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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)

Wednesday, June 13, 2018  
PERMIT MODIFICATION APPROVAL  
Horizontal 6A / Horizontal 6A Well - 1

ANTERO RESOURCES CORPORATION  
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for BILL UNIT 2H  
47-085-10241-00-00

**Shift and extend lateral**

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: BILL UNIT 2H  
Farm Name: COSTILOW, DONALD L.  
U.S. WELL NUMBER: 47-085-10241-00-00  
Horizontal 6A Horizontal 6A Well - 1  
Date Modification Issued: June 13, 2018

Promoting a healthy environment.

06/15/2018

WW-6B  
(04/15)

API NO. 47-085 - 10241  
OPERATOR WELL NO. Bill Unit 2H  
Well Pad Name: Bison Pad

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

1) Well Operator: Antero Resources Corp. 494488557 085 - Ritchie Clay Pennsboro 7.5'  
Operator ID County District Quadrangle

2) Operator's Well Number: Bill Unit 2H Well Pad Name: Bison Pad

3) Farm Name/Surface Owner: Donald L. Costilow Public Road Access: CR 50/26

4) Elevation, current ground: 1221' Elevation, proposed post-construction: 1221'

5) Well Type (a) Gas  Oil  Underground Storage   
Other   
(b) If Gas Shallow  Deep   
Horizontal

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Environmental Protection

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Marcellus Shale: 7000' TVD, Anticipated Thickness 75 feet, Associated Pressure 2800#

8) Proposed Total Vertical Depth: 7000'

9) Formation at Total Vertical Depth: Marcellus Shale

10) Proposed Total Measured Depth: 14600'

11) Proposed Horizontal Leg Length: 6546'

12) Approximate Fresh Water Strata Depths: 119', 300', 446'

13) Method to Determine Fresh Water Depths: Offset well records. Depths have been adjusted according to surface elevations.

14) Approximate Saltwater Depths: 833', 1192', 1695', 1715'

15) Approximate Coal Seam Depths: 826'

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: \_\_\_\_\_

WW-6B  
(04/15)

API NO. 47- 085 - 10241  
OPERATOR WELL NO. Bill Unit 2H  
Well Pad Name: Bison 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	54.5#	500' *see #19	500' *see #19	CTS, 695 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2500'	2500'	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	23#	14600'	14600'	3607 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

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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"	2730	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"	12630	2500	Lead-H/POZ & Tail - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11200			
Liners							

**PACKERS**

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



WW-6B  
(10/14)

API NO. 47-085 - 10241

OPERATOR WELL NO. Bill Unit 2H

Well Pad Name: Bison 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 freshwater 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."

Max Pressure - 9300 lbs

Max Rate - 80 bpm

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21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 19.91 existing acres

22) Area to be disturbed for well pad only, less access road (acres): 6.00 existing 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 + 0.5% C51.

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.



LATITUDE 39°20'00"

7,510'

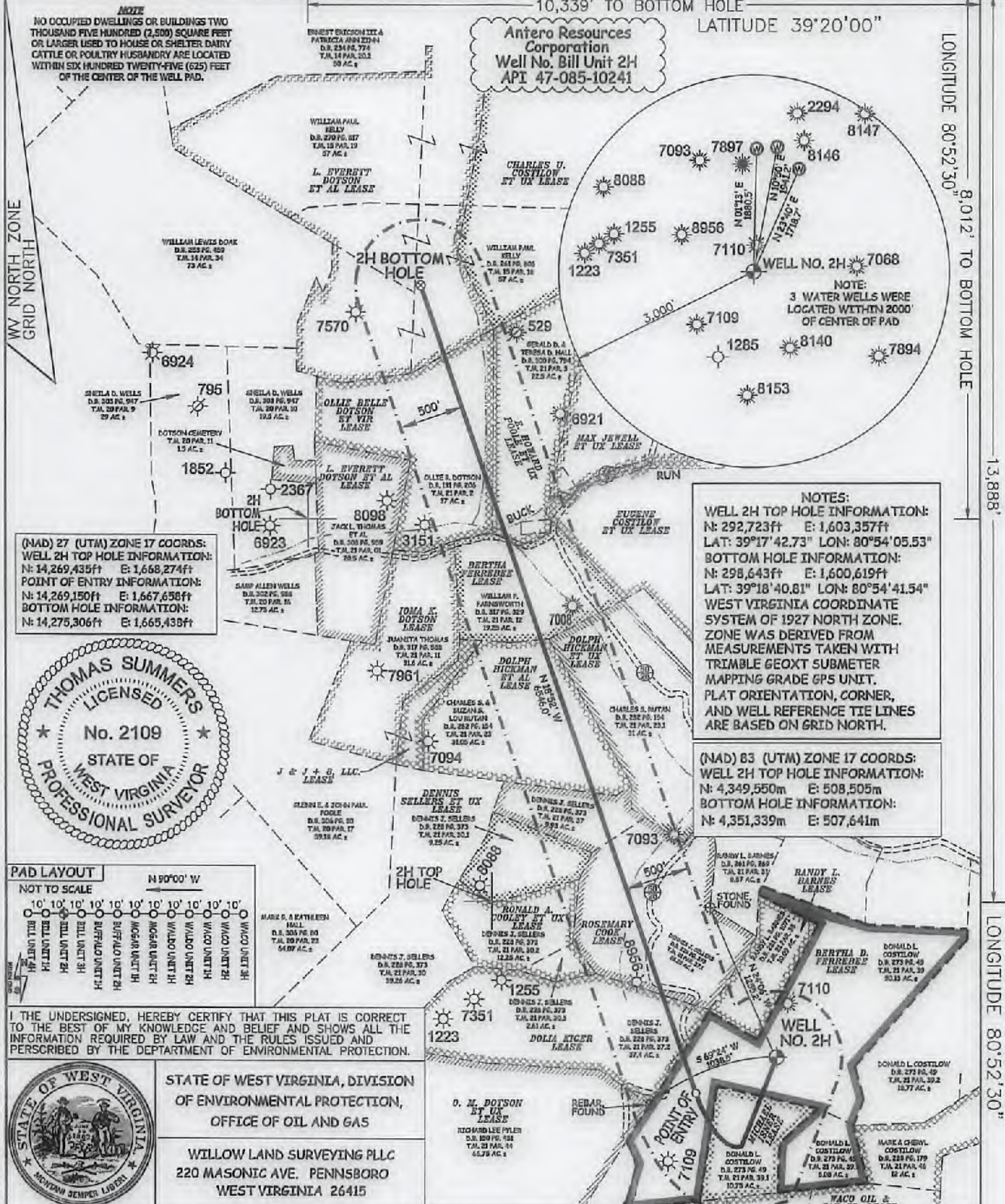
10,339' TO BOTTOM HOLE

LATITUDE 39°20'00"

LONGITUDE 80°52'30"

8,012' TO BOTTOM HOLE

LONGITUDE 80°52'30"



**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.

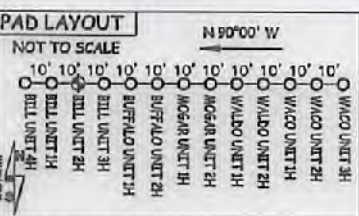
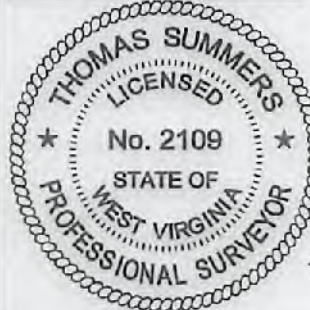
**Antero Resources Corporation**  
**Well No. Bill Unit 2H**  
**API 47-085-10241**

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

**NOTES:**  
**WELL 2H TOP HOLE INFORMATION:**  
 N: 292,723ft E: 1,603,357ft  
 LAT: 39°17'42.73" LON: 80°54'05.53"  
**BOTTOM HOLE INFORMATION:**  
 N: 298,643ft E: 1,600,619ft  
 LAT: 39°18'40.81" LON: 80°54'41.54"  
 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: 4,349,550m E: 508,505m  
**BOTTOM HOLE INFORMATION:**  
 N: 4,351,339m E: 507,641m

**(NAD) 27 (UTM) ZONE 17 COORDS:**  
**WELL 2H TOP HOLE INFORMATION:**  
 N: 14,269,435ft E: 1,658,274ft  
**POINT OF ENTRY INFORMATION:**  
 N: 14,269,150ft E: 1,667,658ft  
**BOTTOM HOLE INFORMATION:**  
 N: 14,275,306ft E: 1,665,439ft



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.

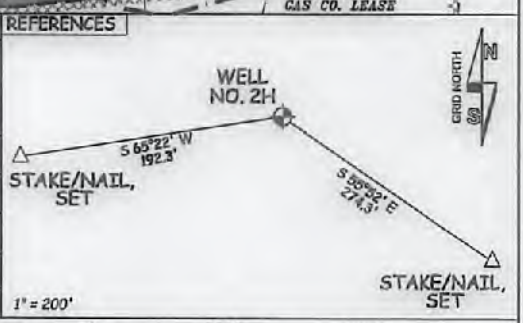


STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
 WILLOW LAND SURVEYING PLLC  
 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

JOB # 15-029WA  
 DRAWING # BILL2HR2  
 SCALE 1" = 1000'  
 MINIMUM DEGREE OF ACCURACY SUBMETER  
 PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS  
 STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

**LEGEND**  
 - - - - - Surface Owner Boundary Lines +/-  
 - - - - - Interior Surface Tracts +/-  
 x - x - x Existing Fence  
 ⊕ Found monument, as noted

THOMAS SUMMERS P.S. 2109  
 DATE 02/12/18  
 OPERATOR'S WELL# BILL UNIT 2H



WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL 47 - 085 - 10241  
 (IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X STATE COUNTY PERMIT  
 LOCATION: ELEVATION 1,221' - AS BUILT WATERSHED NORTH FORK HUGHES RIVER  
 QUADRANGLE PENNSBORO 7.5' DISTRICT CLAY COUNTY RITCHIE 06/15/2018  
 SURFACE OWNER DONALD L. COSTLOW ACREAGE 50.13 ACRES +/-  
 OIL & GAS ROYALTY OWNER BERTHA D. FERREBEE; MICHAEL ISNER; DOLIA KIGER; LEASE ACREAGE 87 AC.±; 10.75 AC.±; 40 AC.±;  
 ROSEMARY COOK; DOLPH HICKMAN ET AL; BERTHA FERREBEE; 39 AC.±; 26.52 AC.±; 20 AC.±;  
 E. HOWARD POOLE ET UX; OLLIE BELLE DOTSON ET VIR; L. EVERETT DOTSON ET AL 23 AC.±; 37 AC.±; 75 AC.±  
 PROPOSED WORK: DRILL X CONVERT DRILL DEEPER X REDRILL FRACTURE OR STIMULATE X  
 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 7,000' TVD 14,600' MD  
 WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM  
 ADDRESS 1615 WYNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD  
 DENVER, CO 80202 CHARLESTON, WV 25313



LATITUDE 39°20'00"

7,510'

10,339' TO BOTTOM HOLE

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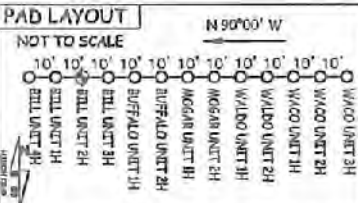
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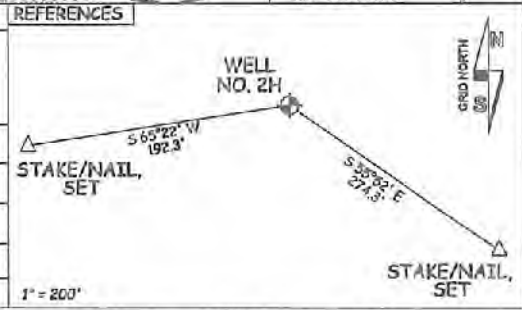
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DRAWING # BILL2HR2  
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THOMAS SUMMERS P.S. 2109  
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OPERATOR'S WELL # BILLUNIT 2H



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ADDRESS 1615 WYNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD  
FORM WW-8 DENVER, CO 80202 CHARLESTON, WV 25313



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><u>Bertha D. Ferrebee Lease</u></b>			
Bertha D. Ferrebee	J & J Enterprises, Inc.	1/8	0170/0080
J & J Enterprises, Inc.	Eastern American Energy Corporation	Confirmatory Deed and Assignment of Leases	DB 0231/0732
Eastern American Energy Corporation	Energy Corporation of America	Certificate of Merger	COI 0006/0450
Energy Corporation of America	Antero Resources Appalachian Corporation	Memorandum of Agreement	0257/0397
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
RECEIVED Office of Oil and Gas			
FEB 20 2018			
0264/0944			
WV Department of Environmental Protection			
<b><u>Michael Isner Lease</u></b>			
Michael Isner	Antero Resources Appalachian Corporation	1/8+	0264/0944
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b><u>Dolia Kiger Lease</u></b>			
Dolia Kiger	J & J Enterprises, Inc.	1/8	0177/0404
J & J Enterprises, Inc.	Eastern American Energy Corporation	Confirmatory Deed and Assignment of Leases	DB 0231/0732
Eastern American Energy Corporation	Energy Corporation of America	Certificate of Merger	CR 0006/0450
Energy Corporation of America	Antero Resources Appalachian Corporation	Memorandum of Agreement	0257/0397
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b><u>Rosemary Cook Lease</u></b>			
Rosemary Cook	Key Oil Company	1/8	0233/0949
Key Oil Company	Antero Resources Appalachian Corporation	*Partial Assignment of Oil and Gas Leases	0253/0747
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b><u>Dolph Hickman, et al Lease</u></b>			
Dolph Hickman, et al	J & J Enterprises, Inc.	1/8	0167/0299
J & J Enterprises, Inc.	Eastern American Energy Corporation	Confirmatory Deed and Assignment of Leases	DB 0231/0732
Eastern American Energy Corporation	Energy Corporation of America	Certificate of Merger	CR 0006/0450
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\*Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.

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

06/15/2018

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Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b><u>Bertha Ferrebee Lease</u></b>			
Bertha D. Ferrebee	J & J Enterprises, Inc.	1/8	0169/0298
J & J Enterprises, Inc.	Eastern American Energy Corporation	Confirmatory Deed and Assignment of Leases	DB 0231/0732
Eastern American Energy Corporation	Energy Corporation of America	Certificate of Merger	COI 0006/0450
Energy Corporation of America	Antero Resources Appalachian Corporation	Memorandum of Agreement	0257/0397
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b><u>E. Howard Poole, et ux Lease</u></b>			
E. Howard Poole, et ux	J & J Enterprises, Inc.	1/8	0167/0295
J & J Enterprises, Inc.	Eastern American Energy Corporation	Assignment	0231/0732
Eastern American Energy Corporation	Energy Corporation of America	Certificate of Merger	0006/0450
Energy Corporation of America	Antero Resources Appalachian Corporation	Assignment	0257/0397
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b><u>Ollie Belle Dotson, et vir Lease</u></b>			
Ollie Belle Dotson, et vir	Carl D. Perkins	1/8	0108/0497
Carl D. Perkins	Perkins Oil and Gas, Inc.	Assignment	0131/0680
Perkins Oil and Gas, Inc.	Antero Resources Corporation	*Partial Assignment	0264/1045

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 Office of Oil and Gas  
 FEB 20 2018

WV Department of Environmental Protection

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WW-6A1  
(5/13)

Operator's Well No. Bill Unit 2H

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L. Everett Dotson, et al Lease	L. Everett Dotson, et al J & J Enterprises, Inc.	J & J Enterprises, Inc. Eastern American Energy Corporation	1/8 Confirmatory Deed & Assignment of Leases	0191/0400 DB 0281/0732
	Eastern American Energy Corporation Energy Corporation of America Antero Resources Appalachian Corp.	Energy Corporation of America Antero Resources Appalachian Corp. Antero Resources Corporation	Certificate of Merger Assignment Name Change	CR 0008/0450 0257/0377 Exhibit 1

\*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.

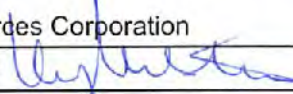
RECEIVED  
Office of Oil and Gas  
**FEB 20 2018**  
WV Department of  
Environmental Protection

**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: Kevin Kilstrom   
Its: Senior Vice President of Production



**FORM WW-6A1  
EXHIBIT 1**

**FILED**

**JUN 10 2013**

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



Penney Barker, Manager  
Corporations Division  
IN THE OFFICE OF  
SECRETARY OF STATE

Tel: (304)558-8000  
Fax: (304)558-8381

Website: [www.wvsos.com](http://www.wvsos.com)

E-mail: [business@wvsos.com](mailto:business@wvsos.com)

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

**APPLICATION FOR  
AMENDED CERTIFICATE  
OF AUTHORITY**

\*\*\*\* In accordance with the provisions of the West Virginia Code, the undersigned corporation hereby \*\*\*\*  
applies for an Amended Certificate of Authority and submits the following statement:

1. Name under which the corporation was authorized to transact business in WV: Antero Resources Appalachian Corporation
2. Date Certificate of Authority was issued in West Virginia: 6/25/2008
3. Corporate name has been changed to: Antero Resources Corporation  
(Attach one Certified Copy of Name Change as filed in home State of Incorporation.)
4. Name the corporation elects to use in WV: Antero Resources Corporation  
(due to home state name not being available)
5. Other amendments: \_\_\_\_\_  
(attach additional pages if necessary)

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FEB 20 2018

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. Schopp (303) 367-7310  
Contact Name Phone Number

WV Department of  
Environmental Protection

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

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

**\*Important Legal Notice Regarding Signature:** For West Virginia Code §31D-1-129. Penalty for signing false document. Any person who signs a document he or she knows is false in any material respect and knows that the document is to be delivered to the secretary of state for filing is guilty of a misdemeanor and, upon conviction thereof, shall be fined not more than one thousand dollars or confined in the county or regional jail not more than one year, or both.





February 16, 2018

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

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

Ms. Adkins:

Antero Resources Corporation (Antero) would like to submit the following permit modifications for five approved wells on the existing Bison Pad. We are requesting to slightly shift the horizontal lateral to accommodate 1000' spacing between wells. Additionally, we are requesting to extend the lateral lengths and associated Estimated Measured Depths for the following wells:

- Bill Unit 1H – API #47-085-10240 ~~xxx~~
- Bill Unit 2H – API #47-085-10241
- Bill Unit 3H – API #47-085-10257
- Buffalo Unit 1H – API #47-085-10249 ← *Not received*
- Buffalo Unit 2H – API #47-085-10243

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WV Department of  
Environmental Protection

Attached you will find the following documents:

- REVISED Form WW-6B, which shows the updated BHL and 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 and Estimated Measured Depth

If you have any questions please feel free to contact me at (303) 357-7233.

Thank you in advance for your consideration.

Sincerely,

A handwritten signature in blue ink that reads "Kara Quackenbush". The signature is written in a cursive, flowing style.

Kara Quackenbush  
Permitting Agent  
Antero Resources Corporation

Enclosures

06/15/2018