



---

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

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

Thursday, April 30, 2020  
PERMIT MODIFICATION APPROVAL  
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION  
1615 WYNKOOP STREET  
DENVER, CO 80202

Re: Permit Modification Approval for RICHMOND 1H  
47-095-02690-00-00

**Extend Lateral and change Point of Entry. Extend Total Measured Depth 10000' to 24250'. Extend Horizontal Leg Length 1702' to 15915'. Updated Leases.**

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: RICHMOND 1H  
Farm Name: ROGER D. BLIZZARD & RUTH E. SPENCER  
U.S. WELL NUMBER: 47-095-02690-00-00  
Horizontal 6A New Drill  
Date Modification Issued: 04/30/2020

Promoting a healthy environment.

WW-6B  
(04/15)

PERMIT MODIFICATION API # 47-095-

API NO. 47-095 - 02690  
OPERATOR WELL NO. Richmond Unit 1H  
Well Pad Name: Blizzard 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 095 - Tyler Ellsworth Porter Falls 7.5'  
Operator ID County District Quadrangle

2) Operator's Well Number: Richmond Unit 1H Well Pad Name: Blizzard Pad

3) Farm Name/Surface Owner: Roger D. Blizzard & Ruth E. Spencer Public Road Access: US Route 34

4) Elevation, current ground: 1004' 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

JCB  
4/22/2020

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Marcellus Shale: 7000' TVD, Anticipated Thickness- 55 feet, Associated Pressure- 2850#

8) Proposed Total Vertical Depth: 7000' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 24250' MD ✓

11) Proposed Horizontal Leg Length: 15915' ✓

12) Approximate Fresh Water Strata Depths: 16'

13) Method to Determine Fresh Water Depths: 47-095-02274

14) Approximate Saltwater Depths: 1430', 1813'

15) Approximate Coal Seam Depths: None Identified

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

RECEIVED  
Office of Oil and Gas

APR 27 2020

(a) If Yes, provide Mine Info: Name: \_\_\_\_\_

Depth: \_\_\_\_\_

Seam: \_\_\_\_\_

Owner: \_\_\_\_\_

WV Department of  
Environmental Protection

John Cragin Blevins Digitally signed by John Cragin Blevins  
Date: 2020.04.22 11:15:49 -04'00'

WW-6B  
(04/15)

API NO. 47- 095 - 02690  
 OPERATOR WELL NO. Richmond Unit 1H  
 Well Pad Name: Blizzard Pad

18)

**CASING AND TUBING PROGRAM**

<b>TYPE</b>	<b>Size (in)</b>	<b>New or Used</b>	<b>Grade</b>	<b>Weight per ft. (lb/ft)</b>	<b>FOOTAGE: For Drilling (ft)</b>	<b>INTERVALS: Left in Well (ft)</b>	<b>CEMENT: Fill-up (Cu. Ft.)/CTS</b>
Conductor	20"	New	H-40	94#	80	80	CTS, 77 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	300	300	CTS, 417 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#	24250	24250 ✓	6260 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#			
Liners							

*JCB*  
4/22/2020

<b>TYPE</b>	<b>Size (in)</b>	<b>Wellbore Diameter (in)</b>	<b>Wall Thickness (in)</b>	<b>Burst Pressure (psi)</b>	<b>Anticipated Max. Internal Pressure (psi)</b>	<b>Cement Type</b>	<b>Cement Yield (cu. ft./k)</b>
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"	0.415"	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			

RECEIVED  
Office of Oil and Gas

APR 27 2020

WV Department of  
Environmental Protection

WW-6B  
(10/14)

PERMIT MODIFICATION API # 47-095-02687

API NO. 47-095 - 02690  
OPERATOR WELL NO. Richmond Unit 1H  
Well Pad Name: Blizzard 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

JCB  
4/22/2020

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 26.80 acres

22) Area to be disturbed for well pad only, less access road (acres): 9.52 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% ACG-47 + 0.05% ACSA-51 + 0.2% ACR-20

RECEIVED  
Office of Oil and Gas

APR 27 2020

WV Department of  
Environmental Protection

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.

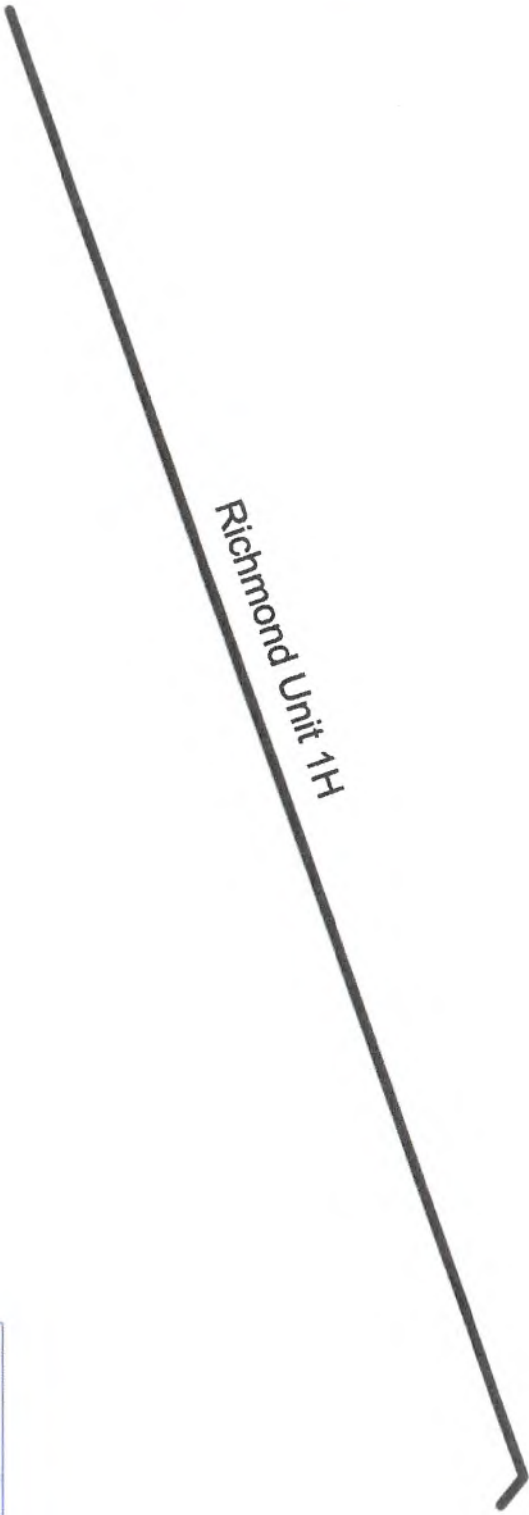
Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.

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.



PERMIT MODIFICATION API # 47-095-02690



Antero Resources Corporation

Richmond Unit 1H - AOR



REMARKS  
No Wells of Interest

January 21, 2020

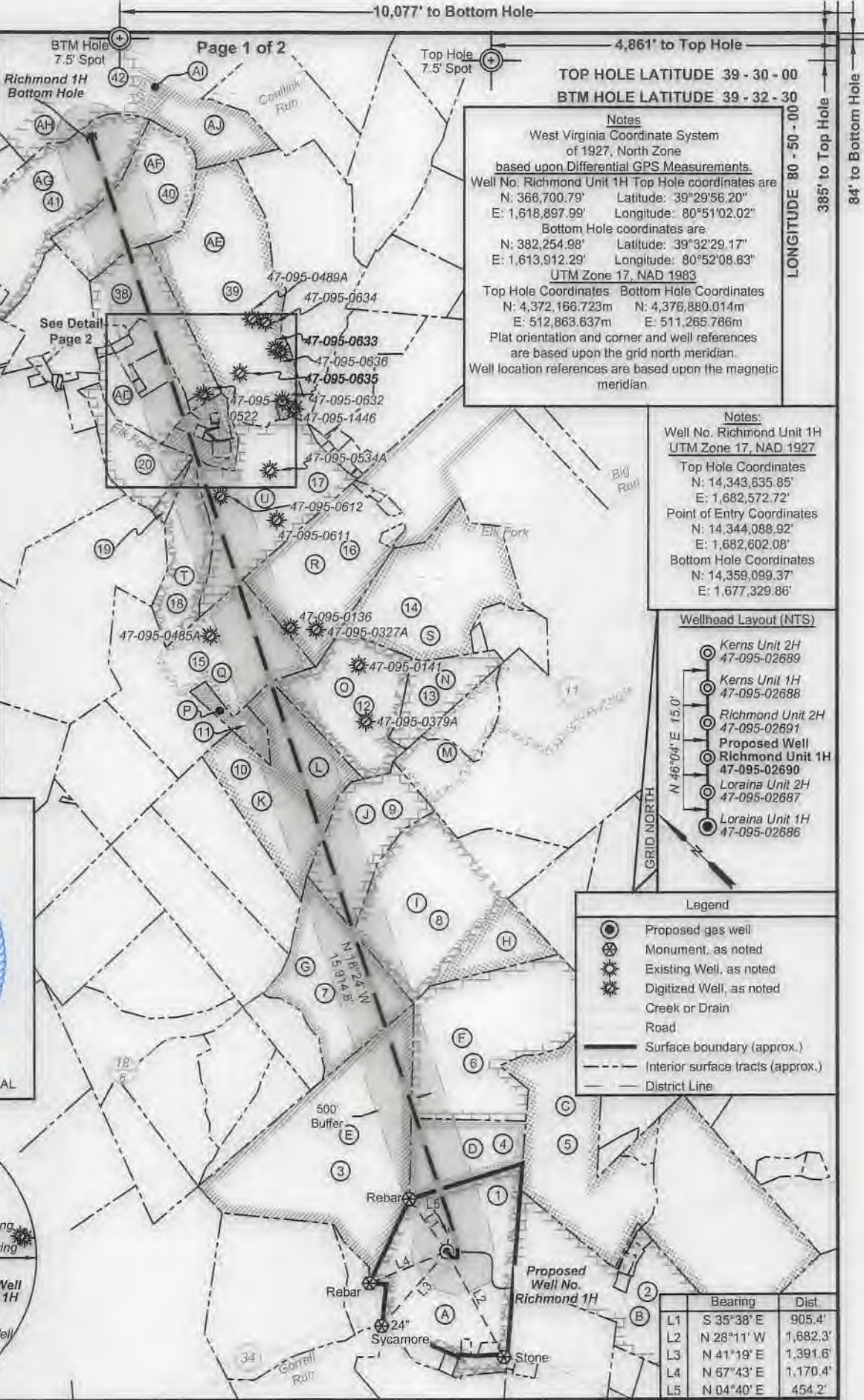
RECEIVED  
Office of Oil and Gas

APR 27 2020

WV Department of  
Environmental Protection

*JCB*  
4/22/2020

**Antero Resources**  
**Well No. Richmond 1H**  
**BHL MOD**  
 Antero Resources Corporation



10,077' to Bottom Hole  
 4,861' to Top Hole  
**TOP HOLE LATITUDE 39 - 30 - 00**  
**BTM HOLE LATITUDE 39 - 32 - 30**  
**LONGITUDE 80 - 50 - 00**  
**LONGITUDE 80 - 50 - 00**  
**LONGITUDE 84' to Bottom Hole**  
**LONGITUDE 385' to Top Hole**

**Notes**  
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.  
 Well No. Richmond Unit 1H Top Hole coordinates are  
 N: 366,700.79' Latitude: 39°29'56.20"  
 E: 1,618,897.99' Longitude: 80°51'02.02"  
 Bottom Hole coordinates are  
 N: 382,254.98' Latitude: 39°32'29.17"  
 E: 1,613,912.29' Longitude: 80°52'08.63"  
**UTM Zone 17, NAD 1983**  
 Top Hole Coordinates Bottom Hole Coordinates  
 N: 4,372,166.723m N: 4,376,880.014m  
 E: 512,863.637m E: 511,265.766m  
 Plat orientation and corner and well references are based upon the grid north meridian.  
 Well location references are based upon the magnetic meridian.

**Well Location References (NTS)**



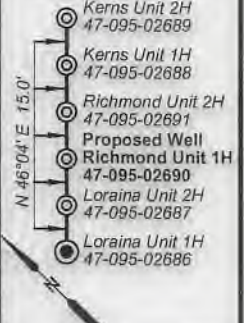
I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the rules issued and prescribed by the Department of Environmental Protection.

Bradley D. Miller, P.S. 2167



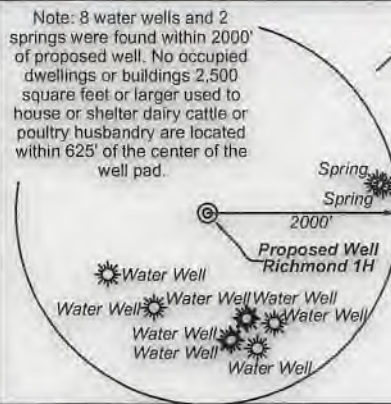
**Notes:**  
 Well No. Richmond Unit 1H  
**UTM Zone 17, NAD 1927**  
 Top Hole Coordinates  
 N: 14,343,635.85'  
 E: 1,682,572.72'  
 Point of Entry Coordinates  
 N: 14,344,088.92'  
 E: 1,682,602.08'  
 Bottom Hole Coordinates  
 N: 14,359,099.37'  
 E: 1,677,329.86'

**Wellhead Layout (NTS)**



**Legend**

- Proposed gas well
- Monument, as noted
- Existing Well, as noted
- Digitized Well, as noted
- Creek or Drain
- Road
- Surface boundary (approx.)
- Interior surface tracts (approx.)
- District Line



	Bearing	Dist.
L1	S 35°38' E	905.4'
L2	N 28°11' W	1,682.3'
L3	N 41°19' E	1,391.6'
L4	N 67°43' E	1,170.4'
L5	N 04°40' E	454.2'

FILE NO: 49-54-E-19  
 DRAWING NO: Richmond 1H Well Plat  
 SCALE: 1" = 2000'  
 MINIMUM DEGREE OF ACCURACY: Submeter  
 PROVEN SOURCE OF ELEVATION: WVDOT, Harrisville, WV

**STATE OF WEST VIRGINIA**  
 DEPARTMENT OF ENVIRONMENTAL PROTECTION  
**OIL AND GAS DIVISION**

DATE: April 9 2020  
 OPERATOR'S WELL NO. Richmond 1H  
 API WELL NO MOD1  
 47 - 095 - 02690  
 STATE COUNTY PERMIT

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

LOCATION: ELEVATION: As-Built 1,004' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Porter Falls  
 DISTRICT: Ellsworth

SURFACE OWNER: & Ruth E. Spencer David E. Bowyer; A. DeWayne Matthews; Susan Ertel; Kevin S. Goff, et ux (2);  
 ROYALTY OWNER: Heritage Resources Marcellus Minerals, LLC; Jerry R. Brown; B. Fred Hill, Jr. LEASE NO: ACREAGE: 102.62

PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) BHL MOD  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 7,000' TVD 24,250' MD

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System  
 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road  
 Denver, CO 80202 Charleston, WV 25313



ID	TM/Par	Owner	Bk/Pg	Acres
1	15-33	Roger D. Blizzard, et al	340/170	102.62
2	15-32	William S. & Opal Marie Nash	335/188	78.58
3	15-30	Thomas C. Grinage, et al	458/73	124.08
4	15-31	Roger D. Blizzard, et al	342/782	25
5	15-38	Rodney A. & Candis L. Nash	351/701	85.48
6	15-30.1	Roger D. Blizzard, et al	343/427	101.38
7	15-12	Roger Matthess	319/22	61
8	15-11	Roger Matthess	318/137	115.47
9	15-7	Roger Matthess	319/22	41.72
10	15-6	James F. & Connie L. Billiter, et al	288/325	59.5
11	10-59	Goldie A. Mathews	115/485	10.08
12	10-58	Jeffery A. & Cheryl L. Ferrell	325/334	52
13	10-56	Mary K Neff	413/731	22.06
14	10-57	Charles E. & Laura L. Friend	334/836	84.39
15	10-60	J.S. & Goldie A. Mathews	129/58	17.67
16	10-46	Opal Carol Tallman	282/382	114
17	10-43	Kevin S. & Melinda S. Goff	431/799	100
18	10-42	Kevin S. & Melinda S. Goff	431/799	25.5
19	10-41	Kevin S. & Melinda S. Goff	431/799	2.66
20	10-36	Randy Lee & Mary Lou Michael	230/499	24.65
21	10-37.3	H.H. Snider	158/151	0.50
22	10-37.4	Kevin S. & Melinda S. Goff	425/830	7.50

ID	TM/Par	Owner	Bk/Pg	Acres
23	10-37.1	Wayne H. & Violet L. Mercer	226/473	5.05
24	10-37.2	Kenneth L. & Gladys L. Vancamp	431/194	1.36
25	10-39	Elk Fork Cemetery Association	143/308	0.32
26	10-15	Kevin S. Goff & Melinda S. Goff	423/695	18.50
27	10-15.9	Becky S. & Everett E. Neff, II	322/751	1.03
28	10-40	Avril Dewayne Matthews	421/565	1.43
29	10-14.1	Triad Energy Corp. of WV Inc.	329/604	1
30	10-14.3	Elk Fork Church	299/126	1.495
31	10-16	Ruby M. Watson	256/45	0.488
32	10-15.5	Ruby M. Watson	289/359	0.0292
33	10-15.7	Frank W., Jr. & Ruby M. Watson	317/383	5.226
34	10-15.4	Frank W., Jr. & Ruby M. Watson	343/309	0.65
35	10-15.8	Frank & Ruby Watson	427/47	5.229
36	10-17	Sandra K. Metz	342/153	0.89
37	10-18	Wendy S. Gustavich	331/365	1.9
38	10-15.6	Wayne H. & Violet Mercer	317/378	35.82
39	10-14	Kevin S. & Melinda S. Goff	597/808	97.065
40	10-3	Kevin S. & Melinda S. Goff	597/808	53.75
41	10-2	Patricia Ann Heintzman	W13/384	73.26
42	6-36	Dennis & Clista Heintzman	297/640	417.6
43	10-38	Elk Fork Cemetery Association	142/271	0.46
44	10-37	Sandra Fanti	425/827	1.31



Leases	
A	Heritage Resources Marcellus Minerals, LLC
B	William S. Nash, et al
C	Helen E. Boggs
D	Jerry R. Brown
E	B. Fred Hill Jr.
F	Roger D. Blizzard
G	Reita Jane Hall
H	Samuel Rogers
I	Linda Lou Moore
J	Dale E. Pipes
K	Sandra E. Merrigan
L	David E. Bowyer
M	Joseph Shoemaker
N	Kenneth R. Barker
O	J&N Management Enterprises LLC
P	Rockford Energy, LLC
Q	A. DeWayne Matthews
R	Allen Smith
S	Charles Eugene Friend, et ux
T	Kevin S. Goff, et ux
U	Susan Ertel
V	Sandra Fanti
W	Kevin S. Goff, et ux
X	Kenneth L. Van Camp, et ux
Z	Elk Fork Cemetery
AA	Wayne H. Mercer, et ux
AC	Elk Fork Church of Christ
AD	Ridgewood Development LLC
AE	Dennis M. Strode
AF	Nina & Phillip Whitefield
AG	Patricia Ann Heintzman
AH	Norma Smith
AI	BRC Appalachian Minerals I, LLC
AJ	Nina A. Whitefield

FILE NO: 49-54-E-19  
 DRAWING NO: Richmond 1H Well Plat  
 SCALE: 1" = 2000'  
 MINIMUM DEGREE OF ACCURACY:  
 Submeter  
 PROVEN SOURCE OF ELEVATION:  
 WVDOT, Harrisville, WV

**STATE OF WEST VIRGINIA**  
 DEPARTMENT OF ENVIRONMENTAL PROTECTION  
**OIL AND GAS DIVISION**

DATE: April 9 2020  
 OPERATOR'S WELL NO. Richmond 1H  
 API WELL NO **ModI**  
 47 - 095 - 02690  
 STATE COUNTY PERMIT

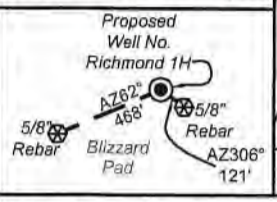
WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
 (IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW  
 LOCATION: ELEVATION: As-Built 1,004' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Porter Falls  
 DISTRICT: Ellsworth COUNTY: Tyler  
 SURFACE OWNER: Roger D. Blizzard Patricia Ann Heintzman; Ridgewood Development, LLC; Kenneth L. Van Camp, et ux; & Ruth E. Spencer David E. Bowyer; A. DeWayne Matthews; Susan Ertel; Kevin S. Goff, et ux (2); Roger D. Blizzard; Reita Jane Hall; Linda Lou Moore; Dale E. Pipes; Sandra E. Merrigan; ACREAGE: 102.62  
 ROYALTY OWNER: Heritage Resources Marcellus Minerals, LLC; Jerry R. Brown; B. Fred Hill, Jr. LEASE NO: \_\_\_\_\_ ACREAGE: \_\_\_\_\_  
 PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) BHL MOD  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 7,000' TVD 24,250' MD

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System  
 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road  
 Denver, CO 80202 Charleston, WV 25313

**Antero Resources**  
**Well No. Richmond 1H**  
 BHL MOD  
 Antero Resources Corporation

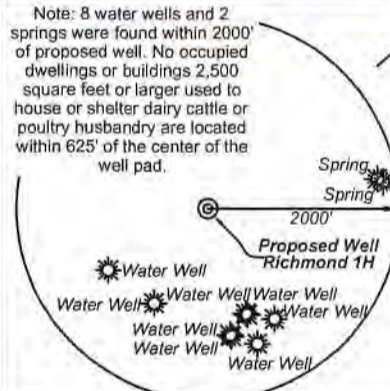


**Well Location References (NTS)**

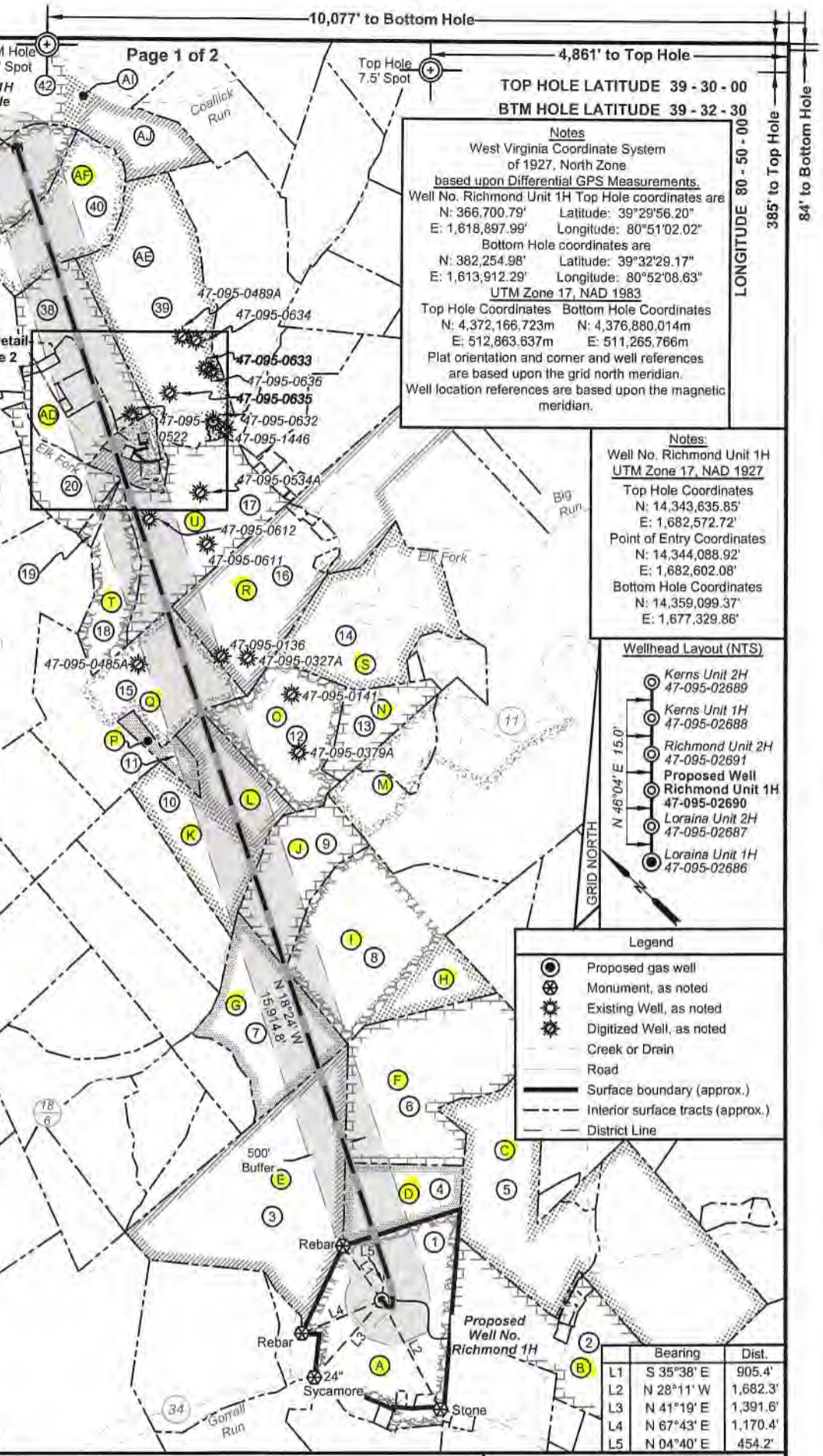


I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the rules issued and prescribed by the Department of Environmental Protection.

*Bradley D. Miller*  
 Bradley D. Miller, P.S. 2167

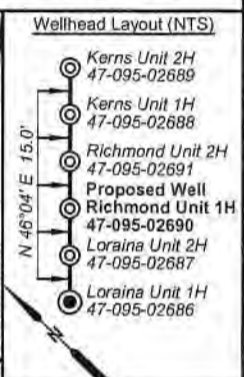


FILE NO: 49-54-E-19  
 DRAWING NO: Richmond 1H Well Plat  
 SCALE: 1" = 2000'  
 MINIMUM DEGREE OF ACCURACY: Submeter  
 PROVEN SOURCE OF ELEVATION: WVDOT, Harrisville, WV



**Notes**  
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.  
 Well No. Richmond Unit 1H Top Hole coordinates are  
 N: 366,700.79' Latitude: 39°29'56.20"  
 E: 1,618,897.99' Longitude: 80°51'02.02"  
 Bottom Hole coordinates are  
 N: 382,254.98' Latitude: 39°32'29.17"  
 E: 1,613,912.29' Longitude: 80°52'08.63"  
 UTM Zone 17, NAD 1983  
 Top Hole Coordinates Bottom Hole Coordinates  
 N: 4,372,166.723m N: 4,376,880.014m  
 E: 512,863.637m E: 511,265.766m  
 Plat orientation and corner and well references are based upon the grid north meridian.  
 Well location references are based upon the magnetic meridian.

**Notes:**  
 Well No. Richmond Unit 1H UTM Zone 17, NAD 1927  
 Top Hole Coordinates  
 N: 14,343,635.85'  
 E: 1,682,572.72'  
 Point of Entry Coordinates  
 N: 14,344,088.92'  
 E: 1,682,602.08'  
 Bottom Hole Coordinates  
 N: 14,359,099.37'  
 E: 1,677,329.86'



**Legend**

- Proposed gas well
- Monument, as noted
- Existing Well, as noted
- Digitized Well, as noted
- Creek or Drain
- Road
- Surface boundary (approx.)
- Interior surface tracts (approx.)
- District Line

Bearing	Dist.
L1 S 35°38' E	905.4'
L2 N 28°11' W	1,682.3'
L3 N 41°19' E	1,391.6'
L4 N 67°43' E	1,170.4'
L5 N 04°40' E	454.2'

**STATE OF WEST VIRGINIA**  
 DEPARTMENT OF ENVIRONMENTAL PROTECTION  
**OIL AND GAS DIVISION**

DATE: April 9 2020  
 OPERATOR'S WELL NO. Richmond 1H  
 API WELL NO  
 47 - 095 - 02690  
 STATE COUNTY PERMIT

WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
 (IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW  
 LOCATION: ELEVATION: As-Built 1,004' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Porter Falls  
 DISTRICT: Ellsworth COUNTY: Tyler  
 SURFACE OWNER: & Ruth E. Spencer ACREAGE: 102.62  
 ROYALTY OWNER: Heritage Resources Marcellus Minerals, LLC; Jerry R. Brown; B. Fred Hill, Jr. LEASE NO: ACREAGE: 119; 66.65  
 PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) BHL MOD  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 24,250' MD

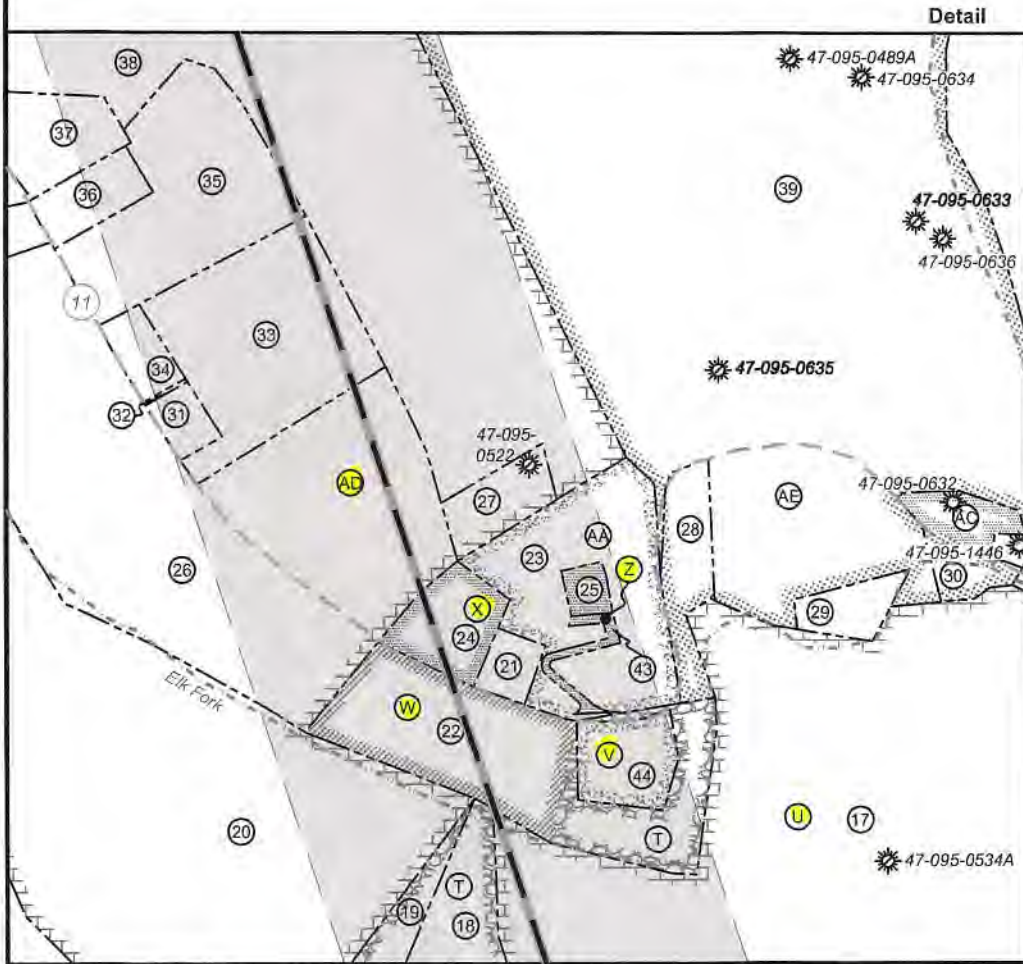
WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System  
 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road  
 Denver, CO 80202 Charleston, WV 25313





ID	TM/Par	Owner	Bk/Pg	Acres
1	15-33	Roger D. Blizzard, et al	340/170	102.62
2	15-32	William S. & Opal Marie Nash	335/188	78.58
3	15-30	Thomas C. Grinage, et al	458/73	124.08
4	15-31	Roger D. Blizzard, et al	342/782	25
5	15-38	Rodney A. & Candis L. Nash	351/701	85.48
6	15-30.1	Roger D. Blizzard, et al	343/427	101.38
7	15-12	Roger Matthes	319/22	61
8	15-11	Roger Matthes	318/137	115.47
9	15-7	Roger Matthes	319/22	41.72
10	15-6	James F. & Connie L. Billiter, et al	288/325	59.5
11	10-59	Goldie A. Mathews	115/485	10.08
12	10-58	Jeffery A. & Cheryl L. Ferrell	325/334	52
13	10-56	Mary K Neff	413/731	22.06
14	10-57	Charles E. & Laura L. Friend	334/836	84.39
15	10-60	J.S. & Goldie A. Matthews	129/58	17.67
16	10-46	Opal Carol Tallman	282/382	114
17	10-43	Kevin S. & Melinda S. Goff	431/799	100
18	10-42	Kevin S. & Melinda S. Goff	431/799	25.5
19	10-41	Kevin S. & Melinda S. Goff	431/799	2.66
20	10-36	Randy Lee & Mary Lou Michael	230/499	24.65
21	10-37.3	H.H. Snider	158/151	0.50
22	10-37.4	Kevin S. & Melinda S. Goff	425/830	7.50

ID	TM/Par	Owner	Bk/Pg	Acres
23	10-37.1	Wayne H. & Violet L. Mercer	226/473	5.05
24	10-37.2	Kenneth L. & Gladys L. Vancamp	431/194	1.36
25	10-39	Elk Fork Cemetery Association	143/308	0.32
26	10-15	Kevin S. Goff & Melinda S. Goff	423/695	18.50
27	10-15.9	Becky S. & Everett E. Neff, II	322/751	1.03
28	10-40	Avril Dewayne Matthews	421/565	1.43
29	10-14.1	Triad Energy Corp. of WV Inc.	329/604	1
30	10-14.3	Elk Fork Church	299/126	1.495
31	10-16	Ruby M. Watson	256/45	0.488
32	10-15.5	Ruby M. Watson	289/359	0.0292
33	10-15.7	Frank W., Jr. & Ruby M. Watson	317/383	5.226
34	10-15.4	Frank W., Jr. & Ruby M. Watson	343/309	0.65
35	10-15.8	Frank & Ruby Watson	427/47	5.229
36	10-17	Sandra K. Metz	342/153	0.89
37	10-18	Wendy S. Gustavich	331/365	1.9
38	10-15.6	Wayne H. & Violet Mercer	317/378	35.82
39	10-14	Kevin S. & Melinda S. Goff	597/808	97.065
40	10-3	Kevin S. & Melinda S. Goff	597/808	53.75
41	10-2	Patricia Ann Heintzman	W13/384	73.26
42	6-36	Dennis & Clista Heintzman	297/640	417.6
43	10-38	Elk Fork Cemetery Association	142/271	0.46
44	10-37	Sandra Fanti	425/827	1.31



Leases	
A	Heritage Resources
B	Marcellus Minerals, LLC
C	William S. Nash, et al
D	Heleen E. Boggs
E	Jerry R. Brown
F	B. Fred Hill Jr.
G	Roger D. Blizzard
H	Reita Jane Hall
I	Samuel Rogers
J	Linda Lou Moore
K	Dale E. Pipes
L	Sandra E. Merrigan
M	David E. Bowyer
N	Joseph Shoemaker
O	Kenneth R. Barker
P	J&N Management Enterprises LLC
Q	Rockford Energy, LLC
R	A. DeWayne Matthews
S	Allen Smith
T	Charles Eugene Friend, et ux
U	Kevin S. Goff, et ux
V	Susan Ertel
W	Sandra Fanti
X	Kevin S. Goff, et ux
Y	Kenneth L. Van Camp, et ux
Z	Elk Fork Cemetery
AA	Wayne H. Mercer, et ux
AB	Elk Fork Church of Christ
AC	Ridgewood Development LLC
AD	Dennis M. Strode
AE	Nina & Phillip Whitefield
AF	Patricia Ann Heintzman
AG	Norma Smith
AH	BRC Appalachian Minerals I, LLC
AI	Nina A. Whitefield
AJ	

FILE NO: 49-54-E-19  
 DRAWING NO: Richmond 1H Well Plat  
 SCALE: 1" = 2000'  
 MINIMUM DEGREE OF ACCURACY:  
 Submeter  
 PROVEN SOURCE OF ELEVATION:  
 WVDOT, Harrisville, WV

**STATE OF WEST VIRGINIA**  
 DEPARTMENT OF ENVIRONMENTAL PROTECTION  
**OIL AND GAS DIVISION**

DATE: April 9 2020  
 OPERATOR'S WELL NO. Richmond 1H  
 API WELL NO  
 47 - 095 - 02690  
 STATE COUNTY PERMIT

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

LOCATION: ELEVATION: As-Built 1,004' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Porter Falls  
 DISTRICT: Ellsworth COUNTY: Tyler  
 SURFACE OWNER: & Ruth E. Spencer  
 ROYALTY OWNER: Heritage Resources Marcellus Minerals, LLC; Jerry R. Brown; B. Fred Hill, Jr.  
 PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) BHL MOD  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 7,000' TVD  
 24,250' MD

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System  
 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road  
 Denver, CO 80202 Charleston, WV 25313

Operator's Well Number Richmond Unit 1H

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

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>Heritage Resources Marcellus Minerals Lease</u> Heritage Resources Marcellus Minerals	Antero Resources Corporation	1/8+	0627/0134
<u>Jerry R. Brown Lease</u> Jerry R. Brown	Antero Resources Corporation	1/8+	0665/0767
<u>Roger D. Blizzard Lease</u> Roger D. Blizzard Petroedge Energy LLC Statoil USA Onshore Properties EQT Production Company	Petroedge Energy LLC Statoil USA Onshore Properties EQT Production Company Antero Resources Corporation	1/8+ Assignment Assignment Assignment	0392/0439 0406/0147 0539/0239 0663/0001
<u>B. Fred Hill Jr. Lease</u> B. Fred Hill Jr.	Antero Resources Corporation	1/8+	0531/0516
<u>Reita Jane Hall Lease</u> Reita Jane Hall	Antero Resources Corporation	1/8+	0531/0450
<u>Linda Lou Moore Lease</u> Linda Lou Moore Petroedge Energy LLC Statoil USA Onshore Properties EQT Production Company	Petroedge Energy LLC Statoil USA Onshore Properties EQT Production Company Antero Resources Corporation	1/8 Assignment Assignment Assignment	0391/0736 0406/0147 0539/0239 0022/0144
<u>Dale Pipes Lease</u> Dale Pipes Antero Resources Appalachian Corporation	Antero Resources Appalachian Corporation Antero Resources Corporation	1/8+ Name Change	0404/0390 Exhibit 1
<u>Sandra E. Merrigan Lease</u> Sandra E. Merrigan	Antero Resources Corporation	1/8+	0553/0165
<u>David E. Bowyer Lease</u> David E. Bowyer Statoil USA Onshore Properties EQT Production Company	Statoil USA Onshore Properties EQT Production Company Antero Resources Corporation	1/8+ Assignment Assignment	0492/0773 0539/0239 0663/0001
<u>A. DeWayne Matthews Lease</u> A. DeWayne Matthews	Antero Resources Corporation	1/8+	0611/0556

RECEIVED  
Office of Oil and Gas

APR 22 2020

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.

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

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	<u>Susan Ertel Lease</u> Susan Ertel	Antero Resources Corporation	1/8+	0494/0583
W	<u>Kevin S. Goff et ux Lease</u> Kevin S. Goff et ux	Antero Resources Corporation	1/8+	0014/0497
X	<u>Kenneth L. VanCamp et ux Lease</u> Kenneth L. VanCamp et ux	Antero Resources Corporation	1/8+	0017/0659
#D	<u>Ridgewood Development Lease</u> Ridgewood Development	Antero Resources Corporation	1/8+	0626/0345
A.F.	<u>Nina &amp; Philip Whitefield et vir Lease</u> Nina & Philip Whitefield et vir	Antero Resources Corporaiton	1/8+	0005/0673

WW-6A1  
(5/13)

Operator's Well No. Richmond Unit 1H

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

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
<u>Patricia Ann Heintzman Lease</u>	Patricia Ann Heintzman	Antero Resources Corporation	1/8+	0594/0309

\*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

RECEIVED  
Office of Oil and Gas  
**APR 22 2020**  
WV Department of  
Environmental Protection

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: Tim Rady  
Its: VP of Land



April 21, 2020

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 Blizzard Pad: Richmond Unit 1H (API # 47-095-02690).

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

APR 22 2020

WV Department of  
Environmental Protection



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

April 21, 2020

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 Blizzard Pad: Richmond Unit 1H (API # 47-095-02690).

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 flourish extending to the right.

Megan Griffith  
Permitting Agent  
Antero Resources Corporation

RECEIVED  
Office of Oil and Gas

APR 27 2020

WV Department of  
Environmental Protection

Enclosures

WW-6B  
(04/15)

API NO. 47-095 - 02690

OPERATOR WELL NO. Richmond Unit 1H

Well Pad Name: Blizzard Pad

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

1) Well Operator: Antero Resources Corporation

<u>494507062</u>	<u>095 - Tyler</u>	<u>Ellsworth</u>	<u>Porter Falls 7.5'</u>
------------------	--------------------	------------------	--------------------------

  
Operator ID County District Quadrangle

2) Operator's Well Number: Richmond Unit 1H Well Pad Name: Blizzard Pad

3) Farm Name/Surface Owner: Roger D. Blizzard & Ruth E. Spencer Public Road Access: US Route 34

4) Elevation, current ground: 1004' 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: 7000' TVD, Anticipated Thickness- 55 feet, Associated Pressure- 2850#

8) Proposed Total Vertical Depth: 7000' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 24250' MD

11) Proposed Horizontal Leg Length: 15915'

12) Approximate Fresh Water Strata Depths: 16'

13) Method to Determine Fresh Water Depths: 47-095-02274

14) Approximate Saltwater Depths: 1430', 1813'

15) Approximate Coal Seam Depths: None Identified

RECEIVED  
Office of Oil and Gas

16) Approximate Depth to Possible Void (coal mine, karst, other): None Anticipated

APR 22 2020

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes \_\_\_\_\_ No

WV Department of  
Environmental Protection

(a) If Yes, provide Mine Info: Name: \_\_\_\_\_

Depth: \_\_\_\_\_

Seam: \_\_\_\_\_

Owner: \_\_\_\_\_

WW-6B  
(04/15)

API NO. 47- 095 - 02690

OPERATOR WELL NO. Richmond Unit 1H

Well Pad Name: Blizzard 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#	300	300	CTS, 417 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#	24250	24250	6260 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"	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"	0.415"	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							

RECEIVED  
Office of Oil and Gas

APR 22 2020

WV Department of  
Environmental Protection

PACKERS

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



WW-6B  
(10/14)

API NO. 47- 095 - 02690

OPERATOR WELL NO. Richmond Unit 1H

Well Pad Name: Blizzard 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): 26.80 acres

22) Area to be disturbed for well pad only, less access road (acres): 9.52 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.

RECEIVED  
Office of Oil and Gas

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

APR 22 2020  
WW Department of  
Environmental Protection

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.

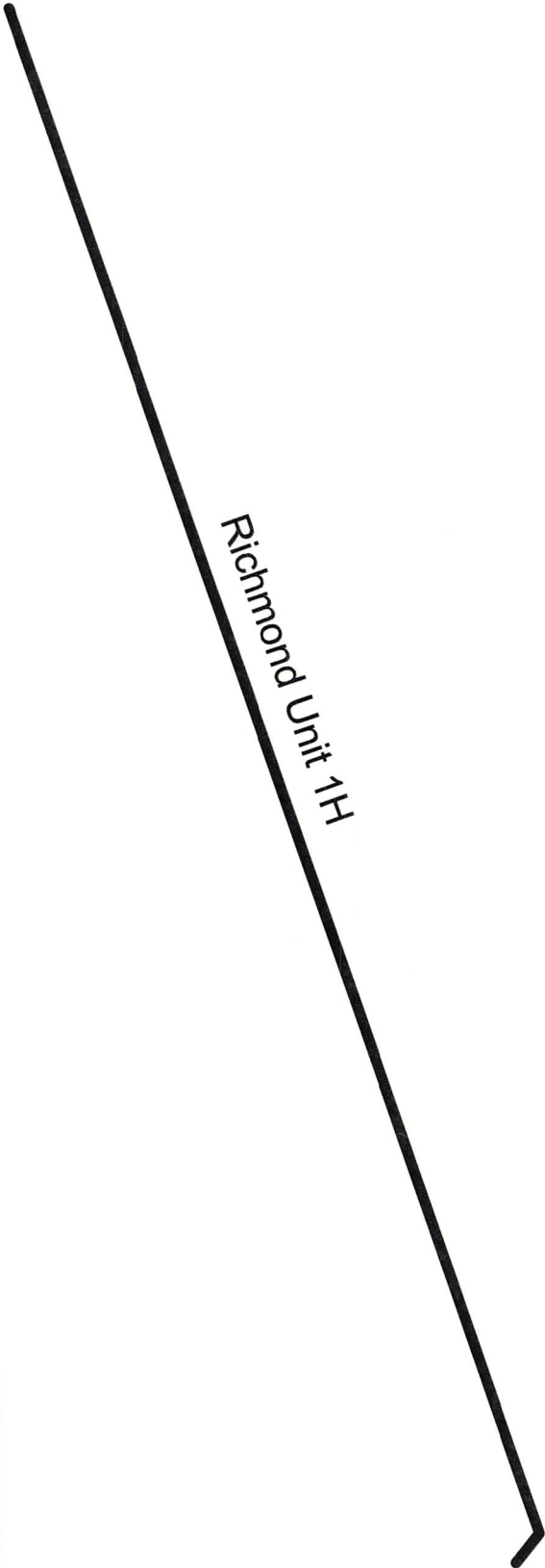
Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.

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.



PERMIT MODIFICATION API # 47-095-02690



RECEIVED  
Office of Oil and Gas  
APR 22 2020  
WV Department of  
Environmental Protection



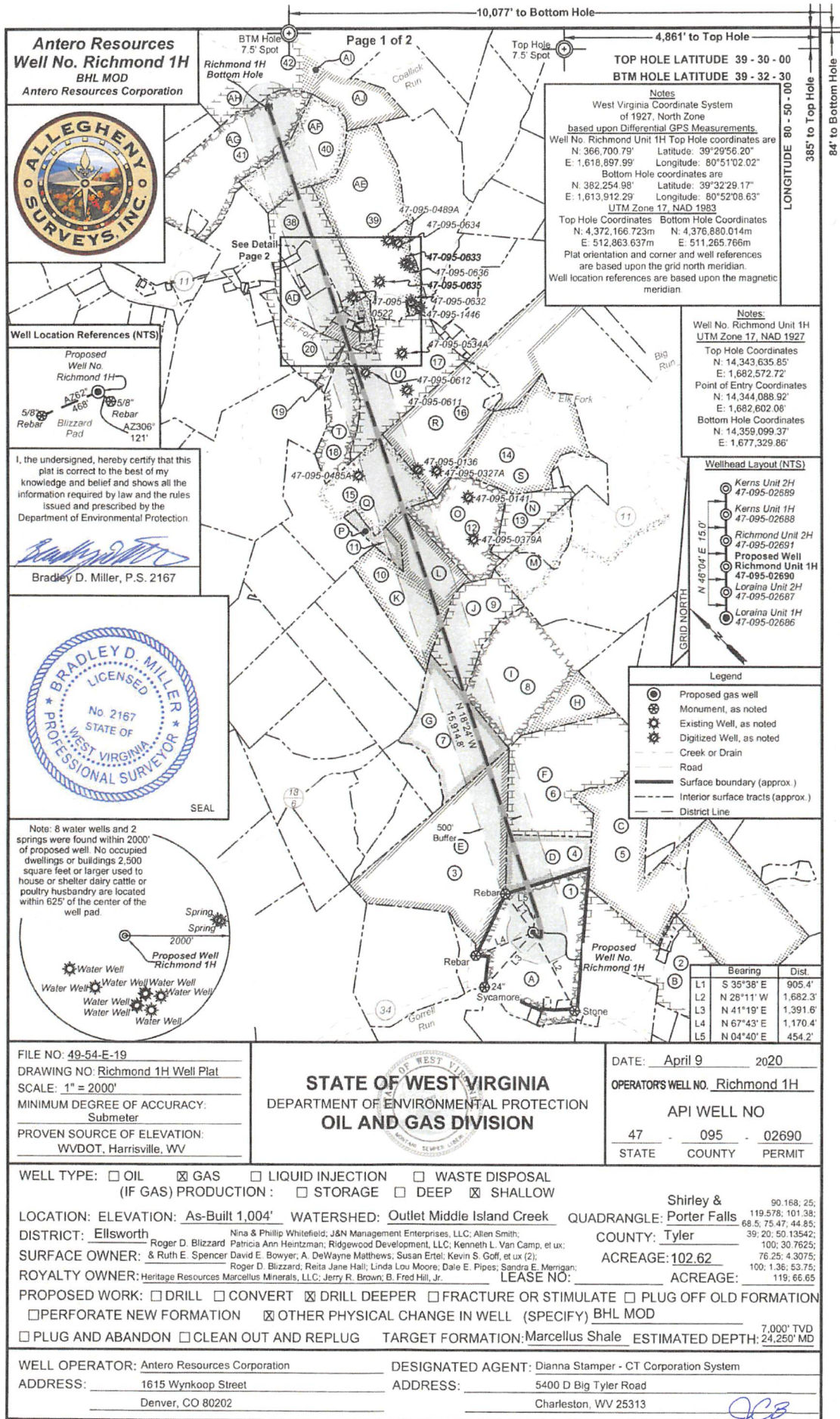
Antero Resources Corporation

Richmond Unit 1H - AOR

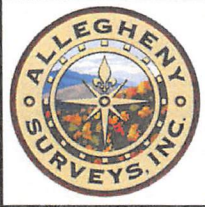


No Wells of Interest REMARKS

January 21, 2020



**Antero Resources**  
**Well No. Richmond 1H**  
 BHL MOD  
 Antero Resources Corporation

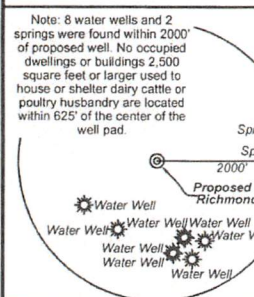
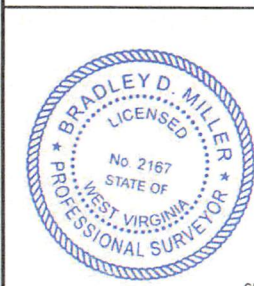


**Well Location References (NTS)**



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 prescribed by the Department of Environmental Protection.

*Bradley D. Miller*  
 Bradley D. Miller, P.S. 2167



FILE NO: 49-54-E-19  
 DRAWING NO: Richmond 1H Well Plat  
 SCALE: 1" = 2000'  
 MINIMUM DEGREE OF ACCURACY: Submeter  
 PROVEN SOURCE OF ELEVATION: WVDOT, Harrisville, WV

**STATE OF WEST VIRGINIA**  
 DEPARTMENT OF ENVIRONMENTAL PROTECTION  
**OIL AND GAS DIVISION**

DATE: April 9 2020  
 OPERATOR'S WELL NO. Richmond 1H  
 API WELL NO  
47 - 095 - 02690  
 STATE COUNTY PERMIT

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

LOCATION: ELEVATION: As-Built 1,004' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Shirley & Porter Falls  
 DISTRICT: Ellsworth COUNTY: Tyler  
 SURFACE OWNER: Ruth E. Spencer ACREAGE: 102.62  
 ROYALTY OWNER: Heritage Resources Marcellus Minerals, LLC; Jerry R. Brown; B. Fred Hill, Jr. LEASE NO: \_\_\_\_\_ ACREAGE: \_\_\_\_\_

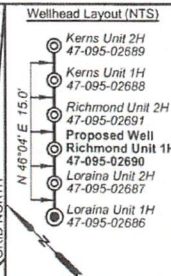
PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) BHL MOD

PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 24,250' MD

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System  
 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road  
Denver, CO 80202 Charleston, WV 25313

**Notes**  
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.  
 Well No. Richmond Unit 1H Top Hole coordinates are  
 N: 366,700.79' Longitude: 80°51'02.02"  
 E: 1,618,897.99' Longitude: 80°51'02.02"  
 Bottom Hole coordinates are  
 N: 382,254.98' Latitude: 39°32'29.17"  
 E: 1,613,912.29' Longitude: 80°52'08.63"  
 UTM Zone 17, NAD 1983  
 Top Hole Coordinates Bottom Hole Coordinates  
 N: 4,372,166.723m N: 4,376,880.014m  
 E: 512,863.637m E: 511,265.766m  
 Plat orientation and corner and well references are based upon the grid north meridian.  
 Well location references are based upon the magnetic meridian.

**Notes:**  
 Well No. Richmond Unit 1H UTM Zone 17, NAD 1927  
 Top Hole Coordinates  
 N: 14,343,635.85'  
 E: 1,682,572.72'  
 Point of Entry Coordinates  
 N: 14,344,088.92'  
 Bottom Hole Coordinates  
 N: 14,359,099.37'  
 E: 1,677,329.86'



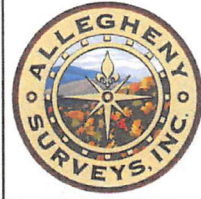
**Legend**

- Proposed gas well
- Monument, as noted
- Existing Well, as noted
- Digitized Well, as noted
- Creek or Drain
- Road
- Surface boundary (approx.)
- Interior surface tracts (approx.)
- District Line

	Bearing	Dist.
L1	S 35°38' E	905.4'
L2	N 28°11' W	1,682.3'
L3	N 41°19' E	1,391.6'
L4	N 67°43' E	1,170.4'
L5	N 04°40' E	454.2'

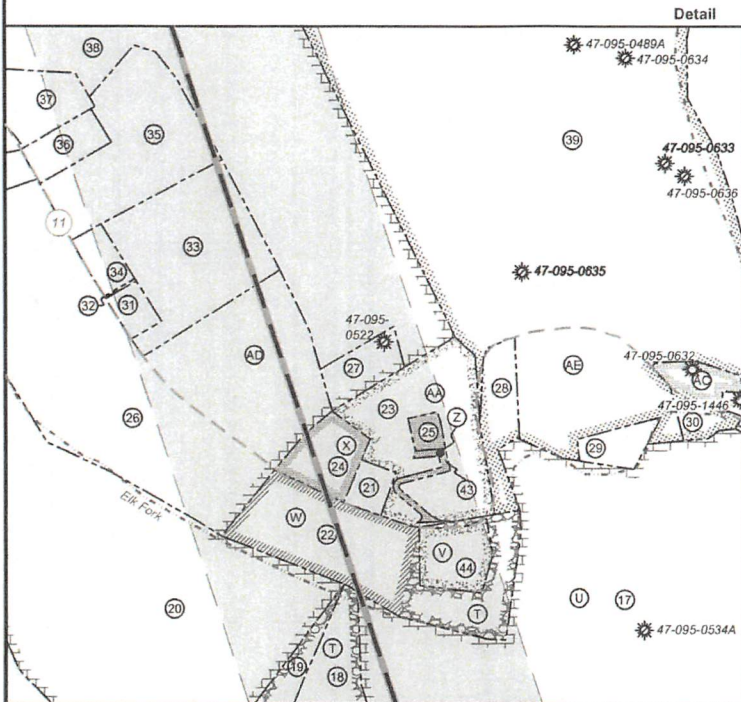
RECEIVED  
 Office of Oil and Gas  
**APR 27 2020**  
 WV Department of Environmental Protection

*JCB*  
 4/22/2020



ID	TM/Par	Owner	Bk/Pg	Acres
1	15-33	Roger D. Blizzard, et al	340/170	102.62
2	15-32	William S. & Opal Marie Nash	335/188	78.58
3	15-30	Thomas C. Grnaga, et al	458/73	124.08
4	15-31	Roger D. Blizzard, et al	342/782	25
5	15-38	Rodney A. & Candis L. Nash	351/701	85.48
6	15-30.1	Roger D. Blizzard, et al	343/427	101.38
7	15-12	Roger Matthes	319/22	61
8	15-11	Roger Matthes	318/137	115.47
9	15-7	Roger Matthes	319/22	41.72
10	15-6	James F. & Connie L. Biliter, et al	288/325	59.5
11	10-59	Goldie A. Mathews	115/485	10.08
12	10-58	Jeffery A. & Cheryl L. Ferrell	325/334	52
13	10-56	Mary K Neff	413/731	22.06
14	10-57	Charles E. & Laura L. Friend	334/836	84.39
15	10-60	J.S. & Goldie A. Mathews	129/58	17.67
16	10-46	Opal Carol Tallman	282/382	114
17	10-43	Kevin S. & Melinda S. Goff	431/799	100
18	10-42	Kevin S. & Melinda S. Goff	431/799	25.5
19	10-41	Kevin S. & Melinda S. Goff	431/799	2.66
20	10-36	Randy Lee & Mary Lou Michael	230/499	24.65
21	10-37.3	H.H. Snider	158/151	0.50
22	10-37.4	Kevin S. & Melinda S. Goff	425/830	7.50

ID	TM/Par	Owner	Bk/Pg	Acres
23	10-37.1	Wayne H. & Violet L. Mercer	226/473	5.05
24	10-37.2	Kenneth L. & Gladys L. Vancamp	431/194	1.36
25	10-39	Elk Fork Cemetery Association	143/308	0.32
26	10-15	Kevin S. Goff & Melinda S. Goff	423/695	18.50
27	10-15.9	Becky S. & Everett E. Neff, II	322/751	1.03
28	10-40	Avril Dewayne Mathews	421/565	1.43
29	10-14.1	Triad Energy Corp. of WV Inc.	329/604	1
30	10-14.3	Elk Fork Church	298/126	1.495
31	10-16	Ruby M. Watson	256/45	0.488
32	10-15.5	Ruby M. Watson	289/359	0.0292
33	10-15.7	Frank W., Jr. & Ruby M. Watson	317/383	5.226
34	10-15.4	Frank W., Jr. & Ruby M. Watson	343/309	0.65
35	10-15.8	Frank & Ruby Watson	427/47	5.229
36	10-17	Sandra K. Metz	342/153	0.89
37	10-18	Wendy S. Gustavich	331/365	1.9
38	10-15.6	Wayne H. & Violet Mercer	317/378	35.82
39	10-14	Kevin S. & Melinda S. Goff	597/808	97.065
40	10-3	Kevin S. & Melinda S. Goff	597/808	53.75
41	10-2	Patricia Ann Heintzman	W13/384	73.26
42	6-36	Dennis & Clista Heintzman	297/640	417.6
43	10-38	Elk Fork Cemetery Association	142/271	0.46
44	10-37	Sandra Fanti	425/827	1.31



Leases	
A	Heritage Resources
B	Marcellus Minerals, LLC
C	William S. Nash, et al
D	Helen E. Boggs
E	Jerry R. Brown
F	B. Fred Hill Jr.
G	Roger D. Blizzard
H	Reita Jane Hall
I	Samuel Rogers
J	Linda Lou Moore
K	Dale E. Pipes
L	Sandra E. Merrigan
M	David E. Bowyer
N	Joseph Shoemaker
O	Kenneth R. Barker
P	J&N Management Enterprises LLC
Q	Rockford Energy, LLC
R	A. DeWayne Mathews
S	Allen Smith
T	Charles Eugene Friend, et ux
U	Kevin S. Goff, et ux
V	Susan Ertel
W	Sandra Fanti
X	Kevin S. Goff, et ux
Y	Kenneth L. Van Camp, et ux
Z	Elk Fork Cemetery
AA	Wayne H. Mercer, et ux
AB	Elk Fork Church of Christ
AC	Ridgewood Development LLC
AD	Dennis M. Strode
AE	Nina & Phillip Whitefield
AF	Patricia Ann Heintzman
AG	Norma Smith
AH	Nina A. Whitefield
AI	BRC Appalachian Minerals I, LLC
AJ	Nina A. Whitefield

FILE NO: 49-54-E-19  
 DRAWING NO: Richmond 1H Well Plat  
 SCALE: 1" = 2000'  
 MINIMUM DEGREE OF ACCURACY:  
 Submeter  
 PROVEN SOURCE OF ELEVATION:  
 WVDOT, Harrisville, WV

**STATE OF WEST VIRGINIA**  
 DEPARTMENT OF ENVIRONMENTAL PROTECTION  
**OIL AND GAS DIVISION**

DATE: April 9 2020  
 OPERATOR'S WELL NO. Richmond 1H  
 API WELL NO  
 47 - 095 - 02690  
 STATE COUNTY PERMIT

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

LOCATION: ELEVATION: As-Built 1,004' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Porter Falls  
 DISTRICT: Ellsworth COUNTY: Tyler  
 SURFACE OWNER: Roger D. Blizzard Patricia Ann Heintzman, Ridgewood Development, LLC; Kenneth L. Van Camp, et ux; ACREAGE: 102.62  
 ROYALTY OWNER: Heritage Resources Marcellus Minerals, LLC; Jerry R. Brown; B. Fred Hill, Jr. LEASE NO: ACREAGE: 102.62  
 PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) BHL MOD  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 7,000' TVD; 24,250' MD

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System  
 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road  
 Denver, CO 80202 Charleston, WV 25313

RECEIVED  
 Office of Oil and Gas  
**APR 27 2020**  
 WV Department of  
 Environmental Protection

JCS  
 4/22/2020

WW-6A1

Operator's Well Number Richmond Unit 1H

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

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<b><u>Heritage Resources Marcellus Minerals Lease</u></b>			
Heritage Resources Marcellus Minerals	Antero Resources Corporation	1/8+	0627/0134
<b><u>Jerry R. Brown Lease</u></b>			
Jerry R. Brown	Antero Resources Corporation	1/8+	0665/0767
<b><u>Roger D. Blizzard Lease</u></b>			
Roger D. Blizzard	Petroedge Energy LLC	1/8+	0392/0439
Petroedge Energy LLC	Statoil USA Onshore Properties	Assignment	0406/0147
Statoil USA Onshore Properties	EQT Production Company	Assignment	0539/0239
EQT Production Company	Antero Resources Corporation	Assignment	0663/0001
<b><u>B. Fred Hill Jr. Lease</u></b>			
B. Fred Hill Jr.	Antero Resources Corporation	1/8+	0531/0516
<b><u>Reita Jane Hall Lease</u></b>			
Reita Jane Hall	Antero Resources Corporation	1/8+	0531/0450
<b><u>Linda Lou Moore Lease</u></b>			
Linda Lou Moore	Petroedge Energy LLC	1/8	0391/0736
Petroedge Energy LLC	Statoil USA Onshore Properties	Assignment	0406/0147
Statoil USA Onshore Properties	EQT Production Company	Assignment	0539/0239
EQT Production Company	Antero Resources Corporation	Assignment	0022/0144
<b><u>Dale Pipes Lease</u></b>			
Dale Pipes	Antero Resources Appalachian Corporation	1/8+	0404/0390
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b><u>Sandra E. Merrigan Lease</u></b>			
Sandra E. Merrigan	Antero Resources Corporation	1/8+	0553/0165
<b><u>David E. Bowyer Lease</u></b>			
David E. Bowyer	Statoil USA Onshore Properties	1/8+	0492/0773
Statoil USA Onshore Properties	EQT Production Company	Assignment	0539/0239
EQT Production Company	Antero Resources Corporation	Assignment	0663/0001
<b><u>A. DeWayne Matthews Lease</u></b>			
A. DeWayne Matthews	Antero Resources Corporation	1/8+	0611/0556

RECEIVED  
Office of Oil and Gas  
APR 27 2020  
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.

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

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>Susan Ertel Lease</b> Susan Ertel	Antero Resources Corporation	1/8+	0494/0583
<b>Kevin S. Goff et ux Lease</b> Kevin S. Goff et ux	Antero Resources Corporation	1/8+	0014/0497
<b>Kenneth L. VanCamp et ux Lease</b> Kenneth L. VanCamp et ux	Antero Resources Corporation	1/8+	0017/0659
<b>Ridgewood Development Lease</b> Ridgewood Development	Antero Resources Corporation	1/8+	0626/0345
<b>Nina &amp; Philip Whitefield et vir Lease</b> Nina & Philip Whitefield et vir	Antero Resources Corporaiton	1/8+	0005/0673

RECEIVED  
 Office of Oil and Gas

APR 27 2020

WV Department of  
 Environmental Protection

WW-6A1  
(5/13)

Operator's Well No. Richmond Unit 1H

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

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
<u>Patricia Ann Heintzman Lease</u>				
	Patricia Ann Heintzman	Antero Resources Corporation	1/8+	0594/0309

\*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.

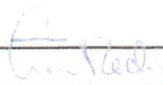
**Acknowledgement of Possible Permitting/Approval  
In Addition to the Office of Oil and Gas**

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: Tim Rady  
Its: VP of Land

RECEIVED  
Office of Oil and Gas  
 APR 27 2020

WV Department of  
Environmental Protection

**VOID**

Section