0269/0157
<u>Charles R. Collins Lease</u> Charles R. Collins	Antero Resources Corporation	1/8+	0274/0392
<u>Donnie Leggett, et ux Lease</u> Donnie Leggett, et ux	Antero Resources Corporation	1/8+	0268/0681
<u>James Shepler, et ux Lease</u> James Shepler, et ux	Antero Resources Corporation	1/8+	0297/0804
<u>Dennis J. Stull, et ux Lease</u> Dennis J. Stull, et ux	Antero Resources Corporation	1/8+	0270/0427
<u>Mole Hill, LLC Lease</u> Mole Hill, LLC	Antero Resources Corporation	1/8+	0282/0799
<u>Lester L. Jewell, et ux Lease</u> Lester L. Jewell, et ux	Antero Resources Corporation	1/8+	0270/1025
<u>Mole Hill, LLC Lease</u> Mole Hill, LLC	Antero Resources Corporation	1/8+	0282/0799
<u>Ronald L. Bell Lease</u> Ronald L. Bell	Antero Resources Corporation	1/8+	0297/0376
<u>Larry Horner, et ux Lease</u> Larry Horner, et ux	Antero Resources Corporation	1/8+	0270/1063

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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>Candice R. Gamache Lease</u> Candice R. Gamache	Antero Resources Corporation	1/8+	0267/0961
<u>Betty Horner Lease</u> Betty Horner	Antero Resources Corporation	1/8+	0270/1066
<u>Ernest R. Doll, et ux Lease</u> Ernest R. Doll, et ux	Antero Resources Corporation	1/8+	0275/0193
<u>Lawrence E. Dotson Lease</u> Lawrence E. Dotson	Antero Resources Corporation	1/8+	0298/0810
<u>Dwight D. Whitehair Lease</u> Dwight D. Whitehair	Antero Resources Corporation	1/8+	0269/0679
<u>Patrick D. Collins Lease</u> Patrick D. Collins	Antero Resources Corporation	1/8+	0300/0551
<u>John T. Kosphina Lease</u> John T. Kosphina	Antero Resources Corporation	1/8+	0275/0021
<u>Janie I. Thomas Lease</u> Janie I. Thomas	Antero Resources Corporation	1/8+	0273/0619
<u>Lloyd Todd, et ux Lease</u> Lloyd Todd, et ux	Antero Resources Corporation	1/8+	0296/0869
<u>Joni T. Fisher Lease</u> Joni T. Fisher	Antero Resources Corporation	1/8+	0269/0269
<u>Kenneth O. Ramsey Lease</u> Kenneth O. Ramsey	Antero Resources Corporation	1/8+	0271/0727
<u>Charlie M. Stull Lease</u> Charlie M. Stull	Antero Resources Corporation	1/8+	0300/0143
<u>Alden N. Smith Lease</u> Alden N. Smith	Antero Resources Corporation	1/8+	0281/1080

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<u>Hummer Properties, LLC Lease</u> Hummer Properties, LLC	Antero Resources Corporation	1/8+	0275/0419
<u>Kenneth O. Ramsey Lease</u> Kenneth O. Ramsey	Antero Resources Corporation	1/8+	0299/0862
<u>Beverly Smith Hornish Lease</u> Beverly Smith Hornish	Antero Resources Corporation	1/8+	0299/0919
<u>James D. Summers Lease</u> James D. Summers	Antero Resources Corporation	1/8+	0272/1075
<u>Kenneth O. Ramsey Lease</u> Kenneth O. Ramsey	Antero Resources Corporation	1/8+	0286/0106
<u>Kenneth O. Ramsey Lease</u> Kenneth O. Ramsey	Antero Resources Corporation	1/8+	0271/0727
<u>Haught Family Trust, et al Lease</u> Haught Family Trust, et al	Antero Resources Corporation	1/8+	0300/0884
<u>Steven L. Hammond Lease</u> Steven L. Hammond	Antero Resources Corporation	1/8+	0286/0792
<u>Mark A. Jackson, et ux Lease</u> Mark A. Jackson, et ux	Antero Resources Corporation	1/8+	0275/0422
<u>Charlene R. Sweeney Lease</u> Charlene R. Sweeney	Antero Resources Corporation	1/8+	0285/0043
<u>Harry Pyles, et al Lease</u> Harry Pyles, et al	Antero Resources Corporation	1/8+	0282/0541
<u>Mary E. Mahaney Lease</u> Mary E. Mahaney	Antero Resources Corporation	1/8+	0300/0095
<u>Gene Shuman, et ux Lease</u> Gene Shuman, et ux	Antero Resources Corporation	1/8+	0267/0956

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<u>Richard M. Ridgeway, et ux Lease</u> Richard M. Ridgeway, et ux	Antero Resources Corporation	1/8+	0272/0667
<u>Nancy A. Emery Lease</u> Nancy A. Emery	Antero Resources Corporation	1/8+	0301/0501
<u>Samuel W. Cokeley Lease</u> Samuel W. Cokeley	Antero Resources Corporation	1/8+	0270/0803
<u>Charlene R. Sweeney Lease</u> Charlene R. Sweeney	Antero Resources Corporation	1/8+	0285/0043

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Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
<u>WVSRA Lease</u>	West Virginia State Rail Authority	Antero Resources Appalachian Corporation	1/8+	0253/0409
	Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1

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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

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: Robert S. Tucker
 Its: VP of Geology

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
Tel: (304)558-8000
Fax: (304)558-8381
Website: www.wvsoa.com
E-mail: business@wvsoa.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:

- Name under which the corporation was authorized to transact business in WV: Antero Resources Appalachian Corporation
- Date Certificate of Authority was issued in West Virginia: 6/26/2008
- Corporate name has been changed to: Antero Resources Corporation
(Attach one Certified Copy of Name Change as filed in home State of incorporation.)
- Name the corporation elects to use in WV: Antero Resources Corporation
(due to home state name not being available)
- Other amendments: _____
(attach additional pages if necessary)
- 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.)

<u>Alvyn A. Schopp</u>	<u>(304) 357-7310</u>
Contact Name	Phone Number
- Signature information (See below *Important Legal Notice Regarding Signature*):

Print Name of Signer: <u>Alvyn A. Schopp</u>	Title/Capacity: <u>Authorized Person</u>
Signature: <u><i>Alvyn A. Schopp</i></u>	Date: <u>June 10, 2013</u>

***Important Legal Notice Regarding Signature:** For 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.