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west virginia department of environmental protection

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

Earl Ray Tomblin, Governor  
Randy C. Huffman, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

## PERMIT MODIFICATION APPROVAL

August 27, 2015

ANTERO RESOURCES CORPORATION  
1615 WYNKOOP STREET  
DENVER, CO 80202

Re: Permit Modification Approval for API Number 8510079, Well #: MOATS UNIT 1H

**Modified Wellbore Path/No Additional Mineral Tracts**

Oil and Gas Operator:

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.

Please call James Martin at 304-926-0499, extension 1654 if you have any questions.

Sincerely,

Gene Smith  
Assistant Chief of Permitting  
Office of Oil and Gas



August 26, 2015

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: Melanie Hankins  
601 57<sup>th</sup> Street  
Charleston, WV 25304

Melanie Hankins:

Antero Resources Corporation (Antero) would like to submit the following permit modification for an approved well on the existing Edwin Pad. While building the curve during drilling of the Moats Unit 2H (API# 47-085-10080), the wellbore ended up approximately 175' off the original permitted path. WVDEP Inspector Mike Goff was notified on 8/20/2015 and gave approval to continue drilling this well back towards the original permitted path.

In order to accommodate appropriate spacing for the offset Moats Unit 1H well (API# 47-085-10079), we are requesting to slightly move the horizontal lateral at the landing and turning points as shown on the attached REVISED mylar plat. Please note that we will not be drilling into any new leases, and all other work will stay the same as originally permitted.

If you have any questions please feel free to contact me at (303) 357-7323.

Thank you in advance for your consideration.

Sincerely,

Ashlie Steele  
Permitting Supervisor  
Antero Resources Corporation

RECEIVED  
Office of Oil and Gas

Aug 26 2015

WV Department of  
Environmental Protection

Enclosures

LATITUDE 39°15'00"

7,930'

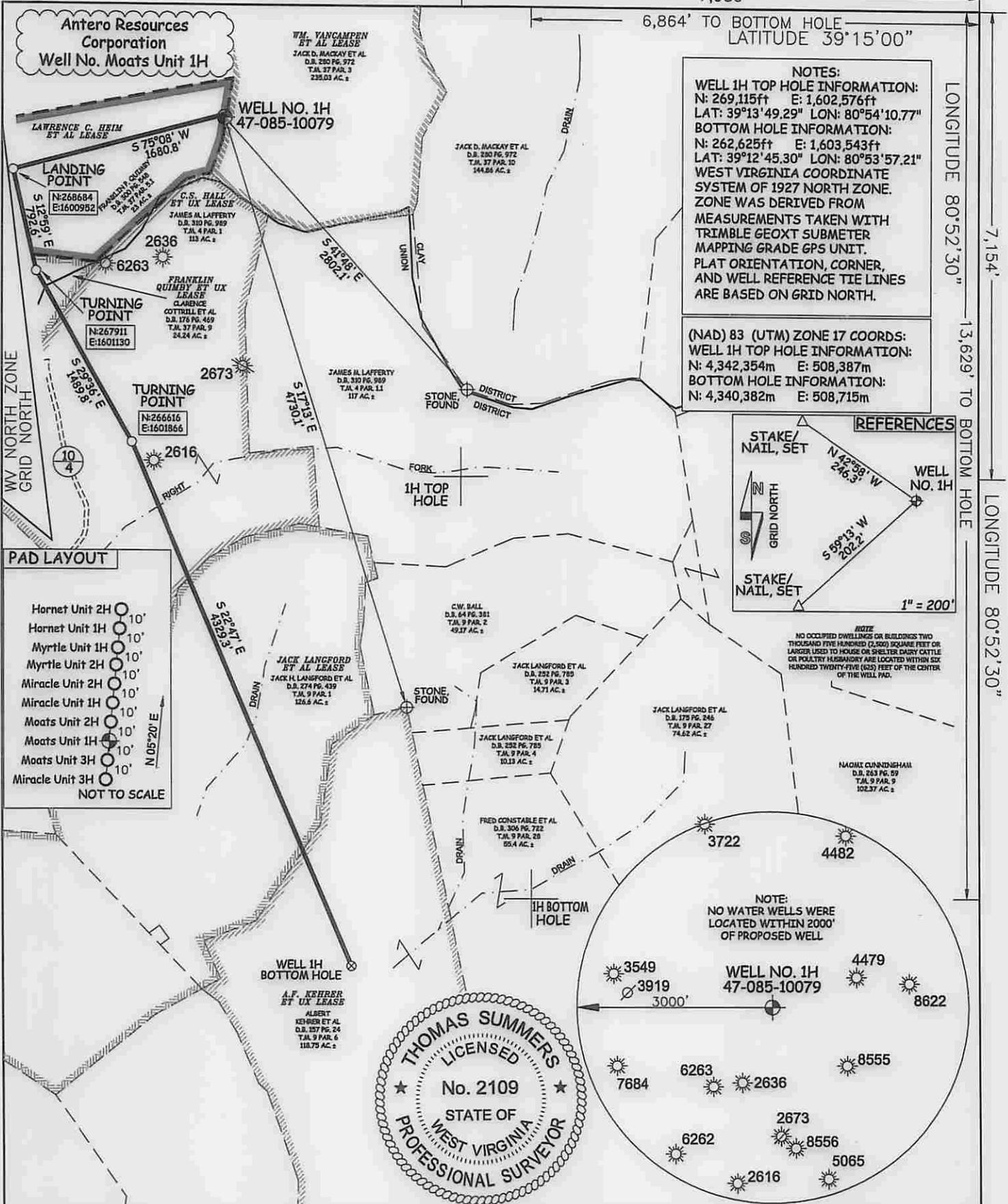
6,864' TO BOTTOM HOLE  
LATITUDE 39°15'00"

LONGITUDE 80°52'30"

7,154'

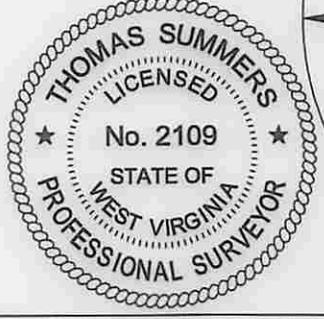
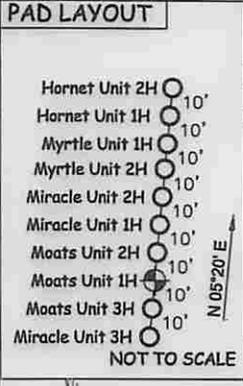
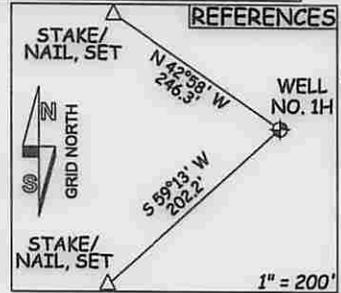
13,629' TO BOTTOM HOLE

LONGITUDE 80°52'30"



**NOTES:**  
**WELL 1H TOP HOLE INFORMATION:**  
 N: 269,115ft E: 1,602,576ft  
 LAT: 39°13'49.29" LON: 80°54'10.77"  
**BOTTOM HOLE INFORMATION:**  
 N: 262,625ft E: 1,603,543ft  
 LAT: 39°12'45.30" LON: 80°53'57.21"  
 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: 4,342,354m E: 508,387m  
**BOTTOM HOLE INFORMATION:**  
 N: 4,340,382m E: 508,715m



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

**NOTE:**  
 NO WATER WELLS WERE LOCATED WITHIN 2000' OF PROPOSED WELL

JOB # 13-051WA  
 DRAWING # MOATS1HR4b  
 SCALE 1" = 1000'

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.

**LEGEND**  
 --- Surface Owner Boundary Lines +/-  
 - - - Interior Surface Tracts +/-  
 ⊕ Existing Fence  
 ⊗ Rebar, Found

MINIMUM DEGREE OF ACCURACY SUBMETER  
 PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

*Thomas Summers*  
 THOMAS SUMMERS P.S. 2109

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

WILLOW LAND SURVEYING PLLC  
 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

DATE 08/26/15  
 OPERATOR'S WELL# MOATS UNIT #1H

WELL TYPE: OIL    GAS X LIQUID INJECTION    WASTE DISPOSAL     
 (IF "GAS") PRODUCTION X STORAGE    DEEP    SHALLOW X

API WELL # 47-085-10079 *H6A Rev.*  
 STATE    COUNTY    PERMIT   

LOCATION: ELEVATION 1,216' ORIGINAL - 1,191' AS DRILLED WATERSHED NORTH FORK HUGHES RIVER  
 QUADRANGLE PULLMAN 7.5' DISTRICT CLAY (TH) UNION (BH) COUNTY RITCHIE

COUNTY NAME    PERMIT   

SURFACE OWNER FRANKLIN P. QUIMBY ACREAGE 23 ACRES +/-  
 OIL & GAS ROYALTY OWNER LAWRENCE C. HEIM ET AL; FRANKLIN QUIMBY ET UX; C.S. HALL ET UX; JACK LANGFORD ET AL; A.F. KEHRER ET UX LEASE ACREAGE 53 AC±; 28.4289 AC±; 113 AC±; 448.5 AC±; 118.75 AC±

PROPOSED WORK: DRILL X CONVERT    DRILL DEEPER    REDRILL    FRACTURE OR STIMULATE X  
 PLUG OFF OLD FORMATION    PERFORATE NEW FORMATION X OTHER PHYSICAL CHANGE IN WELL (SPECIFY) PERMIT MODIFICATION PLUG & ABANDON    CLEAN OUT & REPLUG     
 TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,900' TVD 13,800' MD

WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER  
 ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD  
DENVER, CO 80202 CHARLESTON, WV 25313

Operator's Well Number Moats 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>WM. VanCapmen et al Lease</b>			
William Charles VanCampen	Warren R. Haught, et al	1/8	LB 0122/0565
Warren R. Haught, et al	Haught, Inc.	Assignment	LB 0124/0296
Haught, Inc.	Mountaineer 1979-A	Assignment	LB 0129/0449
Mountaineer 1979-A	Mountain V Oil and Gas Co.	Assignment	LB 0230/0253
Mountain V Oil and Gas Co.	Robert Matheny, Jr. & HMS Resources, Inc.	Assignment	LB 0243/0911
Robert Matheny, Jr. & HMS Resources, Inc.	Genesis Exploration & Production	Assignment	LB 0244/1079
Genesis Exploration & Production	Antero Resources Appalachian Corporation	Assignment	LB 0260/1028
HMS Resources	Antero Resources Appalachian Corporation	Assignment	LB 0260/1035
Robert Matheny, Jr. & HMS	Antero Resources Appalachian Corporation	Assignment	LB 0260/1042
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b>Lawrence C. Heim et al Lease</b>			
Lawrence C. Heim et ux	Eastern American Energy Corporation	1/8	LB 0196/0222
Eastern American Energy Corporation	Energy Corporation of America	Merger	DB 0306/0836
Energy Corporation of America	Antero Resources Appalachian Corp	Assignment	LB 0257/0377
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b>C.S. Hall et ux Lease</b>			
C.S. Hall and Loutricia Hall	C.A. Stricklin	1/8	LB 0093/0155
C.A. Stricklin	Big A Oil Corp	Assignment	LB 0152/0591
Big A Oil Corp	Lamar Oil & Gas Company	Assignment	LB 0196/0320
Lamar Oil & Gas Company	Antero Resources Appalachian Corporation	Assignment	LB 0255/0609
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b>Jack Langford et al Lease</b>			
Jack H. Langford et al	Key Oil Company	1/8+	LB 0254/0158
Key Oil Company	Antero Resources Appalachian Corporation	Assignment	LB 0254/0717
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	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.

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

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE  
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- (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
<b>A.F. Kehrer et ux Lease</b>	A.F. Kehrer et ux	A.W. Summerfield	1/8	LB 0128/0626
	A.W. Summerfield	Petroleum Development Corporation	Assignment	LB 0128/0621
	Petroleum Development Corporation	PDC Mountaineer LLC	Assignment	LB 0250/0070
	PDC Mountaineer LLC	Antero Resources Appalachian Corporation	Assignment	LB 0257/0183
	<b>Antero Resources Appalachian Corporation</b>	<b>Antero Resources Corporation</b>	<b>Name Change</b>	<b>Exhibit 1</b>

\*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: Kevin Kilstrom  
 Its: Vice President of Production