



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

Friday, October 11, 2019
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for LAKOTA UNIT 1H
47-017-06892-00-00

Lateral Extension to 22,800" TMD

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.

A handwritten signature in blue ink, appearing to read 'James A. Martin', is positioned above the printed name and title.

James A. Martin
Chief

Operator's Well Number: LAKOTA UNIT 1H
Farm Name: GEORGE S. WYCKOFF
U.S. WELL NUMBER: 47-017-06892-00-00
Horizontal 6A New Drill
Date Modification Issued: October 11, 2019

Promoting a healthy environment.

WW-6B
(04/15)

API NO. 47- 017 - 06892 MOO
OPERATOR WELL NO. Lakota Unit 1H
Well Pad Name: George Scott Pad

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

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

2) Operator's Well Number: Lakota Unit 1H Well Pad Name: George Scott Pad

3) Farm Name/Surface Owner: George S. Wyckoff Public Road Access: Smithton Rd (Old US-50)

4) Elevation, current ground: 1283' Elevation, proposed post-construction: _____

5) Well Type (a) Gas Oil _____ Underground Storage _____

Other _____

(b) If Gas Shallow Deep _____

Horizontal _____

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus Shale: 7500' TVD, Anticipated Thickness- 55 feet, Associated Pressure- 2950#

8) Proposed Total Vertical Depth: 7500' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 22800' MD

11) Proposed Horizontal Leg Length: 13820'

12) Approximate Fresh Water Strata Depths: 128', 328', 433'

13) Method to Determine Fresh Water Depths: 047-017-02402, 047-017-04853, 047-017-01782

14) Approximate Saltwater Depths: 596', 1504', 1750'

15) Approximate Coal Seam Depths: 450'

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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WV Department of
Environmental Protection
Page 1 of 3

WAS
9/23/19

WW-6B
(04/15)

API NO. 47- 017 - 06892 MOD
 OPERATOR WELL NO. Lakota Unit 1H
 Well Pad Name: George Scott Pad

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#	80'	80'	CTS, 77 Cu. Ft.
Fresh Water	13-3/8"	New	J-55/H-40	54.5#/48#	485' *see #19	485' *see #19	CTS, 674 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#	22800'	22800'	5862 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#			
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	20"	24"	0.438"	1530	50	Class A	1.18
Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	1000	Class A	1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A	1.18
Intermediate							
Production	5-1/2"	8-3/4" & 8-1/2"	0.361"	12,630	2500	Lead-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			

DAC
9/23/19

WW-6B
(10/14)

API NO. 47- 017 - 06892 MOD
OPERATOR WELL NO. Lakota Unit 1H
Well Pad Name: George Scott Pad

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

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

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

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

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

Anticipated Max Pressure - 9300 lbs

Anticipated Max Rate - 80 bpm

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 31.57 Acres

22) Area to be disturbed for well pad only, less access road (acres): 6.05 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.

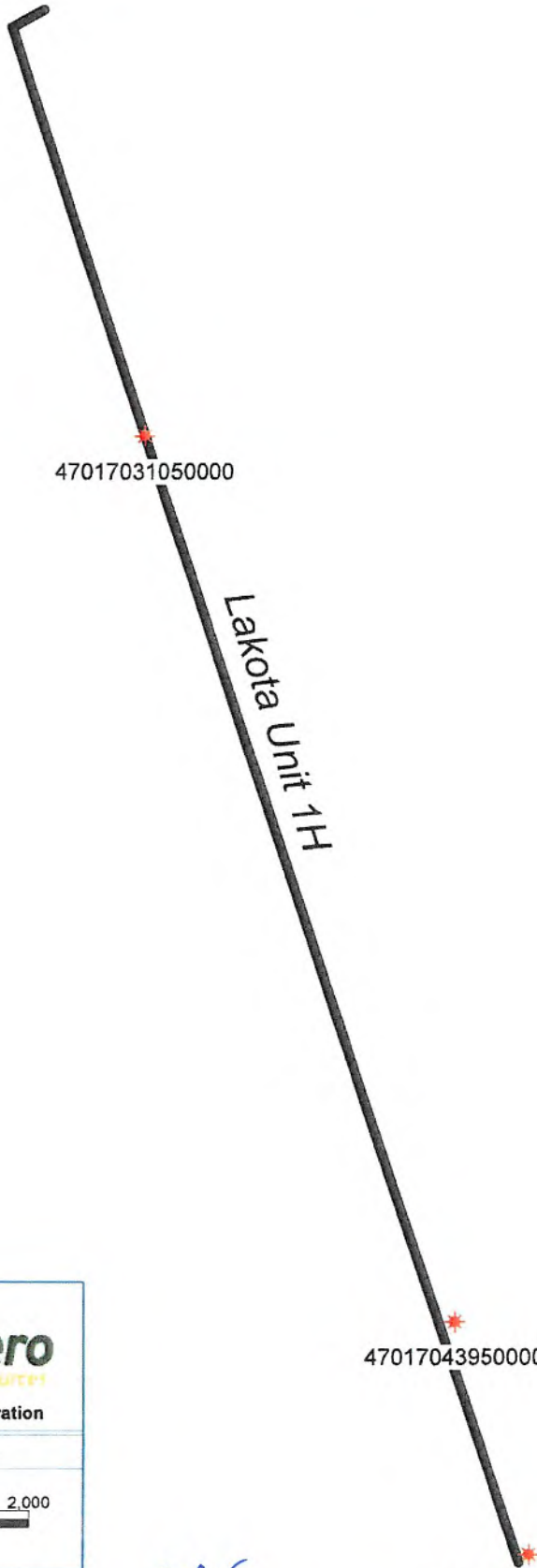
Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls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

*Note: Attach additional sheets as needed.

DAF
9/23/18

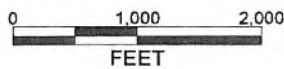
LAKOTA UNIT 1H (GEORGE SCOTT PAD)- AREA OF REVIEW 35-8-5.11


PERMIT MODIFICATION API # 47-017-06892



Antero Resources Corporation

Lakota Unit 1H - AOR



WELL SYMBOLS
 Gas Well

May 9, 2019

DAF
9/23/19

17-06892
MON

UWI (API Num)	Well Name	Well Number	Operator	Historical Operator	TD	Perforated Interval (shallowest, deepest)	Perforated Formation(s)	Produccible Formation(s) not perf'd
47017031050000	BRITTON WILLIAM G	6-1859	EQT PRODUCTION CO	CARNEGIE NAT GAS CRP	5,544	3427 - 5431	Warren, Riley, Alexander	Weir, Big Injun
47017043950000	BITTER NEVA ETAL	1375	XTO ENERGY INC	TRIO PETROLEUM INC	5,593	3383 - 5367	Speechley, Benson, Alexander	Warren, Weir, Big Injun
47017043940000	BITTER NEVA ETAL	1374	XTO ENERGY INC	TRIO PETROLEUM INC	5,497	3317 - 5269	Speechley, Benson, Alexander	Warren, Weir, Big Injun

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WV Department of
Environmental Protection

WW-6A1
(5/13)

Operator's Well No. Lakota Unit 1H

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

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:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
<u>Hugh Spencer et ux Lease</u>	Hugh Spencer et ux	Trio Petroleum Corp	1/8	0178/0717
	Trio Petroleum Corp	Waco Holding Company	Merger	0257/0225
	Waco Holding Company	Waco Oil & Gas Company Inc	Merger	0257/0234
	Waco Oil & Gas Company Inc	Linn Energy LLC	Assignment	0195/0541
	Linn Energy LLC	Linn Energy Holdings LLC	Name Change	0262/0483
	Linn Energy Holdings LLC	XTO Energy Inc	Assignment	0224/0155
	XTO Energy Inc	Antero Resources Corporation	Agreement	0440/0524

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

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

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

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

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

Well Operator: Antero Resources Corporation
 By: Diana Hoff RECEIVED
Office of Oil and Gas
 Its: VP of Operations

SEP 13 2019

Operator's Well Number Lakota Unit 1H

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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>Dorothy E. O'Hanlon Lease</u>			
Dorothy E. O'Hanlon	Antero Resources Corporation	1/8+	0412/0386
<u>Susan Woods Lease</u>			
Susan Woods	Antero Resources Corporation	1/8+	0354/0201
<u>WVSRA Lease</u>			
WVSRA	Antero Resources Appalachian Corporation	1/8+	0253/0409
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Joseph P. Lowther Lease</u>			
Joseph P. Lowther	Antero Resources Corporation	1/8+	0449/0572
<u>Susan H. Jones Lease</u>			
Susan H. Jones	Castle Brook Carbon Black Company	1/8	0024/0359
Castle Brook Carbon Black Company	Columbian Carbon Company	Assignment	0032/0414
Columbian Carbon Company	Columbia Fuel Corporation	Assignment	0079/0202
Columbia Fuel Corporation	Cities Service Oil Company	Merger	0153/0742
Cities Service Oil Company	Cities Service Company	Assignment	0103/0328
Cities Service Company	Cities Service Oil & Gas Corporation	Assignment	0132/0177
Cities Service Oil & Gas Corporation	OXY USA Inc	Name Change	0205/0614
OXY USA Inc	Ashland Exploration Inc	Assignment	0160/0679
Ashland Exploration Inc	Blazer Energy Corporation	Assignment	0181/0421
Blazer Energy Corporation	Eastern States Oil & Gas Inc	Name Change	0153/0742
Eastern States Oil & Gas Inc	Equitable Production Eastern States Inc	Name Change	0153/0742
Equitable Production Eastern States Inc	Equitable Production Company	Merger	WVSOS
Equitable Production Company	EQT Production Company	Name Change	0281/0346
EQT Production Company	Antero Resources Corporation	Agreement	0486/0513
<u>AE Fitzwilliams et al Lease</u>			
AE Fitzwilliams et al	The Carter Oil Company	1/8	0018/0055
The Carter Oil Company	Hope Natural Gas	Assignment	0026/0163
Hope Natural Gas	Consolidated Gas Supply Corporation	Assignment	0143/0345
Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation	Assignment	0135/0583
Consolidated Gas Transmission Corporation	CNG Transmission Corporation	Name Change	0332/0563
CNG Transmission Corporation	Dominion Transmission Inc	Name Change	0332/0570
Dominion Transmissions Inc	Consol Energy Holdings LLC	Assignment	0245/0001
Consol Energy Holdings LLC	Consol Gas Company	Merger	0292/0469
Consol Gas Company	CNX Gas Company LLC	Merger	0293/0252
CNX Gas Company LLC	Antero Resources Corporation	Assignment	0387/0216

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WV Department of
Environmental Protection

WW-6A1

Operator's Well Number Lakota Unit 1H

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Chapter 22, Article 6A, Section 5(a)(5)
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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>V. B. Chapman et ux Lease (TM 12 PCL 12)</u>			
V.B. Chapman, et ux	J.L. Mann	1/8	0020/0162
J.L. Mann	W.S. Hoskins, Trustee for Rock Run Oil and Gas Company	Assignment	0024/0003
W.S. Hoskins, Trustee for Rock Run Oil and Gas Company	Columbian Carbon Company	Assignment	0027/0470
Columbian Carbon Company	Columbian Fuel Corporation	Assignment	0079/0202
Columbian Fuel Corporation	Cities Service Oil Company	Merged	0153/0742
Cities Service Oil Company	Cities Service Company	Conveyed	0103/0328
Cities Service Company	Cities Service Oil and Gas Corporation	Assignment	0132/0177
Cities Service Oil and Gas Corporation	OXY USA Inc.	Name Change	0205/0614
OXY USA Inc.	Ashland Exploration, Inc.	Assignment	0160/0679
Ashland Exploration, Inc.	Ashland Exploration Holdings, Inc.	Name Change	Exhibit 2
Ashland Exploration Holdings, Inc.	Blazer Energy Corp.	Assignment	0181/0421
Blazer Energy Corp.	Eastern States Oil & Gas, Inc.	Name Change	0244/0154
Eastern States Oil & Gas, Inc.	Equitable Production-Eastern States, Inc.	Name Change	Exhibit 3
Equitable Production-Eastern States, Inc.	Equitable Production Company	Merged	0281/0346
Equitable Production Company	EQT Production Company	Name Change	0281/0346
EQT Production Company	Antero Resources Corporation	Assignment	0325/0539
<u>Johnson B. Smith et ux Lease</u>			
Johnson B. Smith et ux	Eastern Oil Company	1/8	0022/0231
Eastern Oil Company	A. W. Stevenson	Assignment	0042/0328
A. W. Stevenson	Eastern Union Gas Company	Assignment	0042/0330
Eastern Union Gas Company	Pittsburgh and West Virginia Gas Company	Assignment	0085/0334
Pittsburgh and West Virginia Gas Company	Equitable Gas Company	Assignment	0121/0257
Equitable Gas Company	Equitrans, Inc.	Assignment	0154/0475
Equitrans, Inc.	EQT Capital Corporation	Name Change	Exhibit 4
EQT Capital Corporation	Antero Resources Corporation	Assignment	0325/0528

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WV Department of
Oil and Gas Production

*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.

****CONTINUED ON NEXT PAGE****

WW-6A1

Operator's Well Number Lakota Unit 1H

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<u>V. B. Chapman et ux Lease (TM 12 PCL 13)</u>			
V.B. Chapman, et ux	J.L. Mann	1/8	0020/0162
J.L. Mann	W.S. Hoskins, Trustee for Rock Run Oil and Gas Company	Assignment	0024/0003
W.S. Hoskins, Trustee for Rock Run Oil and Gas Company	Columbian Carbon Company	Assignment	0027/0470
Columbian Carbon Company	Columbian Fuel Corporation	Assignment	0079/0202
Columbian Fuel Corporation	Cities Service Oil Company	Merged	0153/0742
Cities Service Oil Company	Cities Service Company	Conveyed	0103/0328
Cities Service Company	Cities Service Oil and Gas Corporation	Assignment	0132/0177
Cities Service Oil and Gas Corporation	OXY USA Inc.	Name Change	0205/0614
OXY USA Inc.	Ashland Exploration, Inc.	Assignment	0160/0679
Ashland Exploration, Inc.	Ashland Exploration Holdings, Inc.	Name Change	Exhibit 2
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Equitable Production Company	EQT Production Company	Name Change	0281/0346
EQT Production Company	Antero Resources Corporation	Assignment	0325/0539
<u>R.L Barnes et ux Lease</u>			
R.L. Barnes, et ux	South Penn Oil Company	1/8	0019/0071
South Penn Oil Company	Hope Natural Gas Company	Assignment	0023/0424
Hope Natural Gas Company	Consolidated Gas Supply Corporation	Assignment	0143/0345
Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation	Assignment	0135/0583
Consolidated Gas Transmission Corporation	CNG Transmission Corporation	Name Change	0332/0563
CNG Transmission Corporation	Dominion Transmission Inc	Name Change	0332/0570
Dominion Transmission Inc	Consol Energy Holdings LLC XVI	Assignment	0245/0001
Consol Energy Holdings LLC XVI	Consol Gas Company	Merge	0292/0469
Consol Gas Company	CNX Gas Company LLC	Merge	0293/0252
CNX Gas Company LLC	Antero Resources Corporation	Assignment	0317/0379
<u>Helen Ingrid Hall Lease</u>			
Helen Ingrid Hall	EQT Production Company	1/8	0292/0435
EQT Production Company	Antero Resources Corporation	Assignment	0321/0270
<u>E.C Jones, et al Lease</u>			
E.C. Jones, et al	N.S. Snyder	1/8	0018/0492
N.S. Snyder	Carnegie Natural Gas Company	Assignment	0092/0715
Carnegie Natural Gas Company	Carnegie Production Company	Assignment	0086/061
Carnegie Production Company	EQT Production Company	Name Change	Exhibit 5
EQT Production Company	Antero Resources Corporation	Assignment	0325/0539

RECEIVED 0292/0435
Office of Oil and Gas 0321/0270

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WV Department of Environmental Protection

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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
Kenneth Koebel Lease			
Kenneth Koebel	Antero Resources Corporation	1/8+	0453/0001
Spencer Enterprises LLC Lease			
Spencer Enterprises LLC	Jackson Fuel Corporation	1/8	0285/0547
Jackson Fuel Corporation	David C. Nichols II	Assignment	0285/0552
David C. Nichols II	Antero Resources Appalachian Corporation	Assignment	0285/0565
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	0046/0523
Robert L. Moore et al Lease			
Robert L. Moore et al	Jackson L. Smith Enterprises	1/8	0182/0286
Jackson L. Smith Enterprises	Cobham Gas Industries Inc	Assignment	0187/0572
Cobham Gas Industries Inc	Tri County Oil & Gas Inc	Assignment	0192/0631
Tri County Oil & Gas Inc	Hayhurst Company	Assignment	0217/0042
Hayhurst Company	Piney Holdings Inc	Assignment	0253/0146
Piney Holdings Inc	Antero Resources Corporation	Assignment	0632/0589

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Office of Oil and Gas

SEP 13 2019

WV Department of
Environmental Protection

17-06892
M00

**FORM WV-6A1
EXHIBIT 1**

FILED

JUN 10 2013

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



**IN THE OFFICE OF
SECRETARY OF STATE**

Fenney Baker, Manager
Corporations Division
Tel: (304)558-8000
Fax: (304)558-8381
Website: www.wvscd.com
E-mail: business@wvscd.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 Appalachia 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.)

Alwyn A. Schapp (303) 367-7310
Contact Name Phone Number

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

Print Name of Signer: Alwyn A. Schapp Title/Capacity: Authorized Person

Signature: *Alwyn A. Schapp* Date: June 10, 2013

"Important Legal Notice Regarding Signatures" For West Virginia Code §11D-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.

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SEP 13 2019

WV Department of
Environmental Protection

LATITUDE 39°20'00"

7,117'

LATITUDE 39°17'30" 3,116' TO BOTTOM HOLE

Antero Resources Corporation Well No. Lakota Unit 1H

NOTES: WELL 1H TOP HOLE INFORMATION: N: 296,529ft E: 1,650,975ft LAT: 39°18'27.25" LON: 80°44'00.55" BOTTOM HOLE INFORMATION: N: 283,238ft E: 1,654,798ft LAT: 39°16'16.41" LON: 80°43'09.62" WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS: WELL 1H TOP HOLE INFORMATION: N: 4,350,952m E: 522,993m BOTTOM HOLE INFORMATION: N: 4,346,922m E: 524,225m

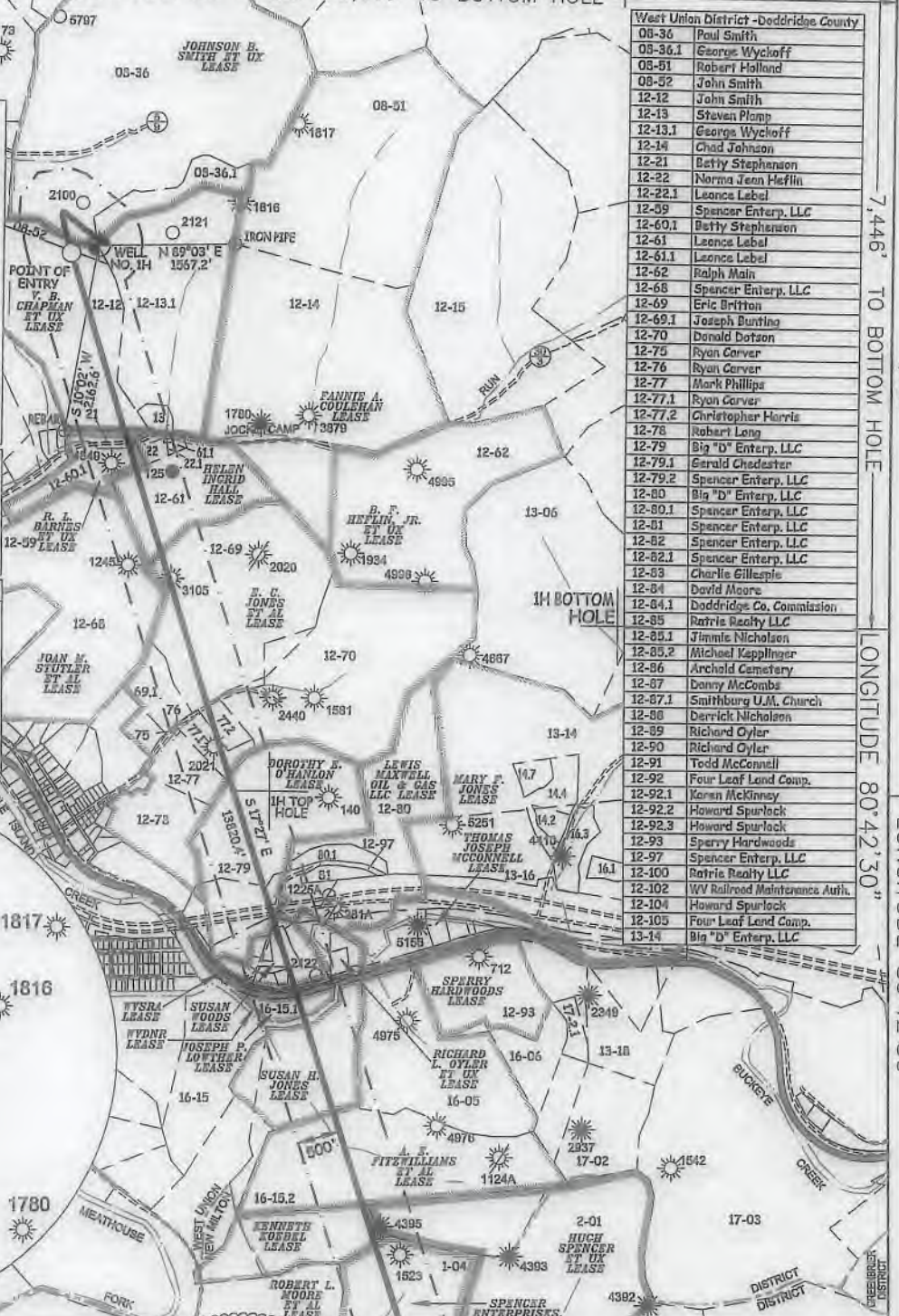
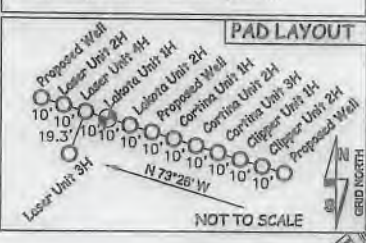


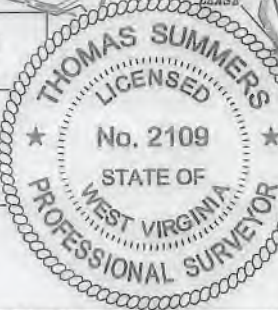
Table listing landowners and lease numbers for West Union District - Doddridge County, including names like Paul Smith, George Wycloff, and Spencer Enterprises, LLC.

7,446' TO BOTTOM HOLE LONGITUDE 80°42'30" LONGITUDE 80°42'30"

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

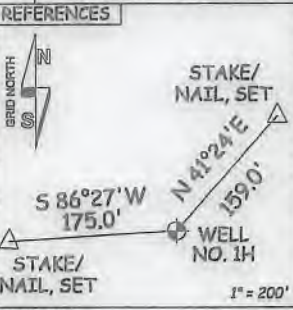


(NAD) 27 (UTM) ZONE 17 COORDS: WELL 1H TOP HOLE INFORMATION: N: 14,274,033ft E: 1,715,805ft POINT OF ENTRY INFORMATION: N: 14,273,921ft E: 1,715,484ft BOTTOM HOLE INFORMATION: N: 14,260,812ft E: 1,719,848ft

Table listing landowners and lease numbers for West Union District - Doddridge County and New Milton District - Doddridge County.

JOB # 18-034WA DRAWING # LAKOTA1HR3 SCALE 1" = 2000' 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 09/09/19 OPERATOR'S WELL# LAKOTA UNIT #1H



NOTE: NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.

WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL 47 - 017 - 06892 MOD LOCATION: ELEVATION 1,283' - AS BUILT WATERSHED HEADWATERS MIDDLE ISLAND CREEK QUADRANGLE SMITHBURG 7.5 DISTRICT WEST UNION COUNTY DODDRIDGE SURFACE OWNER GEORGE S. WYCKOFF ACREAGE 70.58 ACRES +/- OIL & GAS ROYALTY OWNER V. B. CHAPMAN ET UX; JOHNSON B. SMITH ET UX; R. L. BARNES ET UX; HELEN INGRID HALL; LEASE ACREAGE 158 AC +/-; 180 AC +/-; 222 AC +/-; 33 AC +/-; E. C. JONES ET AL.; DOROTHY E. OHANLON; SUSAN WOODS; WVSRA; JOSEPH P. LOWTHER; WVDNR; SUSAN H. JONES; 300 AC +/-; 69.88 AC +/-; 77.53 AC +/-; 301.19 AC +/-; 9 AC +/-; 0.9 AC +/-; 36 AC +/-; A. E. FITZ WILLIAMS ET AL.; KENNETH KOEPEL; SPENCER ENTERPRISES, LLC; ROBERT L. MOORE ET AL.; HUGH SPENCER ET UX; 138.5 AC +/-; 27.94 AC +/-; 43 AC +/-; 24 AC +/-; 132 AC +/- PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) MOD-BHL PLUG & ABANDON CLEAN OUT & REPLUG TARGET FORMATION MARCELLUS ESTIMATED DEPTH 7,500' TVD 22,800' 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

LATITUDE 39°20'00" 7,117'

LATITUDE 39°17'30" 3,116' TO BOTTOM HOLE

Antero Resources Corporation Well No. Lakota Unit 1H

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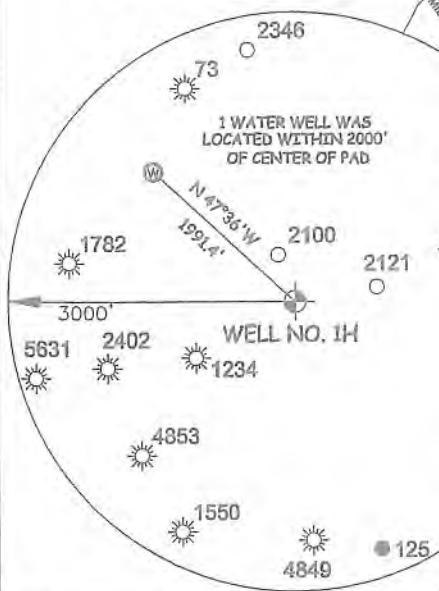
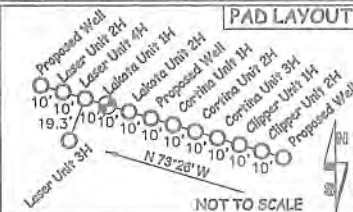


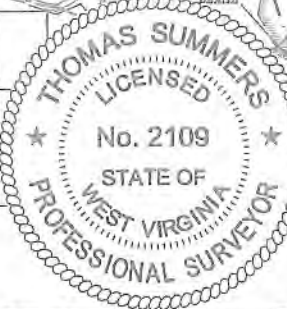
Table listing landowners and lease information for West Union District - Doddridge County, including names like Paul Smith, George Wyckoff, and various lease numbers.

Table listing landowners and lease information for West Union District - Doddridge County, including names like Lucien Sammons, David Mitchell, and various lease numbers.

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JOB # 18-034WA DRAWING # LAKOTA1HR3 SCALE 1" = 2000' MINIMUM DEGREE OF ACCURACY SUBMETER PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

LEGEND: Surface Owner Boundary Lines +/-, Interior Surface Tracts +/-, Existing Fence, Found monument, as noted. THOMAS SUMMERS P.S. 2109 DATE 09/09/19 OPERATOR'S WELL# LAKOTA UNIT #1H

REFERENCES: (NAD) 27 (UTM) ZONE 17 COORDS: WELL 1H TOP HOLE INFORMATION: N: 14,274,033ft E: 1,715,805ft POINT OF ENTRY INFORMATION: N: 14,273,921ft E: 1,715,484ft BOTTOM HOLE INFORMATION: N: 14,260,812ft E: 1,719,848ft

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7,446' TO BOTTOM HOLE LONGITUDE 80°42'30" LONGITUDE 80°42'30"

COUNTY NAME PERMIT

April 26, 2019




RE: **Permission to Permit and Drill on XTO Leasehold**

Doddridge County, West Virginia

Dear 

Antero Resources Corporation ("**Antero**") hereby requests permission of XTO Energy Inc. ("**XTO**") to proceed with its plans to drill one or more horizontal wells in, under, and through certain properties subject to oil and gas interests in the Target Depths owned or controlled by XTO located in Doddridge County, West Virginia (as more particularly described on Exhibit A to this letter agreement, and insofar as located within the Units (as defined below), the "**Properties**"), pursuant to the terms and conditions of this letter agreement. Antero and XTO are currently negotiating an acreage trade agreement for the exchange and/or granting of certain oil and gas interests in Doddridge County, West Virginia (the "**Potential Trade**"). Antero and XTO anticipate that the Potential Trade will include the Properties and Antero desires to commence drilling the Properties for the initial development of Antero's Clipper and Lakota Units (as more particularly described on Exhibit B to this letter agreement, the "**Units**") during the pendency of negotiations and in advance of the closing of the Potential Trade. As used herein, "**Target Depths**" means those depths from the top of the Rhinestreet formation, at a depth of 5,827 feet, as seen by the Antero Resources Corporation Rymer 4H pilot hole, API 47095022730000, Doddridge County, West Virginia, to the center of the earth.

In order to generate mutual goodwill between Antero and XTO, and for one hundred dollars (\$100.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, XTO hereby grants Antero the rights to apply for and obtain all applicable governmental permits for the drilling of one or more wellbore laterals in, under, and through the Properties (collectively, "**Wells**") and to drill such Wells; *provided*, that XTO expressly withholds and does not grant Antero the right to complete or produce the Wells on or under the Properties or to access or conduct surface operations on the Properties.

In the event that Antero and XTO do not finalize, execute and close the Potential Trade within one hundred and eighty (180) days after the date of this letter agreement (the "**Trade Deadline**"), then within ten (10) days after the Trade Deadline, (a) Antero will pay XTO a purchase price of \$ per net mineral acre for the Properties, and (b) XTO will concurrently transfer and convey the Properties to Antero pursuant to a mutually agreeable form of assignment, which will contain a special warranty of title by, through, and under XTO, but not otherwise and which, for the avoidance of doubt, will (unless otherwise agreed to by XTO and Antero in writing) reserve to XTO all of XTO's right, title, and interest in formations other than the Target Depths. If

Antero and XTO do not finalize, execute, and close the Potential Trade on or prior to or on date that is one hundred and fifty (150) days after the date of this letter agreement, either of Antero or XTO may elect to extend the Trade Deadline for an additional thirty (30) days (*provided* that the electing party must then be continuing to negotiate in good faith in order to continue to pursue the transactions contemplated by the Potential Trade) while reasonably accommodating Antero's ongoing development needs and requests for the Units.



Nothing in this letter agreement will diminish any current or future rights of XTO in the Properties or other properties. This letter agreement and the rights and obligations of the Antero and XTO hereunder will terminate upon the earlier of (i) the assignment of the Properties to Antero pursuant to the third paragraph above, or (ii) if and when Antero and XTO consummate the closing of the Potential Trade with respect to the Properties. This letter agreement will be binding upon XTO and Antero and their respective successors and assigns. In the event of any assignment or transfer of this letter agreement, the assigning or transferring party shall require such assignee or transferee to expressly assume and be bound by the terms of this letter agreement.

If the above meets your approval, please execute in the space provided below and return one signed copy to the letterhead address. Should you have any questions, please contact Tyler Adams at (303) 357-7249.

[Signature Page Follows.]

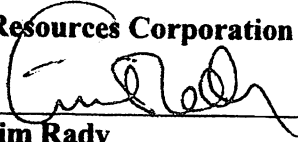
EXHIBIT B

UNITS

Unit Name(s)
Clipper
Lakota

Sincerely,

Antero Resources Corporation


By: **Tim Rady**
Title: **Vice President – Land**

Agreed to and accepted this 3RD day of JUNE, 2019.

XTO Energy Inc.

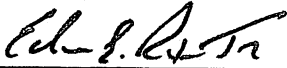

By: **Edwin S. Ryan, Jr.**
Title: **Agent and Attorney-in-Fact**
Date:

EXHIBIT A
PROPERTIES

County	District	Lessor	Lease Date	Book	Page
Doddridge	New Milton	Hugh "Bud" Spencer and Earledeen Spencer, his wife	11/14/1996	178	717
Doddridge	New Milton	Neva A. Ritter, widow	11/14/1996	179	45