

west virginia department of environmental protection

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

Harold D. Ward, Cabinet Secretary www.dep.wv.gov

Monday, March 15, 2021 PERMIT MODIFICATION APPROVAL Horizontal 6A / New Drill

# ANTERO RESOURCES CORPORATION 1615 WYNKOOP STREET

## DENVER, CO 80202

Re: Permit Modification Approval for TAPEATS UNIT 2H 47-095-02714-00-00

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:TAPEATS UNIT 2HFarm Name:KENNETH TOMBLN ET ALU.S. WELL NUMBER:47-095-02714-00-00Horizontal 6ANew DrillDate Modification Issued:3/15/2021

Promoting a healthy environment.

PERMIT MODIFICATION API # 47-095-02714

API NO. 47-095 - 02714 OPERATOR WELL NO, Tapeats Unit 2H Well Pad Name: Grand Pad

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

| 1) Well Operator                     | r: Antero R   | esources   | Corporat  | 49450  | 7062                                   | 095-Tyler                | Ellsworth  | Porter Falls 7.5' |
|--------------------------------------|---|--|---|--|--|--------------------------|--|-------------------|
| ,                                    |   |  |   | Operat                                       |  | County                   | District   | Quadrangle        |
| 2) Operator's W                      | ell Number:   | Tapeats U  | nit 2H  |  | Well Pac                               | l Name: Grand            | l Pad  |                   |
| 3) Farm Name/S                       | 3) Farm Name/Surface Owner: Kenneth Tomblin et al Public Road Access: Gorrells Run Road |  |   |  |  |                          |  |                   |
| 4) Elevation, cur                    | rent ground:  | 1268'  | Ele   | evation,                                     | proposed                               | post-construction        | on: ~1243  | I                 |
| , ,                                  | (a) Gas X   | allen Son var felsjold af it for innen andere son en son | Oil   | entra de energia de la compañía da serie com | Unde                                   | erground Storag          | ;e   |                   |
| ,                                    | (b)If Gas S   | Shallow  | Х   |  | Deep                                   | 1. ( )                   |  |                   |
|                                      | H   | Iorizontal   | Х   |  |  |                          |  | Dmit              |
| 6) Existing Pad:                     | Yes or No   | /es  |   | n yakana kata kata kata kata kata kata kata  |  | av.                      |  | 3-10-2]           |
| 7) Proposed Tary<br>Marcellus Sha    |   |  |   | -  |  | and Expected Pressure- 2 |  |                   |
| 8) Proposed Tota                     | al Vertical De  | epth: 7300   | )' TVD  |  |  |                          |  |                   |
| 9) Formation at '                    |   | -  | Marcellus   |  |  |                          |  |                   |
| 10) Proposed To                      | tal Measured  | Depth:   | 26900' MI   | D  |  |                          |  |                   |
| 11) Proposed Ho                      | rizontal Leg  | Length: 1  | 6155'   |  |  |                          |  |                   |
| 12) Approximate                      | Fresh Water   | r Strata Dep   | oths:   | 25'  |  |                          |  |                   |
| 13) Method to D                      | etermine Fres   | sh Water D   | epths: 4  | 7-095-0                                      | 2267                                   |                          | 1  |                   |
| 14) Approximate                      | Saltwater D   | epths: 23  | 05'   |  |  |                          | naalan taamaa ay ay ah sid coo too ar too ka too bahara  |                   |
| 15) Approximate                      | Coal Seam I   | Depths: 43   | 31'   |  |  |                          |  |                   |
| 16) Approximate                      | Depth to Pos  | ssible Void  | l (coal mir   | ne, karst                                    | , other):                              | None Anticipat           | ed   |                   |
| 17) Does Propos<br>directly overlyin |   |  |   | ns<br>Ye                                     | s                                      | No                       | X  |                   |
| (a) If Yes, prov                     | ide Mine Info   | o: Name:   |   |  |  |                          |  | -                 |
|                                      |   | Depth:   |   |  |  |                          |  |                   |
|                                      |   | Seam:  | al activity of the second s | 0.2000 at 510 per ser anti-                  | Million and Balance Constants of State |                          | وروي مرد المرد الم |                   |
|                                      |   | Owner  | •   |  |  |                          |  |                   |

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WW-6B (04/15)

## 03/19/2021

PERMIT MODIFICATION API # 47-095-02714

 API NO. 47-095
 - 0274

 OPERATOR WELL NO. Tapeats Unit 2H

Well Pad Name: Grand Pad

(ST/70) 89-MM

## CASING AND TUBING PROGRAM

(81

| Liners       |                          |  |              |                                  |                               |  |                    |
|--------------|--------------------------|--|--------------|----------------------------------|-------------------------------|--|--------------------|
| ZaiduT       | <b></b> 3/8"             | wəN                                    | 08-N         | #L.4                             |                               |  |                    |
| Production   | .2/1-9                   | wəN                                    | 011-d        | 53#                              | 56900                         | 56900  | 14 .uO 6869        |
| Intermediate |                          |  |              |                                  |                               |  |                    |
| Coal         | " <mark>8/</mark> 9-6    | wəN                                    | 99-r         | #9E                              | 5600                          | 5600   | CTS, 1018 Cu. Ft.  |
| Fresh Water  | 13-3/8 <sub>11</sub>     | wəN                                    | 1-22         | #9.43                            | 300                           | 300  | CTS, 417 Cu. Ft.   |
| Conductor    | 50u                      | wəN                                    | 07-H         | #†6                              | 08                            | 08   | CTS, 218 Cu. Ft.   |
| LXLE         | <u>Size</u> ( <u>m</u> ) | <u>Used</u><br><u>Or</u><br><u>New</u> | <u>Grade</u> | <u>(Ib/fi)</u><br>Weight per fi. | FOOTAGE: For<br>Drilling (ft) | <u>INTERVALS:</u><br><u>Left in Well</u><br>( <u>ff)</u> | CFMENL:<br>CEMENL: |

1 8-01-8 AW

|                                       | I                    |  |                         |                                  |                           |                  | riners       |
|---------------------------------------|----------------------|--|-------------------------|----------------------------------|---------------------------|------------------|--------------|
|                                       |                      |  | 11,200                  | "61.0                            | "877.4                    | "8\£-2           | ZuiduT       |
| 8.1-H & 44.1-ZO9\H                    | H - INT & SOGVI-beau | 5200   | 15,630                  | "B14.0                           | 8-3/4" & 8-1/2"           | 11/2"            | Production   |
|                                       |                      |  |                         |                                  |                           |                  | Intermediate |
| 81.1~                                 | A sselD              | 1600   | 3250                    | 0'325"                           | 12-1/4"                   | "8/9-6           | [603]        |
| 81.1~                                 | A sasio              | 1000   | 5230                    | "85.0                            | 12-1/5"                   | "8\E-E1          | Fresh Water  |
| 81.1~                                 | A seelD              | 90   | 1230                    | "864.0                           | 54"                       | 50 <sub>11</sub> | Conductor    |
| Cement<br><u>Yield</u><br>(cu. ft./k) | <u>Cement</u>        | Anticipated<br>Max. Internal<br>Pressure (psi) | Burst Pressure<br>(psi) | <u>Wall</u><br>Thickness<br>(in) | Wellbore<br>Diameter (in) | (mi) əziZ        | LXPE         |

## *<b>LACKERS*

| ∀/ |   | Depths Set: |
|----|---|-------------|
| ∀/ | N | :səziS      |
| ∀/ | N | :bniX       |

E to 2 ageq

WW-6B (10/14) API NO. 47- 095 - 02714 OPERATOR WELL NO. Tapeads Unit 2H Well Pad Name: Grand 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.

DMH 7-10-21

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): Existing 44.34 acres

22) Area to be disturbed for well pad only, less access road (acres): Existing 13.72 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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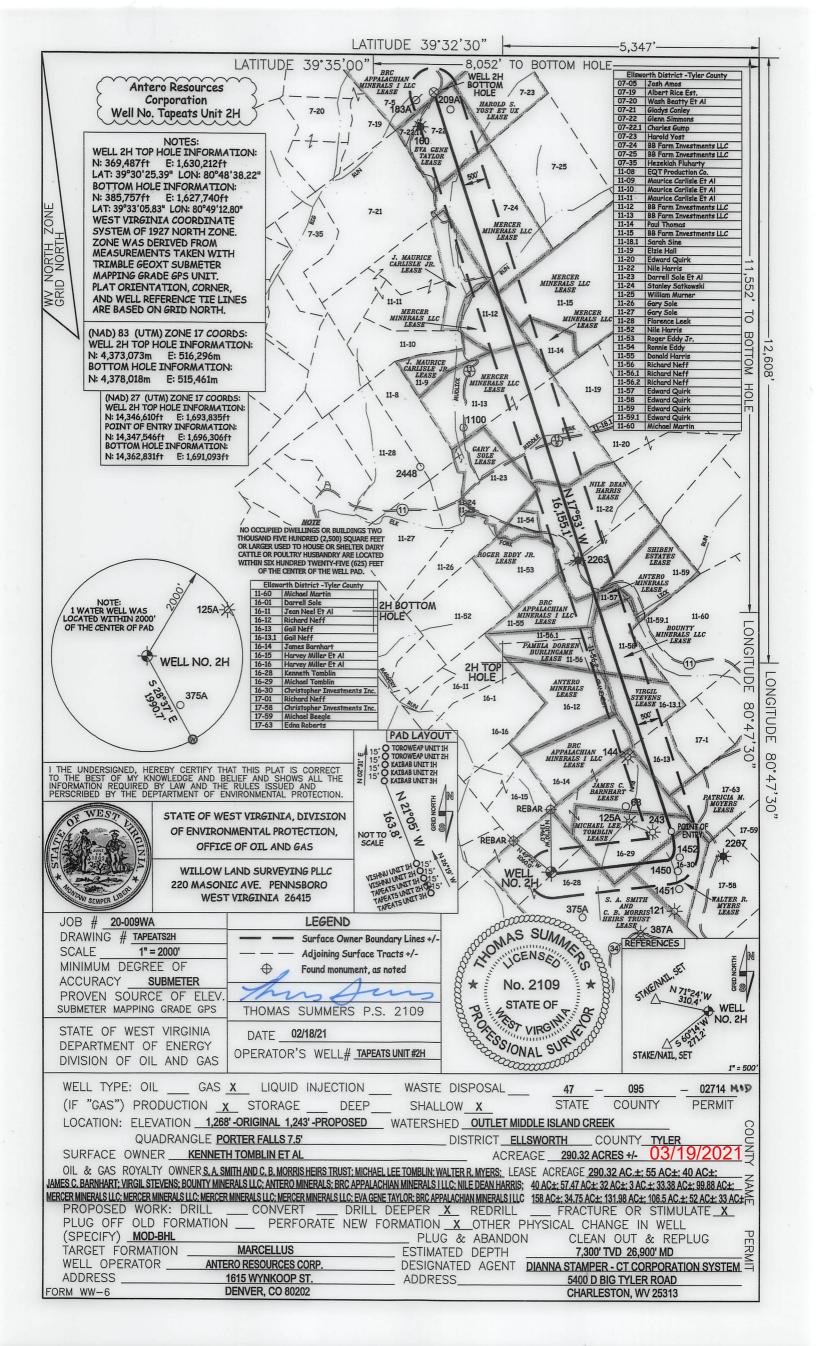


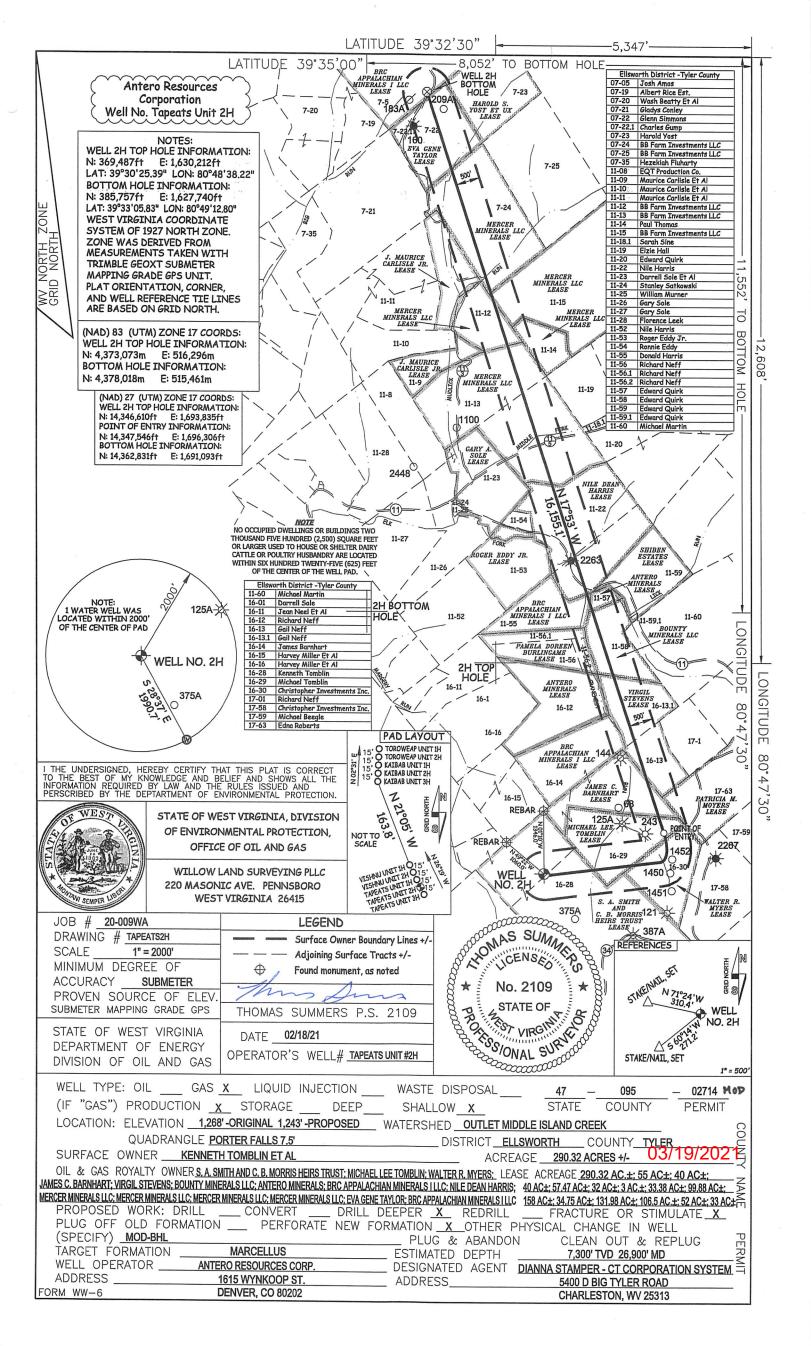
|                |                       | -           |                    |                    |       |   |                         |                                    |
|----------------|-----------------------|-------------|--------------------|--------------------|-------|---|-------------------------|------------------------------------|
| UWI (APINum)   | Well Name             | Well Number | Operator           | Hist Oper          | TD    | Perforated Interval (shallowest, deepest) | Perforated Formation(s) | Producible Formation(s) not perf'd |
| 47095022630000 | HARRIS                | 3V          | ALLIANCE PETR CORP | ALLIANCE PETR CORP | 3,590 | 2150 - 2549                               | Weir, Gordon            | Alexander, Benson                  |
| 47095002430000 | FERRELL NANCY H HEIRS | 2           | TRIAD HUNTER LLC   | EDGAR OIL          |       | 1938 - 1938                               | Keener                  | Weir, Alexander, Benson            |

WV Department or Environmental Protection

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Operator's Well Number

Tapeats 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                               |
|---|--------------------------------|--------------------------------|---|
| <u>S.A. Smith &amp; C. B. Morris Heirs Trust Lease</u><br>S.A. Smith & C. B. Morris Trust Heirs | Antero Resources Corporation   | 1/8+                           | 0022/0268                               |
| S.A. Smith & C. B. Morris Trust Heirs   | Antero Resources Corporation   | 1/8+                           | 0022/0208                               |
| Michael Lee Tomblin Lease   |                                |                                |   |
| Michael Lee Tomblin   | Antero Resources Corporation   | 1/8                            | 0420/0497                               |
|   |                                |                                |   |
| Walter R. Myers Lease   |                                |                                |   |
| Walter R. Myers   | Petroedge Energy LLC           | 1/8+                           | 0411/0351                               |
| Petroedge Energy LLC  | Statoil USA Onshore Properties | Assignment                     | 0436/0001                               |
| Statoil USA Onshore Properties  | EQT Production Company         | Assignment                     | 0539/0239                               |
| EQT Production Company  | Antero Resources Corporation   | Assignment                     | 0663/0001                               |
|   |                                |                                |   |
| Michael Lee Tomblin Lease   |                                |                                |   |
| Michael Lee Tomblin   | Antero Resources Corporation   | 1/8                            | 0420/0497                               |
| James C. Barnhart Lease   |                                |                                |   |
| James C. Barnhart   | Petroedge Energy LLC           | 1/8+                           | 0400/0184                               |
| Petroedge Energy LLC  | Statoil USA Onshore Properties |                                | 0436/0001                               |
| Statoil USA Onshore Properties  |                                | Assignment                     | • |
| EQT Production Company  | EQT Production Company         | Assignment                     | 0539/0239                               |
| EQT Production company  | Antero Resources Corporation   | Assignment                     | 0663/0001                               |
| Virgil Stevens Lease  |                                |                                |   |
| Virgil Stevens  | Antero Resources Corporation   | 1/8+                           | 0624/0048                               |
|   |                                | -, - *                         |   |
| Bounty Minerals LLC Lease   |                                |                                |   |
| Bounty Minerals LLC   | Antero Resources Corporation   | 1/8+                           | 0508/0268                               |
|   |                                |                                |   |
| Antero Minerals Lease   |                                |                                |   |
|   |                                |                                |   |
| BRC Appalachian Minerals I LLC Lease  |                                |                                |   |
| BRC Appalachian Minerals I LLC  | Statoil USA Onshore Properties | 1/8                            | 0369/0300                               |
| Statoil USA Onshore Properties  | EQT Production Company         | Assignment RECEIVED            | 0539/0239                               |
| EQT Production Company  | Antero Resources Corporation   | Assignment Office of Oil and C | aas 0663/0001                           |
| Nilo Doon Howis Loose   |                                |                                |   |
| Nile Dean Harris Lease  |                                | MAR 0 3 202                    | 21                                      |
| Nile Dean Harris  | Statoil USA Onshore Properties | 1/8+                           | 0449/0154                               |
| Statoil USA Onshore Properties  | EQT Production Company         | Assignment WV Department       | 0539/0239                               |
| EQT Production Company  | Antero Resources Corporation   | Assignment Environmental Prote | 0663/0001                               |
|   |                                |                                |   |

\*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.

Operator's Well Number Tapeats Unit 2H

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| Grantor, lessor, etc.  | Grantee, lessee, etc.        | Royalty | Book/Page |
|--|------------------------------|---------|-----------|
| <u>Mercer Minerals LLC Lease (TM 11 PCL 12)</u><br>Mercer Minerals LLC | Antero Resources Corporation | 1/8+    | 0547/0640 |
| Mercer Minerals LLC Lease (TM 11 PCL 14)<br>Mercer Minerals LLC        | Antero Resources Corporation | 1/8+    | 0547/0640 |
| <u>Mercer Minerals LLC Lease (TM 11 PCL 15)</u><br>Mercer Minerals LLC | Antero Resources Corporation | 1/8+    | 0547/0640 |
| <u>Eva Gene Taylor Lease</u><br>Eva Gene Taylor                        | Antero Resources Corporation | 1/8+    | 0575/0413 |

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MAR 0 3 2021

WV Department of Environmental Protection

\*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.



WW-6A1 (5/13)

Operator's Well No. Tapeats Unit 2H

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| Lease Name or                     |                                |                                |            |           |
|-----------------------------------|--------------------------------|--------------------------------|------------|-----------|
| Number                            | Grantor, Lessor, etc.          | Grantee, Lessee, etc.          | Royalty    | Book/Page |
| BRC Appalachian Minerals I LLC Le | ase                            |                                |            |           |
|                                   | BRC Appalachian Minerals I LLC | Statoil USA Onshore Properties | 1/8        | 0378/0764 |
|                                   | Statoil USA Onshore Properties | EQT Production Company         | Assignment | 0539/0239 |
|                                   | EQT Production Company         | Antero Resources Corporation   | Assignment | 0663/0001 |

\*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

Act

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 Oil and Gas

|  | Well Operator: | Antero Resources Corporati | on MAR 0 3 2021                              |
|--|----------------|----------------------------|--|
| *Co-tenancy utilization – At least 7<br>mineral owners in tract. At least 75% of<br>the royalty owners have executed a<br>lease on the tract. The interests of the<br>remaining co-tenants were acquired | By:            | Tim Rady                   |  |
|  | Its:           | VP of Land                 | WV Department of<br>Environmental Protection |
| pursuant to the Co-tenancy<br>Modernization and Majority Protection  |                |                            |  |

Page 1 of <u>1</u> 03/19/2021



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

Ms. Laura Adkins:

March 1, 2021

Antero Resources Corporation (Antero) would like to submit the following permit modifications for the following approved wells on the existing Grand Pad: Tapeats Unit 1H (API # 47-095-02713) & Tapeats Unit 2H (API # 47-095-02714).

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, Megan Griffith

Permitting Agent Antero Resources Corporation

Enclosures

Inspector Signed Gpies VS Stamped ? Tombling Kenneth Vs Michael Lee

MAR 0 3 2021

WV Department of Environmental Protection 03/19/2021