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west virginia department of environmental protection

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

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

Tuesday, May 26, 2020  
PERMIT MODIFICATION APPROVAL  
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION  
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for LORAINA 1H  
47-095-02686-00-00

**Modified lateral and POE for TMD of 24,950' with no additional wells within AOR.**

ANTERO RESOURCES CORPORATION

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin  
Chief

Operator's Well Number: LORAINA 1H  
Farm Name: ROGER D. BLIZZARD & RUTH E. SPENCER  
U.S. WELL NUMBER: 47-095-02686-00-00  
Horizontal 6A New Drill  
Date Modification Issued: May 26, 2020

Promoting a healthy environment.

WW-6B  
(04/15)

API NO. 47-095 - 02686 MOD  
 OPERATOR WELL NO. Loraina 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: Loraina 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: 24950' MD

11) Proposed Horizontal Leg Length: 15891'

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

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Environmental Protection

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

WW-6B  
(04/15)

API NO. 47-095 - 02686 *MEP*

OPERATOR WELL NO. Loraina 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#	24950	24950	6453 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							

**PACKERS**

Kind:	N/A				RECEIVED Office of Oil and Gas APR 06 2020
Sizes:	N/A				WV Department of Environmental Protection
Depths Set:	N/A				

WW-6B  
(10/14)

API NO. 47- 095 - 02686 MOD  
OPERATOR WELL NO. Loraina 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.

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

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25) Proposed borehole conditioning procedures:

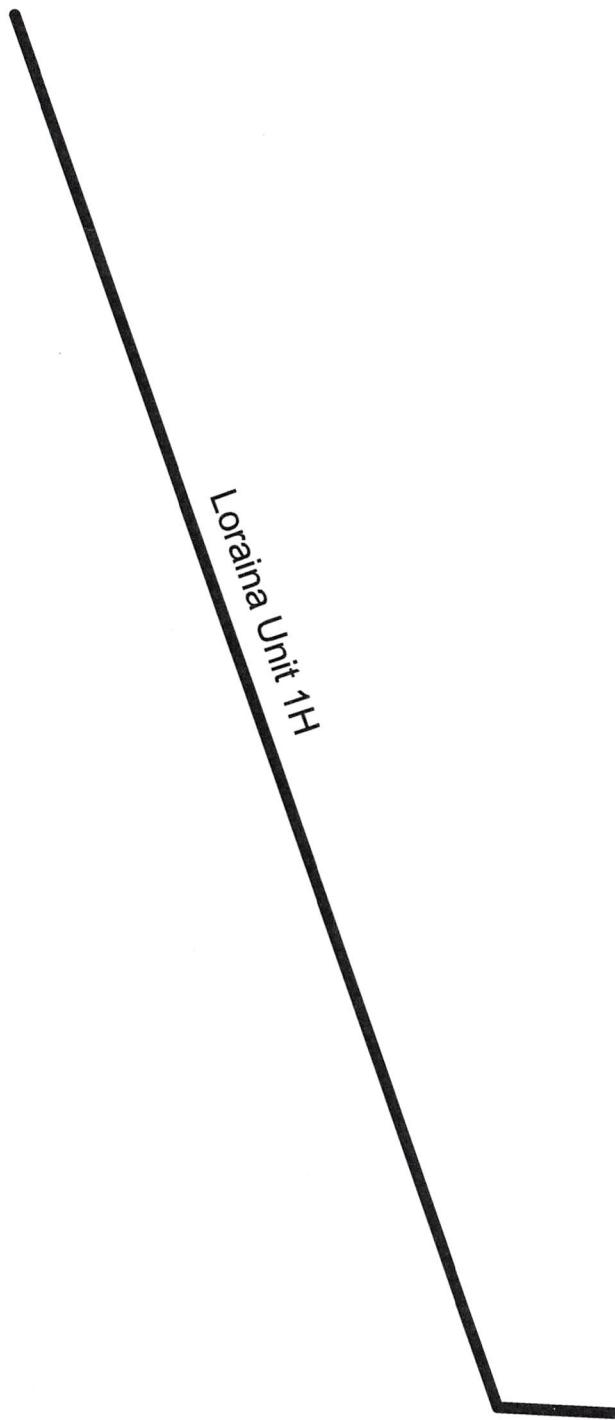
Conductor: blowhole clean with air, run casing, 10 bbls fresh water.  
Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.  
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.

WV Department of  
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\*Note: Attach additional sheets as needed.



PERMIT MODIFICATION API # 47-095-02686 *mod*



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Antero Resources Corporation

Loraina Unit 1H - AOR



REMARKS  
No Wells of Interest

January 21, 2020

WW-6A1

Operator's Well Number Loraina 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>Cliff &amp; Virginia Perkins Irrevocable Trust Lease</u> Cliff & Virginia Perkins Irrevocable Trust	Antero Resources Corporation	1/8+	0480/0710
<u>B. Fred Hill Jr. Lease</u> B. Fred Hill Jr.	Antero Resources Corporation	1/8+	0531/0516
<u>Karen F. Quinn Lease</u> Karen F. Quinn	Antero Resources Corporation	1/8+	0507/0604
<u>United Spinal Association Lease</u> United Spinal Association	Antero Resources Corporation	1/8+	0651/0389
<u>John W. Starkey et ux Lease</u> John W. Starkey et ux	Antero Resources Corporation	1/8+	0535/0176
<u>BRC Appalachian Minerals Lease</u> BRC Appalachian Minerals	Antero Resources Corporation	1/8	0369/0300
<u>Allen Smith Lease</u> Allen Smith	Antero Resources Corporation	1/8+	0535/0387
<u>Mary Carol Chamberlain Lease</u> Mary Carol Chamberlain	Antero Resources Corporation	1/8+	0539/0121
<u>Michael Allen Eddy Lease</u> Michael Allen Eddy	Antero Resources Corporation	1/8+	0559/0164
<u>Patsy J. Oliverio Lease</u> Patsy J. Oliverio	Antero Resources Corporation	1/8+	0494/0488
<u>Michael E. Neff Lease</u> Michael E. Neff	Antero Resources Corporation	1/8+	0450/0613
<u>James H. Basset et ux Lease</u> James H. Basset et ux	Antero Resources Corporation	1/8+	0417/0682

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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<b>Donald Lee Sharps Lease</b> Donald Lee Sharps	Antero Resources Corporation	1/8+	0572/0003
<b>Patricia Ann Heintzman Lease</b> Patricia Ann Heintzman	Antero Resources Corporation	1/8+	0594/0309

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\*Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.

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

MOP

WW-6A1  
(5/13)

Operator's Well No. Loraina 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)**

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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
<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.

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APR 06 2020

WV Department of Environmental Protection

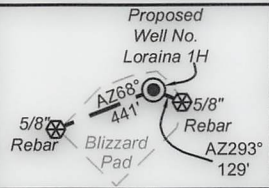
Well Operator: Antero Resources Corporation  
By: Tim Rady  
Its: VP of Land



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



**Well Location References (NTS)**

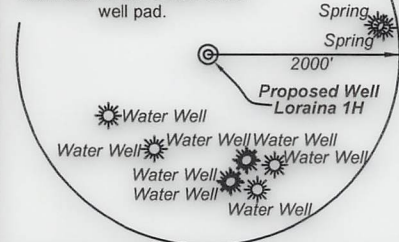


I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the rules issued and prescribed by the Department of Environmental Protection.

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



Note: 8 water wells and 2 springs were found within 2000' of proposed well. No occupied dwellings or buildings 2,500 square feet or larger used to house or shelter dairy cattle or poultry husbandry are located within 625' of the center of the well pad.

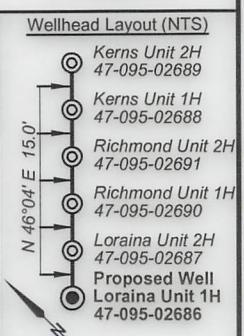


**Legend**

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

**Notes**  
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.  
 Well No. Loraina Unit 1H Top Hole coordinates are  
 N: 366,679.98' Latitude: 39°29'55.99"  
 E: 1,618,876.38' Longitude: 80°51'02.29"  
 Bottom Hole coordinates are  
 N: 381,810.75' Latitude: 39°32'24.55"  
 E: 1,612,387.02' Longitude: 80°52'28.02"  
 UTM Zone 17, NAD 1983  
 Top Hole Coordinates Bottom Hole Coordinates  
 N: 4,372,160.273m N: 4,376,736.907m  
 E: 512,857.159m E: 510,803.339m  
 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. Loraina Unit 1H UTM Zone 17, NAD 1927  
 Top Hole Coordinates  
 N: 14,343,614.69'  
 E: 1,682,551.46'  
 Point of Entry Coordinates  
 N: 14,343,628.32'  
 E: 1,681,038.53'  
 Bottom Hole Coordinates  
 N: 14,358,629.91'  
 E: 1,675,812.73'



	Bearing	Dist.
L1	S 33°46' E	910.2'
L2	N 29°10' W	1,674.4'
L3	N 41°13' E	1,361.7'
L4	N 68°16' E	1,142.6'
L5	N 88°32' W	1,513.5'

FILE NO: 43-54-E-19  
 DRAWING NO: Loraina 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 2, 2020  
 OPERATOR'S WELL NO. Loraina 1H  
 API WELL NO. 47-095-02686  
 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 90.168; 93.757; 119.578; 41.75; 130; 1.75; 78; 9.5; 49; 34.102;  
 DISTRICT: Ellsworth COUNTY: Tyler  
 SURFACE OWNER: Ruth E. Spencer & Heritage Resources Marcellus Minerals, LLC; Cliff & Virginia Perkins Irrevocable Trust; Donald Lee Sharps; Patricia A. Heintzman (2); Michael Allen Eddy; Allen Smith; Roger D. Blizzard; Patsy J. Oliverio; Michael E. Neff; Melvin L. Nichols, et ux; James H. Basset, et ux; ACREAGE: 102.62 17.481; 131.94; 106.32; 0.24; 0.39;  
 ROYALTY OWNER: Heritage Resources Marcellus Minerals, LLC; Cliff & Virginia Perkins Irrevocable Trust; LEASE NO: \_\_\_\_\_ ACREAGE: 32.28; 76.25; 48.5

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  
24,950' MD

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



ID	TM/Par	Owner	Bk/Pg	Acres
1	15-33	Roger D. Blizzard, et al	340/170	102.62
2	15-34.1	Randy & Pamela L. Lancaster	370/776	11.417
3	15-34	Michael & Bente H. Biddle	294/537	82.34
4	15-30	Thomas C. Grinage, et ux	458/73	124.078
5	15-31	Roger D. Blizzard, et al	342/782	25
6	15-27	Ronald & Martha J. Greathouse	217/571	26
7	15-28	Charles Loy Jr., et al	379/140	9
8	15-29	Ronald & Martha J. Greathouse	214/124	15.75
9	15-12	Roger Matthes	319/22	61
10	15-15	David Mendenhall, et al	284/4	50
11	15-15.1	Robert M. Feldmeier, et ux	575/690	30
12	15-14	John W. & Leah D. Starkey	345/93	50.75
13	15-5	Earl H., Jr. & Bernadette Warriner	306/141	48.5
14	15-6	James F. & Connie L. Billiter, et al	288/325	59.5
15	15-2	John W. Eddy, Estate	71/13	49
16	10-59	Goldie A. Mathews	115/485	10.08
17	10-60	J.S. & Goldie A. Matthews	129/58	101.14
18	10-43	Kevin S. & Melinda S. Goff	431/799	100
19	10-42	Kevin S. & Melinda S. Goff	431/799	25.5
20	10-65	Daniel R. Deetz, et al	321/713	131.94
21	10-41	Kevin S. & Melinda S. Goff	431/799	2.66
22	10-36	Randy Lee & Mary Lou Michael	230/499	24.65
23	10-37.4	Kevin S. & Melinda S. Goff	425/830	7.5
24	10-35	Michael E. Neff	299/601	105.56
25	10-35.1	James H. & Mildred G. Bassett	220/370	8.12
26	10-15	Kevin S. Goff & Melinda S. Goff	423/695	18.50
27	10-16	Ruby M. Watson	256/45	0.488

ID	TM/Par	Owner	Bk/Pg	Acres
28	10-15.5	Ruby M. Watson	289/359	0.0292
29	10-15.7	Frank W., Jr. & Ruby M. Watson	317/383	5.226
30	10-15.4	Frank W., Jr. & Ruby M. Watson	343/309	0.65
31	10-35.2	Robert R. Bassett	269/703	0.48
32	10-35.6	Joseph C., Jr. & Vicky G. Snyder	317/551	0.24
33	10-35.3	James H. & Mildred G. Bassett	273/538	0.39
34	10-35.4	Mary Jane Woofter	319/73	0.75
35	10-35.5	Michael E. Neff	281/543	0.76
36	10-20	James & Mildred Bassett	311/637	0.72
37	10-15.3	Robert L. & Teresa Eddy	284/496	0.64
38	10-17	Sandra K. Metz	342/153	0.89
39	10-15.8	Frank & Ruby Watson	427/47	5.229
40	10-18	Wendy S. Gustavich	331/365	1.9
41	10-15.2	Sandra Metz	246/320	0.95
42	10-19.1	Sandra K. Metz	380/98	2.76
43	10-15.6	Wayne H. & Violet Mercer	317/378	35.82
44	10-19	James Bassett & Mildred Bassett	264/548	29.52
45	10-22	Michael V. and Debra K. Smith	335/619	59.42
46	10-21	Patricia Ann Heintzman	W13/384	3
47	10-3	Kevin S. & Melinda S. Goff	597/808	53.75
48	10-2	Patricia Ann Heintzman	W13/384	73.26
49	10-1	Patricia Ann Heintzman	150/15	48.50
50	10-64	John E Roberts	W30/108	100
51	6-36	Dennis & Clista Heintzman	297/640	417.6



Leases	
A	Heritage Resources Marcellus Minerals, LLC
B	Cliff & Virginia Perkins Irrevocable Trust
C	Jerry R. Brown
D	B. Fred Hill Jr.
E	Karen F. Quinn
F	United Spinal Association
G	Reita Jane Hall
H	John W. Starkey, et ux
I	BRC Appalachian Mineral I LLC
J	Dale E. Pipes
K	Sandra E. Merrigan
L	John W. Kerns Heir Trust
M	Allen Smith
N	David E. Bowyer
O	Rockford Energy, LLC
P	Mary Carol Chamberlain
Q	Bob Christen
R	Patsy J. Oliverio
S	Michael Allen Eddy
T	A. DeWayne Matthews
U	Susan Ertel
V	Kevin S. Goff, et ux
W	Kevin S. Goff, et ux
X	Michael E. Neff
Y	Ridgewood Development LLC
Z	James H. Bassett, et ux
AA	Richard Basset
AB	Melvin L. Nichols, et ux
AC	James H. Basset, et ux
AE	Paul A., Jr. & Phyllis V. Marks
AF	Donald Lee Sharps
AG	Nina & Phillip Whitefield
AH	Patricia Ann Heintzman
AI	Patricia Ann Heintzman
AJ	John E. Roberts
AK	Norma Smith

FILE NO: 43-54-E-19  
 DRAWING NO: Loraina 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 2, 2020  
 OPERATOR'S WELL NO. Loraina 1H  
 API WELL NO  
 47 - 095 - 02686 MOD  
 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 90.168; 93.757;  
 DISTRICT: Ellsworth Donald Lee Sharps; Patricia A. Heintzman (2); Michael Allen Eddy; Allen Smith 119.578; 41.75;  
 SURFACE OWNER: & Ruth E. Spencer Roger D. Blizzard Patsy J. Oliverio; Michael E. Neff; Vicky G. Nichols; James H. Basset, et ux; COUNTY: Tyler 130; 1.75; 78; 9.5;  
 ROYALTY OWNER: Heritage Resources Marcellus Minerals, LLC; Cliff & Virginia Perkins Irrevocable Trust; B. Fred Hill Jr.; United Spinal Association; Karen F. Quinn; John W. Starkey, et ux; ACREAGE: 102.62 49; 34.102;  
 PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION 17.481; 131.94;  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) BHL MOD 106.32; 0.24; 0.39;  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 25,000' MD 7,000' TVD

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