



west virginia department of environmental protection

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

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Friday, January 8, 2021
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION
1615 WYNKOOP STREET
DENVER, CO 80202

Re: Permit Modification Approval for TYGART 2H
47-095-02722-00-00

Extend Lateral Length, Total Measured Depth, 12600' to 24200'. 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".

James A. Martin
Chief

Operator's Well Number: TYGART 2H
Farm Name: PATRICIA ANN HEINTZMAN
U.S. WELL NUMBER: 47-095-02722-00-00
Horizontal 6A New Drill
Date Modification Issued: 01/08/2021

Promoting a healthy environment.

WW-6B
(04/15)

API NO. 47-095 - 02722
OPERATOR WELL NO. Tygart Unit 2H
Well Pad Name: Elk Fork 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 Porters Falls 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Tygart Unit 2H Well Pad Name: Elk Fork Pad

3) Farm Name/Surface Owner: Patricia Ann Heintzman Public Road Access: Elk Fork Road

4) Elevation, current ground: 1126' Elevation, proposed post-construction: _____

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

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6) Existing Pad: Yes or No No

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: 24200'

11) Proposed Horizontal Leg Length: 15628'

12) Approximate Fresh Water Strata Depths: 125'

13) Method to Determine Fresh Water Depths: 47-095-00269

14) Approximate Saltwater Depths: 1703'

15) Approximate Coal Seam Depths: 58'

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: _____

CHK# 224759
Amt \$5000
Date 12/15/20

WW-6B
(04/15)

API NO. 47- 095 - 02722
 OPERATOR WELL NO. Tygart Unit 2H
 Well Pad Name: Elk Fork 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#	90'	90'	CTS, 86 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#	24200'	24200'	6246 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							

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Kind:	N/A			WV Department of Environmental Protection
Sizes:	N/A			
Depths Set:	N/A			

WW-6B
(10/14)

API NO. 47- 095 - 02722
 OPERATOR WELL NO. Tygart Unit 2H
 Well Pad Name: Elk Fork Pad

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill a new vertical shallow well into the Marcellus Shale.

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): 43.65 acres

22) Area to be disturbed for well pad only, less access road (acres): 8.91 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

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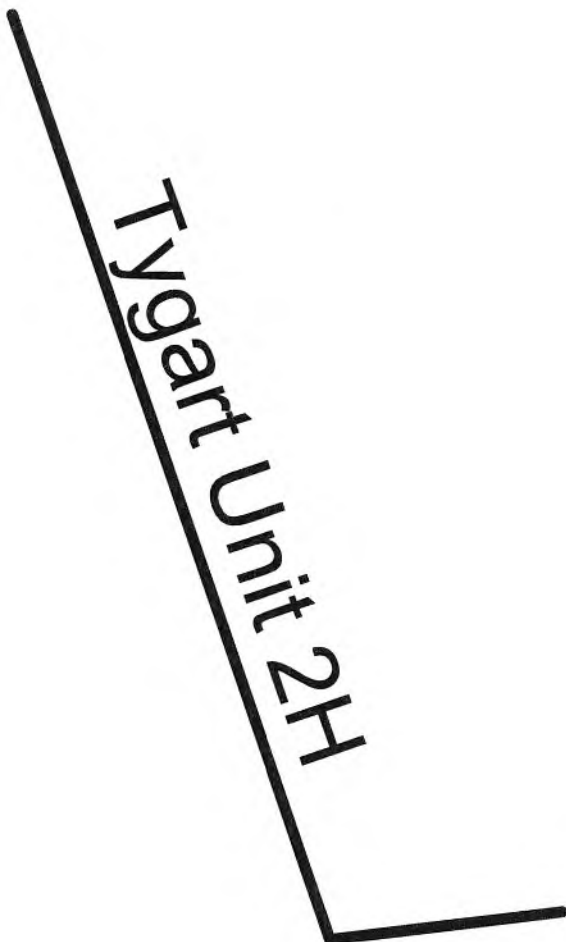
25) Proposed borehole conditioning procedures:

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*Note: Attach additional sheets as needed.



PERMIT MODIFICATION API # 47-095-02722



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Antero Resources Corporation

Tygart Unit 2H - AOR



REMARKS
No Wells of Interest

November 9, 2020

WW-6A1

Operator's Well Number Tygart 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>Patricia Ann Heintzman Lease (TM 10 PCL 2)</u> Patricia Ann Heintzman	Antero Resources Corporation	1/8+	0594/0309
<u>Patricia Ann Heintzman Lease (TM 10 PCL 21)</u> Patricia Ann Heintzman	Antero Resources Corporation	1/8+	0594/0309
<u>John E. Roberts Lease</u> John E. Roberts Stone Energy Corporation	Stone Energy Corporation Antero Resources Corporation	1/8+ Assignment	0402/0266 0447/0115
<u>Dennis R. Heintzman et ux Lease</u> Dennis R. Heintzman et ux Stone Energy Corporation Antero Resources Appalachian Corporation	Stone Energy Corporation Antero Resources Appalachian Corporation Antero Resources Corporation	1/8+ Assignment Name Change	0397/0726 0442/0037 0557/0430
<u>BRC Appalachian Minerals I LLC Lease (TM 2 PCL 8)</u> BRC Appalachian Minerals I LLC Statoil USA Onshore Properties EQT Production Company	Statoil USA Onshore Properties EQT Production Company Antero Resources Corporation	Assignment Assignment Assignment	0378/0764 0539/0239 0663/0001
<u>James D. VanCamp et al Lease (TM 3 PCL 32)</u> ✓ James D. VanCamp et al Antero Resources Appalachian Corporation	Antero Resources Appalachian Corporation Antero Resources Corporation	1/8+ Name Change	0404/0380 0557/0430
<u>Kerry Lemasters et ux Lease</u> ✓ Kerry Lemasters et ux	Antero Resources Corporation	1/8+	0417/0451
<u>James D. VanCamp et al Lease (TM 3 PCL 28)</u> ✓ James D. VanCamp et al Antero Resources Appalachian Corporation	Antero Resources Appalachian Corporation Antero Resources Corporation	1/8+ Name Change	0404/0380 0557/0430
<u>James D. VanCamp et al Lease (TM 3 PCL 28.2)</u> ✓ James D. VanCamp et al Antero Resources Appalachian Corporation	Antero Resources Appalachian Corporation Antero Resources Corporation	1/8+ Name Change	0404/0380 0557/0430
<u>James D. VanCamp et al Lease (TM 3 PCL 31)</u> ✓ James D. VanCamp et al Antero Resources Appalachian Corporation	Antero Resources Appalachian Corporation Antero Resources Corporation	1/8+ Name Change	0404/0380 0557/0430

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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.

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Chapter 22, Article 6A, Section 5(a)(5)
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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:

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>James D. VanCamp et al Lease (TM 3 PCL 32)</u> ✓			
James D. VanCamp et al	Antero Resources Appalachian Corporation	1/8+	0404/0380
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	0557/0430
<u>James D. VanCamp et al Lease (TM 3 PCL 32.2)</u> ✓			
James D. VanCamp et al	Antero Resources Appalachian Corporation	1/8+	0404/0380
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	0557/0430
<u>Sybil Mae Gorby Lease</u>			
Sybil Mae Gorby	Antero Resources Corporation	1/8	0076/0663
<u>James D. VanCamp et al Lease (TM 3 PCL 32.2)</u> ✓			
James D. VanCamp et al	Antero Resources Appalachian Corporation	1/8+	0404/0380
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	0557/0430
<u>BRC Appalachian Minerals I LLC Lease (TM 2 PCL 8)</u>			
BRC Appalachian Minerals I LLC	Statoil USA Onshore Properties	Assignment	0378/0764
Statoil USA Onshore Properties	EQT Production Company	Assignment	0539/0239
EQT Production Company	Antero Resources Corporation	Assignment	0663/0001
<u>James D. VanCamp et al Lease (TM 3 PCL 33)</u> ✓			
James D. VanCamp et al	Antero Resources Appalachian Corporation	1/8+	0404/0380
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	0557/0430

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Environmental Protection

WW-6A1
(5/13)

Operator's Well No. Tygart 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)**

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- (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>Sherry Lynn Chefren Lease</u>	Sherry Lynn Chefren	Antero Resources Corporation	1/8+	0429/0527

*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

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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

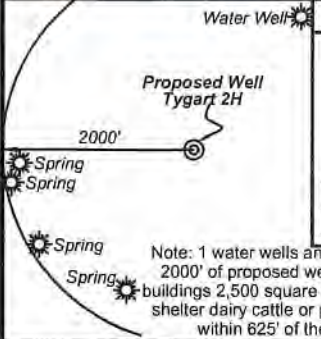
*Co-tenancy utilization – At least 7 mineral owners in tract. At least 75% of the royalty owners have executed a lease on the tract. The interests of the remaining co-tenants were acquired pursuant to the Co-tenancy Modernization and Majority Protection Act.

**Antero Resources
Well No. Tygart 2H
BHL MOD**
Antero Resources Corporation

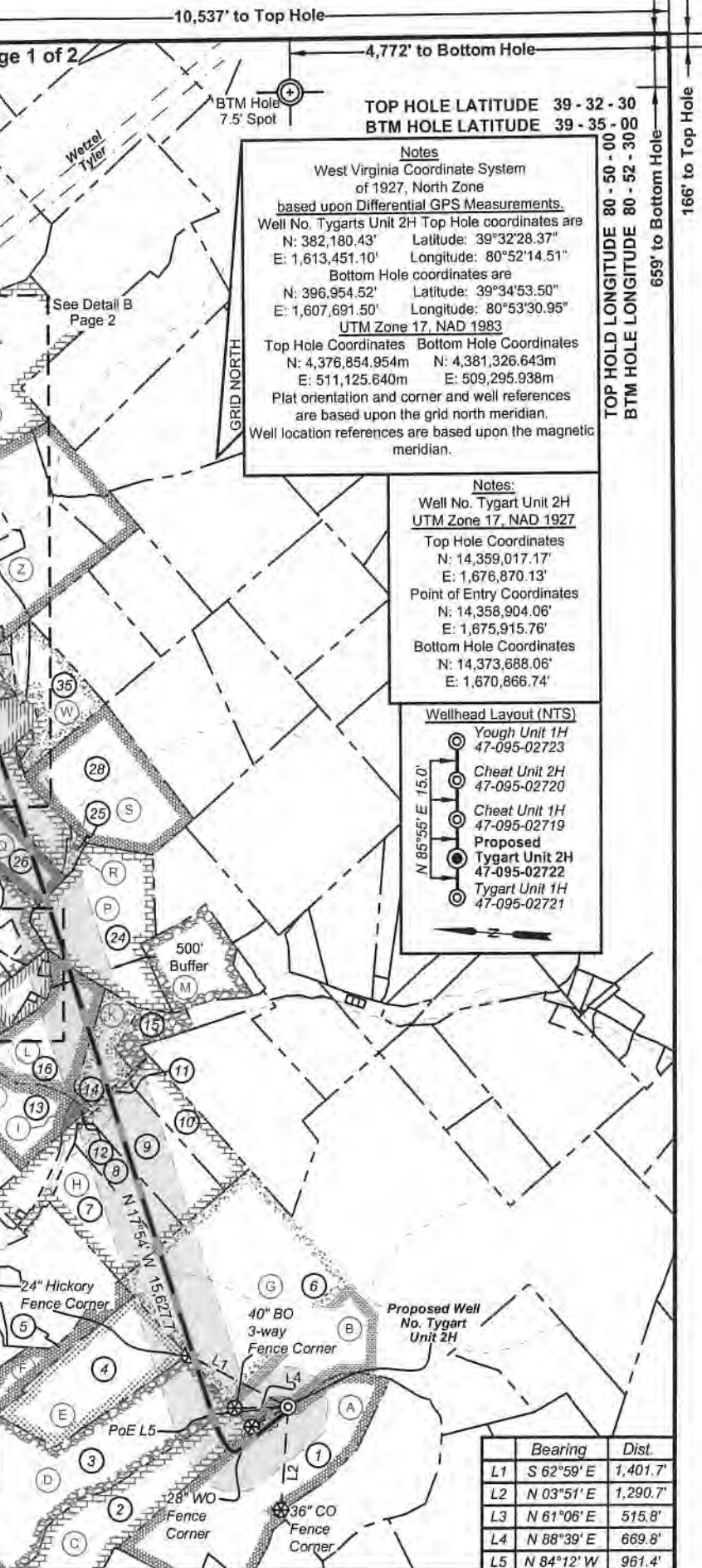


I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the rules issued and prescribed by the Department of Environmental Protection.

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

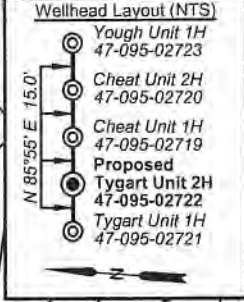


- Legend**
- Proposed gas well
 - ⊗ Monument, as noted
 - ⊙ Existing Well, as noted
 - - - Creek or Drain
 - Road
 - Surface boundary (approx.)
 - Interior surface tracts (approx.)
 - County Line



Notes
West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
Well No. Tygarts Unit 2H Top Hole coordinates are
N: 382,180.43' Latitude: 39°32'28.37"
E: 1,613,451.10' Longitude: 80°52'14.51"
Bottom Hole coordinates are
N: 396,954.52' Latitude: 39°34'53.50"
E: 1,607,691.50' Longitude: 80°53'30.95"
UTM Zone 17, NAD 1983
Top Hole Coordinates Bottom Hole Coordinates
N: 4,376,854.954m N: 4,381,326.643m
E: 511,125.640m E: 509,295.938m
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. Tygart Unit 2H UTM Zone 17, NAD 1927
Top Hole Coordinates
N: 14,359,017.17'
E: 1,676,870.13'
Point of Entry Coordinates
N: 14,358,904.06'
E: 1,675,915.76'
Bottom Hole Coordinates
N: 14,373,888.06'
E: 1,670,866.74'



	Bearing	Dist.
L1	S 62°59' E	1,401.7'
L2	N 03°51' E	1,290.7'
L3	N 61°06' E	515.8'
L4	N 88°39' E	669.8'
L5	N 84°12' W	961.4'

FILE NO: 82-54-E-19
DRAWING NO: Tygart Unit 2H BHL MOD
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: December 17 2020
OPERATOR'S WELL NO. Tygart 2H
API WELL NO
47 - 095 - 02722
STATE COUNTY PERMIT

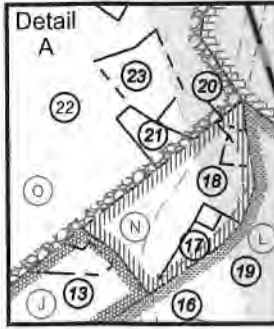
WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
(IF GAS) PRODUCTION: STORAGE DEEP SHALLOW

LOCATION: ELEVATION: As-Built 1,126' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Top Hole:Porter Falls
DISTRICT: Ellsworth BTM Hole:Paden City COUNTY: Tyler 33.76; 76.25; 48.5; 100; 93.8985; 13.3; 24; 23.87;
SURFACE OWNER: Patricia Ann Heintzman James D. VanCamp, et al (5); Kerry Lemasters, et ux; James D. VanCamp, et ux (3); Sherry Lynn Chefren; BRC Appalachian Minerals I, LLC (2); ACREAGE: 73.26 47.5; 6.4; 109.875; 151.08; 98.2; 107.188;
ROYALTY OWNER: Patricia Ann Heintzman (2); John E. Roberts; Dennis R. Heintzman, et ux; Sybil Mae Gorb; LEASE NO: ACREAGE: 17.2625; 100;

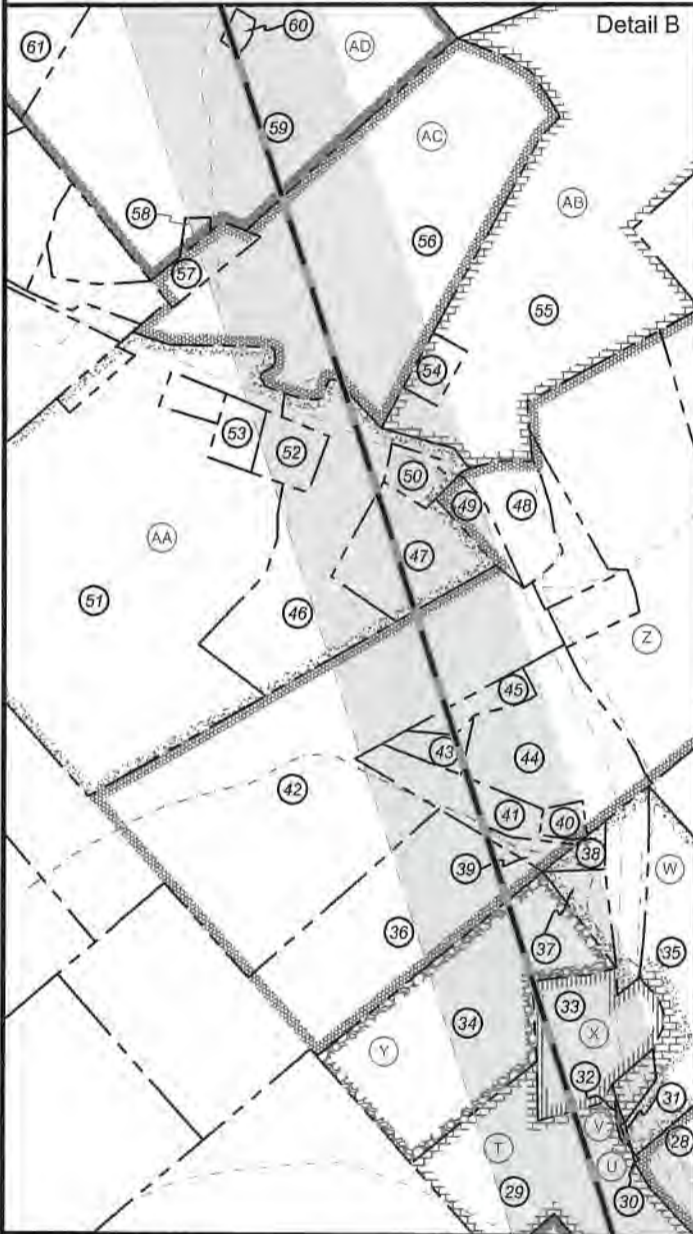
PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) BHL MOD 7,000' TVD
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 24,200' MD

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. Tygart 2H
BHL MOD
 Antero Resources Corporation



Leases			
A	Patricia Ann Heintzman	P	James D. VanCamp, et al
B	Norma Smith	Q	James D. VanCamp, et ux
C	Patricia Ann Heintzman	R	James D. VanCamp, et al
D	John E. Roberts	S	James D. VanCamp, et al
E	Michael Scott Mercer, et ux	T	James D. VanCamp, et al
F	Richard A. Mercer	U	Stanley Watkins
G	Dennis R. Heintzman, et ux	V	Stanley Watkins
H	BRC Appalachian Minerals I, LLC	W	BRC Appalachian Minerals I, LLC
I	Waco Oil & Gas Company, Inc.	X	James D. VanCamp, et al
J	James D. VanCamp, et al	Y	Sybil Mae Gorby
K	James D. VanCamp, et al	Z	James D. VanCamp, et al
L	Kerry Lemasters, et ux	AA	BRC Appalachian Minerals I, LLC
M	Brenda L. Martin	AB	Lowmax R. Kunkel
N	James D. VanCamp, et al	AC	James D. VanCamp, et ux
O	Kay Christen	AD	Sherry Lynn Chefred



ID	TM/Par	Owner	Bk/Pg	Acres
1	10-2	Patricia Ann Heintzman	W13/384	73.26
2	10-1	Patricia Ann Heintzman	150/15	48.50
3	10-64	John E Roberts	W30/108	100.00
4	6-40	Alan D. Wyke	W40/195	42.20
5	9-13	Richard A. Mercer	321/197	16.00
6	6-36	Dennis & Clista Heintzman	297/640	417.60
7	6-35	Donald E. Forrester	343/381	25.75
8	6-35.1	Stephen & Andria Knowlton	289/20	13.32
9	6-35.2	Stephen & Andria Knowlton	224/77	29.02
10	6-35.4	Stephen & Andria Knowlton	340/412	17.46
11	6-35.3	Stephen & Andria Knowlton	224/77	3.00
12	6-23.2	Larry R. Henthorn	584/138	1.27
13	6-23	Randall Dennis, et al	W70/660	42.30
14	6-16.2	Stephen J. & Andria Knowlton	211/375	13.30
15	6-16.3	Michael L. Roberts	407/45	14.81
16	6-16	Kerry & Barbara Lemasters	215/548	33.76
17	6-16.7	Terry Andrew Jackson	388/271	1.23
18	6-16.1	James W. & Geneva Lancaster	443/639	3.44
19	6-16.6	Terry Andrew Jackson	388/271	0.25
20	6-16.8	James W. & Geneva Lancaster	443/639	0.55
21	6-22.1	Charles E. Dennis	348/160	1.25
22	6-22	Patricia Ann Greathouse	W38/671	169.90
23	6-22.2	Roger & Nadine Greathouse	334/770	2.61
24	6-15	James D. VanCamp, et al	W38/144	47.50
25	6-15.1	James D. VanCamp, et ux	174/451	2.28
26	6-14	James D. VanCamp, et al	W38/144	24.00
27	6-22.3	Lucinda J. Greathouse	350/674	10.00
28	6-4	James D. Vancamp, et al	W38/144	46.76
29	6-3	James D. Vancamp, et al	W38/144	23.87
30	6-3.2	Wayne L. Wade	220/322	0.05
31	6-3.3	Wayne L. Wade	220/322	0.03
32	6-3.4	Wayne L. Wade	268/478	0.12
33	6-2	Joel A. Prosser	387/736	6.64
34	6-1	Sybil Gorby	175/265	17.26
35	3-43	Joel A Prosser	387/736	23.62
36	5-1	James D. VanCamp, et al	W38/144	39.00
37	3-43.2	Larry & Kimberly Henthorn	642/513	2.05
38	3-43.1	Janet Johnson	W29/203	0.90
39	3-44.1	Tylor D. Hostuttler	592/109	0.98
40	3-44.2	Gary A & Penny K Midcap	272/632	0.88
41	3-44.4	Tylor D. Hostuttler	592/109	4.00
42	2-11	Rosalie B. Henry	W35/616	61.54
43	3-44.3	Wm J. & Melissa A. Buchanan	299/515	1.88
44	3-44	Jamie Leigh Parks	337/784	9.86
45	3-44.5	W.J. & Melissa Buchanan	326/348	1.72
46	2-8.4	Jonathan & Mary Belle Pittman	186/170	21.14
47	3-47	Donna & Matthew Cecil	462/582	8.61
48	3-46.1	Pamela R. Nelson-Lansford	328/699	2.96
49	3-46	Vada R Hart	40/469	1.54
50	3-47.1	Jack L. Throck-Morton	462/582	1.33
51	2-8	Jonathan & Mary Belle Pittman	186/170	70.93
52	2-8.5	Stanley G. Pittman	327/751	3.68
53	2-8.3	Teresa A. Morris	343/390	1.82
54	3-12.1	Josephine Kunkel	286/75	1.90
55	3-12	Lomax R. Kunkel	297/692	57.51
56	3-48	Linda Hoover	356/233	45.00
57	2-9	Linda L. Hoover	356/233	1.57
58	2-1.2	Donald E. Virden Jr.	421/281	0.41
59	2-1.1	Donald E. Virden, Jr.	421/281	68.20
60	2-1.3	Lou Ann & Donald E. Virden Jr.	325/907	0.55
61	2-1	Donald E. Virden, Jr.	421/281	30.84

FILE NO: 82-54-E-19
 DRAWING NO: Tygart Unit 2H BHL MOD
 SCALE: 1" = 2000'
 MINIMUM DEGREE OF ACCURACY:
 Submeter
 PROVEN SOURCE OF ELEVATION:
 WVDOT, Harrisville, WV



DATE: December 17 2020
 OPERATOR'S WELL NO. Tygart 2H
 API WELL NO
 47 - 095 - 02722
 STATE COUNTY PERMIT

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

LOCATION: ELEVATION: As-Built 1,126' WATERSHED: Outlet Middle Island Creek QUADRANGLE: BTM Hole: Paden City Top Hole: Porter Falls

DISTRICT: Ellsworth COUNTY: Tyler 33.76; 76.25; 48.5; 100;

SURFACE OWNER: Patricia Ann Heintzman James D. VanCamp, et al (5); Kerry Lemasters, et ux; James D. VanCamp, et ux (3); Sherry Lynn Chefred; BRC Appalachian Minerals I, LLC (2); ACREAGE: 73.26 93.6985; 13.3; 24; 23.87;

ROYALTY OWNER: Patricia Ann Heintzman (2); John E. Roberts; Dennis R. Heintzman, et ux; Sybil Mae Gorby; LEASE NO: ACREAGE: 151.08; 98.2; 107.188; 17.2625; 100;

PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) BHL MOD 7,000' TVD

PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 24,200' 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

10,537' to Top Hole

4,772' to Bottom Hole

Antero Resources
Well No. Tygart 2H
BHL MOD
Antero Resources Corporation

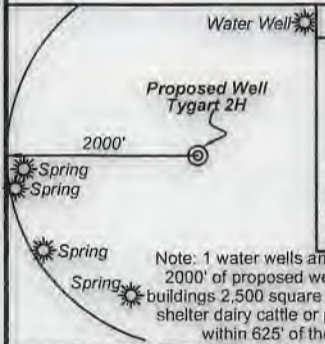


I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the rules issued and prescribed by the Department of Environmental Protection.

Bradley D. Miller, P.S. 2167



SEAL



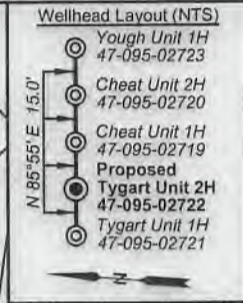
- Legend**
- Proposed gas well
 - Monument, as noted
 - Existing Well, as noted
 - Creek or Drain
 - Road
 - Surface boundary (approx.)
 - Interior surface tracts (approx.)
 - County Line



	Bearing	Dist.
L1	S 62°59' E	1,401.7'
L2	N 03°51' E	1,290.7'
L3	N 61°06' E	515.8'
L4	N 88°39' E	669.8'
L5	N 84°12' W	961.4'

Notes
West Virginia Coordinate System of 1927, North Zone
based upon Differential GPS Measurements.
Well No. Tygart Unit 2H Top Hole coordinates are
N: 382,180.43' Latitude: 39°32'28.37"
E: 1,613,451.10' Longitude: 80°52'14.51"
Bottom Hole coordinates are
N: 396,954.52' Latitude: 39°34'53.50"
E: 1,607,691.50' Longitude: 80°53'30.95"
UTM Zone 17, NAD 1983
Top Hole Coordinates Bottom Hole Coordinates
N: 4,376,854.954m N: 4,381,326.643m
E: 511,125.640m E: 509,295.938m
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. Tygart Unit 2H
UTM Zone 17, NAD 1927
Top Hole Coordinates
N: 14,359,017.17'
E: 1,676,870.13'
Point of Entry Coordinates
N: 14,358,904.06'
E: 1,675,915.76'
Bottom Hole Coordinates
N: 14,373,688.06'
E: 1,670,866.74'



FILE NO: 82-54-E-19
DRAWING NO: Tygart Unit 2H BHL MOD
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: December 17 20 20
OPERATOR'S WELL NO. Tygart 2H
API WELL NO MOD
47 - 095 - 02722
STATE COUNTY PERMIT

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

LOCATION: ELEVATION: As-Built 1,126' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Top Hole:Porter Falls
DISTRICT: Ellsworth COUNTY: Tyler 33.76; 76.25; 48.5; 100;
93.6965; 13.3; 24; 23.87;

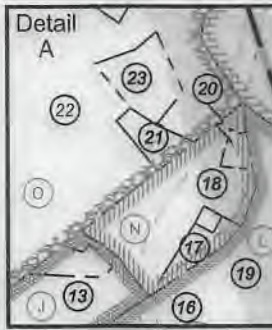
SURFACE OWNER: Patricia Ann Heintzman James D. VanCamp, et al (5); Kerry Lemasters, et ux; James D. VanCamp, et ux (3);
ROYALTY OWNER: Patricia Ann Heintzman (2); John E. Roberts; Dennis R. Heintzman, et ux; Sybil Mae Gorbey; LEASE NO: ACREAGE: 73.26
77.5; 6.4; 109.875;
151.08; 98.2; 107.188;
17.2625; 100;

PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) BHL MOD 7,000' TVD
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 24,200' 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

166' to Top Hole
659' to Bottom Hole
TOP HOLE LATITUDE 39 - 32 - 30
BTM HOLE LATITUDE 39 - 35 - 00
TOP HOLE LONGITUDE 80 - 50 - 00
BTM HOLE LONGITUDE 80 - 52 - 300

Antero Resources
Well No. Tygart 2H
BHL MOD
 Antero Resources Corporation



Leases			
A	Patricia Ann Heintzman	P	James D. VanCamp, et al
B	Norma Smith	Q	James D. VanCamp, et ux
C	Patricia Ann Heintzman	R	James D. VanCamp, et al
D	John E. Roberts	S	James D. VanCamp, et al
E	Michael Scott Mercer, et ux	T	James D. VanCamp, et al
F	Richard A. Mercer	U	Stanley Watkins
G	Dennis R. Heintzman, et ux	V	Stanley Watkins
H	BRC Appalachian Minerals I, LLC	W	BRC Appalachian Minerals I, LLC
I	Waco Oil & Gas Company, Inc.	X	James D. VanCamp, et al
J	James D. VanCamp, et al	Y	Sybil Mae Gorby
K	James D. VanCamp, et al	Z	James D. VanCamp, et al
L	Kerry Lemasters, et ux	AA	BRC Appalachian Minerals I, LLC
M	Brenda L. Martin	AB	Lowmax R. Kunkel
N	James D. VanCamp, et al	AC	James D. VanCamp, et ux
O	Kay Christen	AD	Sherry Lynn Chefren

ID	TM/Par	Owner	Bk/Pg	Acres
1	10-2	Patricia Ann Heintzman	W13/384	73.26
2	10-1	Patricia Ann Heintzman	150/15	48.50
3	10-64	John E Roberts	W30/108	100.00
4	6-40	Alan D. Wyke	W40/195	42.20
5	9-13	Richard A. Mercer	321/197	16.00
6	6-36	Dennis & Clista Heintzman	297/640	417.60
7	6-35	Donald E. Forrester	343/381	25.75
8	6-35.1	Stephen & Andriea Knowlton	289/20	13.32
9	6-35.2	Stephen & Andriea Knowlton	224/77	29.02
10	6-35.4	Stephen & Andriea Knowlton	340/412	17.46
11	6-35.3	Stephen & Andriea Knowlton	224/77	3.00
12	6-23.2	Larry R. Henthorn	584/138	1.27
13	6-23	Randall Dennis, et al	W70/660	42.30
14	6-16.2	Stephen J. & Andriea Knowlton	211/375	13.30
15	6-16.3	Michael L. Roberts	407/45	14.81
16	6-16	Kerry & Barbara Lemasters	215/548	33.76
17	6-16.7	Terry Andrew Jackson	388/271	1.23
18	6-16.1	James W. & Geneva Lancaster	443/639	3.44
19	6-16.6	Terry Andrew Jackson	388/271	0.25
20	6-16.8	James W. & Geneva Lancaster	443/639	0.55
21	6-22.1	Charles E. Dennis	348/160	1.25
22	6-22	Patricia Ann Greathouse	W38/671	169.90
23	6-22.2	Roger & Nadine Greathouse	334/770	2.61
24	6-15	James D. VanCamp, et al	W38/144	47.50
25	6-15.1	James D. VanCamp, et ux	174/451	2.28
26	6-14	James D. VanCamp, et al	W38/144	24.00
27	6-22.3	Lucinda J. Greathouse	350/674	10.00
28	6-4	James D. Vancamp, et al	W38/144	46.76
29	6-3	James D. Vancamp, et al	W38/144	23.87
30	6-3.2	Wayne L. Wade	220/322	0.05
31	6-3.3	Wayne L. Wade	220/322	0.03
32	6-3.4	Wayne L. Wade	268/478	0.12
33	6-2	Joel A. Prosser	387/736	6.64
34	6-1	Sybil Gorby	175/265	17.26
35	3-43	Joel A Prosser	387/736	23.62
36	5-1	James D. VanCamp, et al	W38/144	39.00
37	3-43.2	Larry & Kimberly Henthorn	642/513	2.05
38	3-43.1	Janet Johnson	W29/203	0.90
39	3-44.1	Tylor D. Hostuttler	592/109	0.98
40	3-44.2	Gary A & Penny K Midcap	272/632	0.88
41	3-44.4	Tylor D. Hostuttler	592/109	4.00
42	2-11	Rosalie B. Henry	W35/616	61.54
43	3-44.3	Wm J. & Melissa A. Buchanan	299/515	1.88
44	3-44	Jamie Leigh Parks	337/764	9.86
45	3-44.5	W.J. & Melissa Buchanan	326/348	1.72
46	2-8.4	Jonathan & Mary Belle Pittman	186/170	21.14
47	3-47	Donna & Matthew Cecil	462/582	8.61
48	3-46.1	Pamela R. Nelson-Lansford	328/699	2.96
49	3-46	Vada R Hart	40/469	1.54
50	3-47.1	Jack L. Throck-Morton	462/582	1.33
51	2-8	Jonathan & Mary Belle Pittman	186/170	70.93
52	2-8.5	Stanley G. Pittman	327/751	3.68
53	2-8.3	Teresa A. Morris	343/390	1.82
54	3-12.1	Josphine Kunkel	286/75	1.90
55	3-12	Lomax R. Kunkel	297/692	57.51
56	3-48	Linda Hoover	356/233	45.00
57	2-9	Linda L. Hoover	356/233	1.57
58	2-1.2	Donald E. Virden Jr.	421/281	0.41
59	2-1.1	Donald E. Virden, Jr.	421/281	68.20
60	2-1.3	Lou Ann & Donald E. Virden Jr.	325/907	0.55
61	2-1	Donald E. Virden, Jr.	421/281	30.84



FILE NO: 82-54-E-19
 DRAWING NO: Tygart Unit 2H BHL MOD
 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: December 17 20 20
 OPERATOR'S WELL NO. Tygart 2H
 API WELL NO. **W40**
 47 - 095 - 02722
 STATE COUNTY PERMIT

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

LOCATION: ELEVATION: As-Built 1,126' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Top Hole:Porter Falls
District: Ellsworth Bottom Hole:Paden City COUNTY: Tyler 33.76; 76.26; 48.5; 100;

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