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west virginia department of environmental protection

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

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

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 2H  
47-017-06893-00-00

**Lateral Extension 23,300' 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 2H  
Farm Name: GEORGE S WYCKOFF  
U.S. WELL NUMBER: 47-017-06893-00-00  
Horizontal 6A New Drill  
Date Modification Issued: October 11, 2019

Promoting a healthy environment.

WW-6B  
(04/15)

PERMIT MODIFICATION API # 47-017: 06893 MOD  
API NO. 47- 017 - 06893 MOD  
OPERATOR WELL NO. Lakota Unit 2H  
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 2H 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: 23300' MD

11) Proposed Horizontal Leg Length: 14163'

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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Office of Oil and Gas

SEP 23 2019

WV Department of  
Environmental Protection

DAF  
9/23/19

WW-6B  
(04/15)

PERMIT MODIFICATION API # 47-017- **uon**  
 API NO. 47- 017 - **06893**  
 OPERATOR WELL NO. Lakota Unit 2H  
 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#                    | 23300'                     | 23300'                       | 5999 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-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 |  |  |  |

*PAK*  
*9/23/15*



WW-6B  
(10/14)

PERMIT MODIFICATION API # 47-017-1 *moo*  
API NO. 47- 017 - 06893  
OPERATOR WELL NO. Lakota Unit 2H  
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.

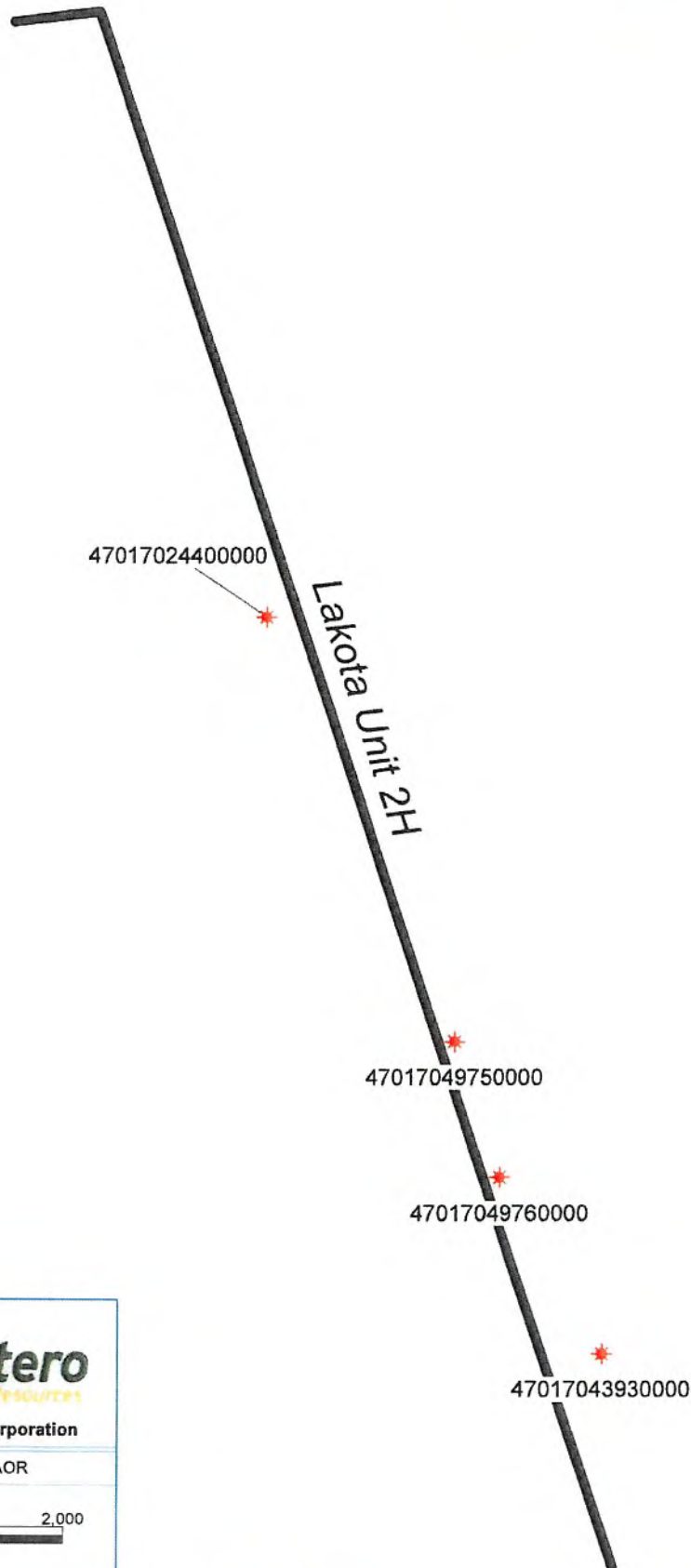
\*Note: Attach additional sheets as needed.

*DAS*  
*9/23/19*



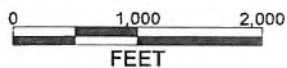
LAKOTA UNIT 2H (GEORGE SCOTT PAD)- AREA OF REVIEW 35-8-5.11

PERMIT MODIFICATION API # 47-017-06893 MOD



Antero Resources Corporation

Lakota Unit 2H - AOR



WELL SYMBOLS  
Gas Well

May 9, 2019

DAF  
4/23/19

17-06893 MOD

| UWI (API Num) | Well Name        | Well Number | Operator           | Historical Operator  | TD    | Perforated Interval (shallowest, deepest) | Perforated Formation(s)                                       | Productible Formation(s) not perf'd |
|---------------|------------------|-------------|--------------------|----------------------|-------|---|---|-------------------------------------|
| 4701702440000 | JONES-BLAIR      | 5           | EQT PRODUCTION CO  | CARNEGIE NAT GAS CRP | 5,200 | 3090 - 5049                               | Warren, Alexander   | Weir, Big Injun                     |
| 4701704975000 | BALLENGER        | 7175        | ALLIANCE PETR CORP | DOMINION EXPL&PROD   | 5,102 | 1418 - 4890                               | Maxton, Big Injun, Squaw, Gordon, Riley, Benson, Alexander    | Weir                                |
| 4701704976000 | BALLENGER        | 7176        | ALLIANCE PETR CORP | DOMINION EXPL&PROD   | 5,442 | 1934 - 5217                               | Salt Sands, Blue Monday, Big Injun, Gordon, Benson, Alexander | Weir                                |
| 4701704939000 | RITTER NEVA ETAL | 1373        | XTO ENERGY INC     | TRIO PETROLEUM INC   | 5,617 | 4179 - 5413                               | Baltown, Riley, Benson  | Warren, Weir, Big Injun             |

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Office of Oil and Gas

SEP 13 2019

WV Department of  
Environmental Protection

WW-6A1  
(5/13)

Operator's Well No. Lakota Unit 2H

**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 *Diana O. Hoff* RECEIVED  
Office of Oil and Gas  
 Its: Vice President Operations

SEP 13 2019

WW-6A1

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| Grantor, lessor, etc.                                  | Grantee, lessee, etc.                                  | Royalty           | Book/Page        |
|--|--|-------------------|------------------|
| <b><u>V. B. Chapman et ux Lease (TM 12 PCL 12)</u></b> |  |                   |                  |
| 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        |
| <b>EQT Production Company</b>                          | <b>Antero Resources Corporation</b>                    | <b>Assignment</b> | <b>0325/0539</b> |
| <b><u>Johnson B. Smith et ux Lease</u></b>             |  |                   |                  |
| 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        |
| <b>EQT Capital Corporation</b>                         | <b>Antero Resources Corporation</b>                    | <b>Assignment</b> | <b>0325/0528</b> |

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SEP 13 2019  
\*\*CONTINUED ON NEXT PAGE\*\*  
WV Department of  
Environmental Protection



WW-6A1

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| <b><u>V. B. Chapman et ux Lease (TM 12 PCL 13)</u></b> |  |                   |                  |
| 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        |
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| 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        |
| <b>EQT Production Company</b>                          | <b>Antero Resources Corporation</b>                    | <b>Assignment</b> | <b>0325/0539</b> |
| <b><u>Fannie A. Coulehan Lease</u></b>                 |  |                   |                  |
| Fannie A. Coulehan                                     | West Virginia Gas Company                              | 1/8               | 0018/0297        |
| West Virginia Gas Company                              | Eastern Oil Company                                    | Assignment        | 0018/0299        |
| Eastern Oil Company                                    | A.W. Stevenson   | Assignment        | 0042/0328        |
| A.W. Stevenson   | Eastern Union Gas Company                              | Assignment        | 0042/0328        |
| Eastern Union Gas Company                              | Pittsburgh & W.VA Gas Company                          | Assignment        | 0085/0334        |
| Pittsburgh & W.VA Gas Company                          | Equitable Gas Company                                  | Assignment        | 0121/0257        |
| Equitable Gas Company                                  | Equitrans, Inc.  | Assignment        | 0154/0475        |
| Equitrans, Inc.  | Equitrans, L.P.  | Name Change       | 0302/0123        |
| Equitrans, L.P.  | Equitable Production- Eastern States, Inc.             | Assignment        | 0192/0019        |
| Equitable Production- Eastern States, Inc.             | EQT Production Co.                                     | Name Change       | 0281/0346        |
| <b>EQT Production Co.</b>                              | <b>Antero Resources Corporation</b>                    | <b>Assignment</b> | <b>0325/0539</b> |
| <b><u>Helen Ingrid Hall Lease</u></b>                  |  |                   |                  |
| Helen Ingrid Hall                                      | EQT Production Company                                 | 1/8               | 0292/0435        |
| <b>EQT Production Company</b>                          | <b>Antero Resources Corporation</b>                    | <b>Assignment</b> | <b>0371/0270</b> |

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|---|---|-------------|-----------|
| <b><u>E.C Jones, et al Lease</u></b>                |   |             |           |
| 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  | 0186/061  |
| Carnegie Production Company                         | EQT Production Company                    | Name Change | Exhibit 5 |
| EQT Production Company                              | Antero Resources Corporation              | Assignment  | 0325/0539 |
| <b><u>Dorothy E. O'Hanlon Lease</u></b>             |   |             |           |
| Dorothy E. O'Hanlon                                 | Antero Resources Corporation              | 1/8+        | 0412/0386 |
| <b><u>Lewis Maxwell Oil &amp; Gas LLC Lease</u></b> |   |             |           |
| Lewis Maxwell Oil & Gas LLC                         | Antero Resources Corporation              | 1/8+        | 0420/0594 |
| <b><u>WVDNR Lease</u></b>                           |   |             |           |
| WVDNR   | Antero Resources Corporation              | 1/8+        | 0483/0188 |
| <b><u>Thomas Joseph McConnell Lease</u></b>         |   |             |           |
| Thomas Joseph McConnell                             | Antero Resources Corporation              | 1/8         | 0205/0381 |
| <b><u>WVSRA Lease</u></b>                           |   |             |           |
| WVSRA   | Antero Resources Appalachian Corporation  | 1/8+        | 0253/0409 |
| Antero Resources Appalachian Corporation            | Antero Resources Corporation              | Name Change | Exhibit 1 |
| <b><u>AE Fitzwilliams et al Lease</u></b>           |   |             |           |
| 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 Transmission 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 |
| <b><u>Hugh Spencer et ux Lease</u></b>              |   |             |           |
| 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 |

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Office of Oil and Gas  
SEP 13 2018  
WV Department of Environmental Protection

WW-6A1

Operator's Well Number Lakota Unit 2H

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 |
|--|--|-------------|-----------|
| <b>Spencer Enterprises LLC Lease</b>     |  |             |           |
| 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 |

RECEIVED  
Office of Oil and Gas

SEP 13 2019

WV Department of  
Environmental Protection



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



Fenny Barker, Manager  
Corporations Division  
Tel: (304)558-8000  
Fax: (304)558-8381  
Website: www.wvscot.com  
E-mail: business@wvscot.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: 6/26/2008
- 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.)

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

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

Print Name of Signer: Allyn A. Schopp Title/Capacity: Authorized Person  
Signature: [Handwritten Signature] Date: June 10, 2013

*\*Important Legal Notice Regarding Signatures\** For West Virginia Code §31D-1-12b. 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.

SEP 13 2019





September 12, 2019

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 57<sup>th</sup> Street  
Charleston, WV 25304

Ms. Laura Adkins:

Antero Resources Corporation (Antero) would like to submit the following permit modification for an approved well on the existing George Scott Pad: Clipper Unit 1H (API # 47-017-06887), Clipper Unit 2H (API # 47-017-06888), Cortina Unit 2H (API # 47-017-06890), Cortina Unit 3H (API # 47-017-06891), Lakota Unit 1H (API # 47-017-06892) & Lakota Unit 2H (API # 47-017-06893).

Attached you will find the following documents:

- REVISED Form WW-6B, which shows the updated POE & Measured Depth
- REVISED Form WW-6A1, which shows the new leases we will be drilling into
- REVISED Mylar Plat, which shows the new Lateral Length & Estimated Measured Depth
- AOR & As-Built Design

If you have any questions please feel free to contact me at (303) 357-7223.

Thank you in advance for your consideration.

Sincerely,

A handwritten signature in black ink, appearing to read "Megan Griffith", with a long horizontal stroke extending to the right.

Megan Griffith  
Permitting Agent  
Antero Resources Corporation

Enclosures

RECEIVED  
Office of Oil and Gas

SEP 13 2019  
WV Department of  
Environmental Protection



LATITUDE 39°20'00"

7,108'

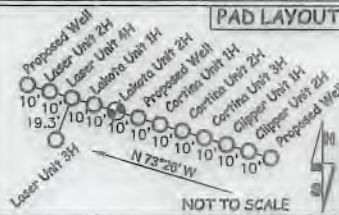
LATITUDE 39°17'30"

2,018' TO BOTTOM HOLE

Antero Resources Corporation Well No. Lakota Unit 2H

NOTES: WELL 2H TOP HOLE INFORMATION: N: 296,526ft E: 1,650,985ft LAT: 39°18'27.22" LON: 80°44'00.43" BOTTOM HOLE INFORMATION: N: 283,162ft E: 1,655,895ft LAT: 39°16'15.80" LON: 80°42'55.66" 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 2H TOP HOLE INFORMATION: N: 4,350,951m E: 522,996m BOTTOM HOLE INFORMATION: N: 4,346,905m E: 524,559m



WV NORTH ZONE GRID NORTH

7,508' TO BOTTOM HOLE

9,387'

LONGITUDE 80°42'30"

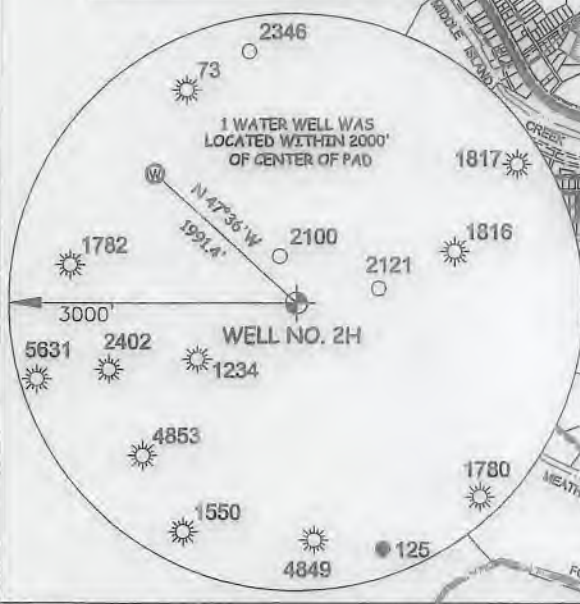
LONGITUDE 80°42'30"

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

Table listing landowners and lease information for the West Union District - Doddridge County, including names like Jimmie Nicholson, Michael Kapflinger, and various LLCs.

Table listing landowners and lease information for the West Union District - Doddridge County, including names like Lucien Summons, John Strickling, and various LLCs.

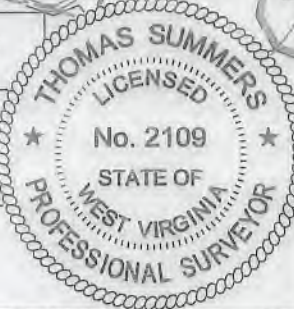
Table listing landowners and lease information for the West Union District - Doddridge County, including names like Ruby Ballenger, Helen Jones, and various LLCs.



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.



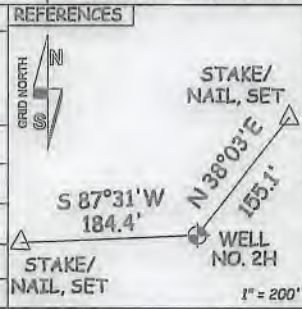
STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS. WILLOW LAND SURVEYING PLLC, 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415



(NAD) 27 (UTM) ZONE 17 COORDS: WELL 2H TOP HOLE INFORMATION: N: 14,274,031ft E: 1,715,814ft POINT OF ENTRY INFORMATION: N: 14,274,180ft E: 1,716,451ft BOTTOM HOLE INFORMATION: N: 14,260,754ft E: 1,720,945ft

JOB # 18-034WA DRAWING # LAKOTA2HR3 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 #2H



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.

Form containing well details: WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL 47 - 017 (IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X STATE COUNTY PERMIT 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; FANNIE A. COULAHAN; HELEN INGRID HALL; LEASE ACREAGE 156 AC +/- 180 AC +/- 234.94 AC +/- 33 AC +/- E.C. JONES ET AL.; DOROTHY E. O'HANLON; LEWIS MAXWELL OIL & GAS LLC; WVDNR; THOMAS JOSEPH MCCONNELL; 300 AC +/- 69.86 AC +/- 54.94 AC +/- 8.9 AC +/- 24.45 AC +/- WVSRA; A. E. FITZWILLIAMS ET AL.; HUGH SPENCER ET UX; SPENCER ENTERPRISES, LLC 301.19 AC +/- 138.5 AC +/- 132 AC +/- 43 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 23,300' 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

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**

| <b>Unit Name(s)</b> |
|---------------------|
| Clipper             |
| Lakota              |

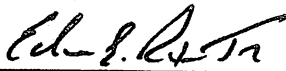
Sincerely,

**Antero Resources Corporation**

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

Agreed to and accepted this 3<sup>RD</sup> day of ~~April~~ JUNE, 2019.

**XTO Energy Inc.**

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

**EXHIBIT A**  
**PROPERTIES**

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