

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

Harold D. Ward, Cabinet Secretary www.dep.wv.gov

Wednesday, September 11, 2024 PERMIT MODIFICATION APPROVAL Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION 1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for BURCH UNIT 1H

47-095-02893-00-00

Extended Lateral Length

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.

Operator's Well Number: BURCH UNIT 1H

Farm Name: SHIRLEY J WELLS & SUSIE CUNNINGHAM

U.S. WELL NUMBER: 47-095-02893-00-00

Horizontal 6A New Drill

Date Modification Issued: 9/11/2024

Promoting a healthy environment.

API NO. 47- 095	_ 02893	
OPERATOR W	ELL NO.	Burch Unit 1H MOD
Well Pad Na	me: Wrigle	v Pad

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

1) Well Operator:	Antero Res	ources Corpo	orai 49	94507062	095-Tyler	Meade	Bens Run
				Operator ID	County	District	Quadrangle
2) Operator's Well	Number: Bu	rch Unit 1H M	MOD	Well Pad	Name: Wrigle	ey Pad	
3) Farm Name/Surf	ace Owner:	Shirley J. Wells & Susie	e Cunningl	Public Road	Access: Roc	k Run Roa	ad
4) Elevation, curren	nt ground:	937'	Eleva	ntion, proposed p	ost-construction	on:	
5) Well Type (a)	Gas X	Oil		Unde	rground Storag	ge	
Oth	ner						
(b)	If Gas Sha	ıllow X		Deep			
	Hor	rizontal X					
6) Existing Pad: Ye	es or No Yes	S					
7) Proposed Target Marcellus Shale:							
8) Proposed Total V							
9) Formation at Tot							
10) Proposed Total							
11) Proposed Horiz	contal Leg Le	ength: 15988					- Da
12) Approximate F	resh Water S	trata Depths:	39	97'			Office RECEIVED Office of Oil and Ga
13) Method to Dete	ermine Fresh	Water Depths:	: 47-	095-02593			AUG and Gas
14) Approximate S	altwater Dep	ths: 1436',18	47'				28 2021
15) Approximate C	oal Seam De	epths: None lo	dentifi	ed		Enviro	V Department of Protection
16) Approximate D	epth to Poss	ible Void (coal	l mine,	, karst, other): 1	None Anticipat	ted	Protection
17) Does Proposed directly overlying o					No	X	
(a) If Yes, provide	e Mine Info:	Name:					
		Depth:					
		Seam:					
		Owner:					

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09/13/2024

API NO. 47-095	_ 02893	
OPERATOR W	ELL NO.	Burch Unit 1H MOD
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STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS WELL WORK PERMIT APPLICATION Operator: Antero Resources 2

) Well Operator:	Antero F	Resources	Corporat	494507062	095-Tyler	Meade	Bens Run
y on operator.			·	Operator ID	County	District	Quadrangle
2) Operator's Well	l Number:	Burch Uni	t 1H MOE	Well P	ad Name: Wrig	ley Pad	
3) Farm Name/Su	rface Own	er: Shirley J. W	ells & Susie Cur	ningham Public Ro	oad Access: Ro	ock Run Ro	ad
l) Elevation, curre	ent ground:	937'	El	evation, propose	d post-construct	tion:	
S) Well Type (a)	ı) Gas ≥	(Oil	Un	derground Stora	age	
Ot	ther _						
(b)If Gas	Shallow	<u>X</u>	Deep			-
		Horizontal	X	<u>.</u>			
5) Existing Pad: Y	es or No	Yes			_		
Proposed Targe Marcellus Shale		• • •	• •	ipated Thickness ss- 55 feet, Assoc	-		
3) Proposed Total	Vertical D	epth: 650	0' TVD				
) Formation at To			Marcellus	i			
10) Proposed Tota	al Measure	d Depth:	25000' M	D			RECEIVED _
1) Proposed Hori	izontal Les	g Length:	15988.5'				of Oil and Gas
12) Approximate			epths:	397'		A	UG 23 ²⁰²⁴
13) Method to Det	termine Fr	esh Water I	Depths: 4	17-095-02593		w	/ Department of
4) Approximate S						Enviro	onmental Protection
(5) Approximate	Coal Seam	Depths: N	lone Iden	tified			
l6) Approximate l	Depth to P	ossible Voi	id (coal mi	ine, karst, other):	None Anticip	ated	
17) Does Proposed	d well loca	tion contain	n coal sea	ms	,		
lirectly overlying	or adjacen	t to an acti	ve mine?	Yes	N	o <u>X</u>	
(a) If Yes, provide	de Mine In	fo: Name): 				
· -		Depth	ı:				
		Seam	:				
		Owne	er:				

API NO. 47- 095 - 02893

OPERATOR WELL NO. Burch Unit 1H MOD

Well Pad Name: Wrigley 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#	100'	100'	CTS, 96 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	447'	447'	CTS, 466 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#	25000'	25000'	CTS, 5372 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#			
Liners							

ТҮРЕ	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/L	~1.18
Fresh Water	13-3/8"	17-1/2"	0.38"	2730	1000	Class A/L	~1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A/L	~1.18
Intermediate							
Production	5-1/2"	8-3/4" & 8-1/2"	0.415"	12,630	2500	Class G/H	~1.8
Tubing	2-3/8"	4.778"	0.19"	11,200			
Liners							

PACKERS

Kind:	N/A	Office of Oil and Gas
Sizes:	N/A	AUG 2 8 2024
Depths Set:	N/A	WV Department of Environmental Protection

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09/13/2024

OPERATOR WELL NO. Burch Unit 1H MOD

Well Pad Name: Wrigley Pad

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

Drill, perforate, fracture a new shallow well and complete 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

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21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 28.45 acres

22) Area to be disturbed for well pad only, less access road (acres): 10.35 acres

WV Department of Environmental Protection

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/L cement.

Surface: Class A/L cement with 2-3% calcium chloride and 1/4 lb of flake Intermediate: Class A/L 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

25) Proposed borehole conditioning procedures:

Conductor: blowhole clean with air, run casing, 10 bbls fresh water.

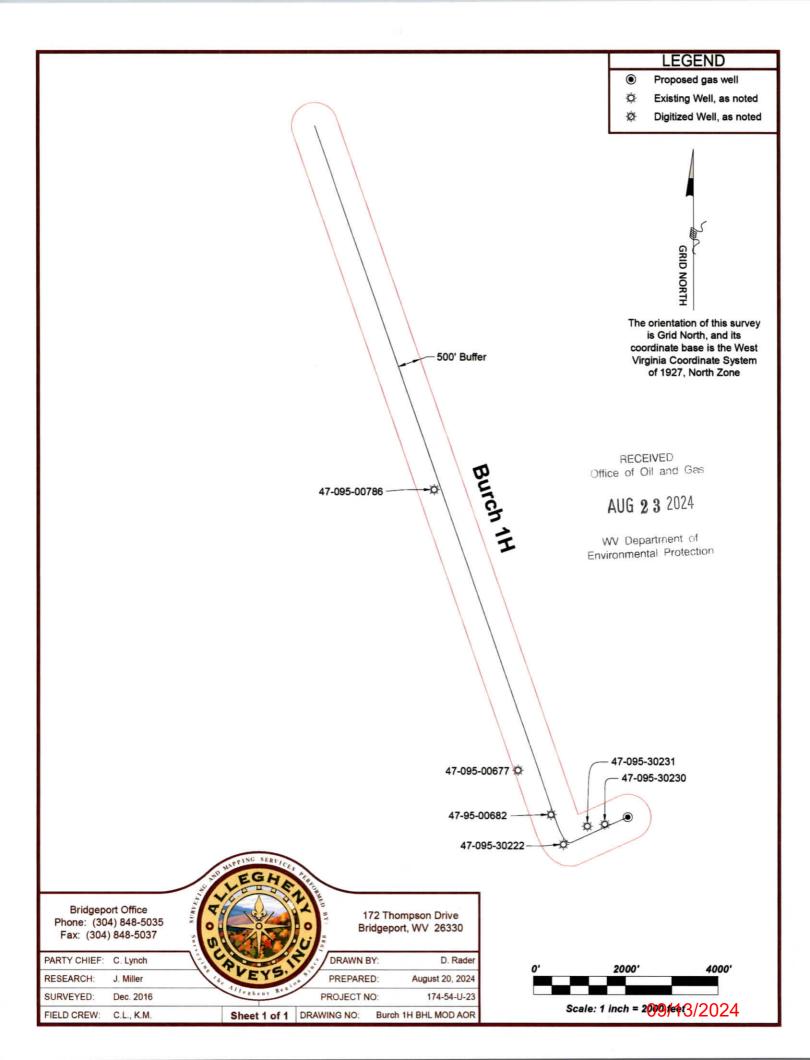
Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

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.

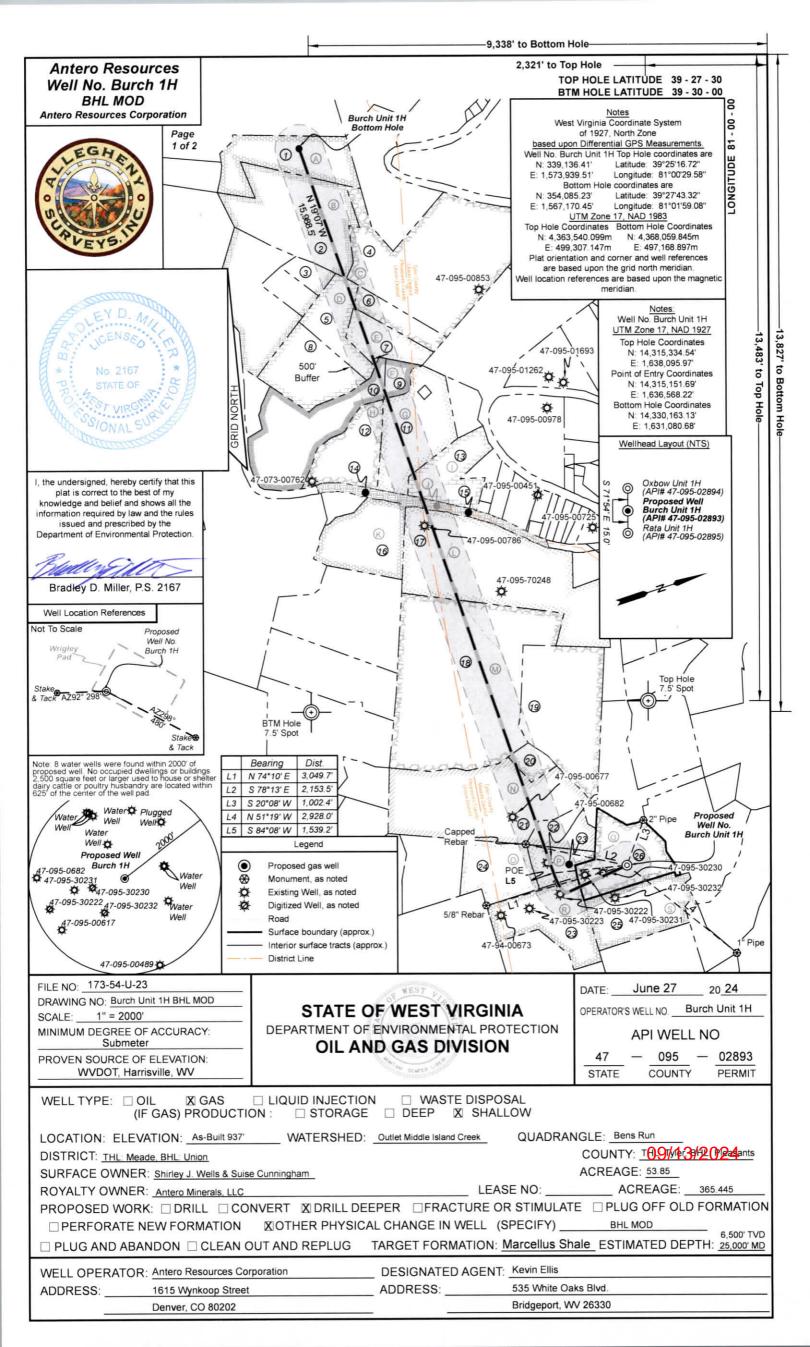
Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

*Note: Attach additional sheets as needed.

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UWI (APINum)	Well Name	Well Number	Operator	Historical Operator	TD	Perforated Interval (shallowest, deepest)	Perforated Formation(s)	Producible Formation(s) not perf'd
47095006820000	BONNER	R-104	PIN OAK OPERATING LLC	RIGGS C W INC	2,923	2759 - 2900	Gordon, Fifth	Weir, Benson, Alexander
47095006770000	BONNER ELONZO	R-105	PIN OAK OPERATING LLC	RIGGS C W INC	2,890	2590 - 2776	Keener, Big Injun, Gordon	Weir, Benson, Alexander
47095302220000	ELONZO BONNER 4	2155	DEEM F S	DEEM F S				
47095302310000	THE RESERVE OF THE PERSON NAMED IN							
47095007860000	TO RECEIVE THE PROPERTY OF THE PARTY OF THE							
47095302300000				Charles and the second				



Antero Resources Well No. Burch 1H BHL MOD Antero Resources Corporation



	Leases
Α	Roy Emmett Huffman & Linda Gay Huffman
В	Michael Scott Bonner
С	Lisa Kmyaich
D	Terry & Daphne Heinzman
E	Antero Minerals, LLC
F	Clifford Benjamin & Rebecca Louise Boone
G	Bobbin E. Pardine
Н	Estate of Mary Jane Stewart
1	Greenbrier Royalty Fund II, LLC
J	WVDNR
K	A.P. Allen, et ux
L	Wells Cattle Farms, Inc.
М	Greenbrier Royalty Fund II, LLC
Ν	Vicki Bonner
0	Bradley William Poch
Р	Janelle Sue Perkins
Q	Antero Minerals, LLC
R	Inex B. Fletcher, et vir
S	Mary C. Robinson Living Trust

ID	TM/Par	Owner	Bk/Pg	Acres
1	3-9	Roy Emmett & Linda Gay Huffman	126/341	55.00
2	3-23A	David L. Bonner	WB33/171	104.00
3	3-26	Glen E. Bonner	WB33/171	13.35
4	13-36	Lisa Krynaich	566/759	165.50
5	7-14	Terry & Daphne Heinzman	262/527	61.77
6	12-12	Lisa Krynaich	566/759	20.00
7	7-23B	Frederick M. Bonner	286/474	27.33
8	7-14.1	Terry & Daphne Heinzman	262/527	30.00
9	7-15	Rebecca Louise & Clifford Benjamin Boone	348/311	9.17
10	7-13.1	Rebecca Louise & Clifford Benjamin Boone	348/317	77.25
11	7-15.1	Bobbin E. Pardine	268/516	63.60
12	7-13.2			42.70
13	15-16	James E. & Anita Carr	349/742	58.12
14		Middle Island Creek		
15		Middle Island Creek		
16	7-22	Forty-Four Acres, Inc.	208/134	44.50
17	4-8	Wells Cattle Farms, Inc.	331/164	155.0
18	4-19	Wells Cattle Farms, Inc.	318/190	206.1
19	4-20	Cecil E. Sr. & Linda Jordan; James & Connie Hicks	318/190	206.1
20	4-32	Wells Cattle Farms, Inc.	318/190	206.1
21	7-1	Daniel Preston Bonner	416/11	142.7
22	7-1.1	Daniel Preston Bonner	416/11	20.19
23	7-7	Janelle S. Perkins	184/378	74.08
24	12-17 Cecil E. & Betty J. Hamilton		269/58	32.38
25	7-8	John Wells	428/412	52.39
26	7-2	Shirley J. Wells & Susie Cunningham	WB41/317	53.85

FILE NO:	173-54-U-23
	3 NO: Burch Unit 1H BHL MOD
SCALE: _	1" = 2000'
MINIMUM	DEGREE OF ACCURACY: Submeter
	SOURCE OF ELEVATION:

STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION OIL AND GAS DIVISION 47 - 095 - 02893

DATE: _	June 27	20_24				
OPERATOR	R'S WELL NO	Burch Unit 1H				
	API WELL NO					

WVDOT, Harrisville, WV	WIAN SEMPCH	Sec. Co.	STATE	COUNTY	PERMIT
	□ LIQUID INJECTION □ W ON: □ STORAGE □ DEE	/ASTE DISPOSAL P ☒ SHALLOW			
LOCATION: ELEVATION: As-Built 937	WATERSHED: Outlet Middle	Island Creek QUADRAI	NGLE: Bens		
DISTRICT: THL: Meade, BHL: Union			COUNTY:	109/yle3#2	20 Peasants
SURFACE OWNER: Shirley J. Wells & Suise	Cunningham		ACREAGE	53.85	
ROYALTY OWNER: Antero Minerals, LLC		LEASE NO:	ACF	REAGE:	365.445
PROPOSED WORK: DRILL CO	NVERT X DRILL DEEPER F	RACTURE OR STIMULAT	E PLUG	OFF OLD F	ORMATION
☐ PERFORATE NEW FORMATION	⊠OTHER PHYSICAL CHANG	E IN WELL (SPECIFY) _	BHL M	OD	6,500' TVD
☐ PLUG AND ABANDON ☐ CLEAN C	UT AND REPLUG TARGET F	ORMATION: Marcellus Sh	ale_ESTIMA	ATED DEPT	H: <u>25,000' MD</u>
WELL OPERATOR: Antero Resources Cor	poration DESIGN	ATED AGENT: Kevin Ellis			
ADDRESS: 1615 Wynkoop Street		SS: 535 White Oa	iks Blvd.		9
Danuar CO 90303	*	Bridgeport W	N 26330		

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
Q: Antero Minerals, LLC Lease			
Antero Minerals, LLC	Antero Resources Corporation	1/8+	184/780
R: Inex B. Fletcher, et vir Lease			
Inex B. Fletcher, et vir	Loren E. Bagley	1/8	216/313
Loren E. Bagley	C. W. Riggs, Inc	Assignment	216/664
C. W. Riggs, Inc	Halwell Limited Partnership	Assignment	249/383
Halwell Limited Partnership	Halwell Company, General Partner	Assignment	297/595
Halwell Company, General Partner	Halwell Company, Inc	Assignment	297/597
Halwell Company, Inc	Triad Energy Corporation of WV, Inc	Assignment	324/430
Triad Energy Corporation of WV, Inc	Triad Hunter, LLC	Assignment	371/605
Triad Hunter, LLC	Antero Resources Corporation	Assignment	626/653
P: Janelle Sue Perkins Lease		-	
Janelle Sue Perkins	Antero Resources Corporation	1/8+ RECEIVED Office of Oil and	Gas 155/530
N: Vicki Bonner Lease	100 No. 100 No. 1000		
Vicki Bonner	Antero Resources Corporation	AUG 2 3 20	297/160
M: Greenbrier Royalty Fund II, LLC Lease			
Greenbrier Royalty Fund II, LLC	Antero Resources Corporation	1/84 WV Department Environmental Pro	tection 296/93
L: Wells Cattle Farms, Inc Lease			
Wells Cattle Farms, Inc	Antero Resources Corporation	1/8+	410/647
J: WVDNR Lease			
WVDNR	Antero Resources Corporation	1/8+	307/127
I: Greenbrier Royalty Fund II, LLC Lease		F 76	_
Greenbrier Royalty Fund II, LLC	Antero Resources Corporation	1/8+	296/93
G: Bobbin E. Pardine Lease	Antonia Bossinia Companyi an	1/0.	750000000
Bobbin E. Pardine	Antero Resources Corporation	1/8+	349/170
F: Clifford Benjamin & Rebecca Louise Boone Lease			
Clifford Benjamin & Rebecca Louise Boone	Antero Resources Corporation	1/8+	349/173
D: Terry & Daphne Heinzman Lease			
Terry & Daphne Heinzman	Antero Resources Corporation	1/8+	349/180
E: Antero Minerals, LLC Lease			
Antero Minerals, LLC	Antero Resources Corporation	1/8+	348/685
C: Lisa Kmyaich Lease		_	
Lisa Kmyaich	Antero Resources Corporation	1/8+	189/373
D: Terry & Daphne Heinzman Lease			
Terry & Daphne Heinzman Lease Terry & Daphne Heinzman	Antero Resources Corporation	1/8+	3/2024

Operator's Well Number Burch Unit 1H MOD

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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
C: Lisa Kmyaich Lease Lisa Kmyaich	Antero Resources Corporation	1/8+	189/373
B: Michael Scott Bonner Lease Michael Scott Bonner	Antero Resources Corporation	1/8+	358/640

^{*}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.

*Cotenancy Utilization - Antero is utilizing the Co-tenancy Modernization and Majority Protection Act to proceed with development of certain royalty owners' interests in this tract.

** Pooling/Unitization - Antero has filed a horizontal well unitization application with the West Virginia Oil and Gas Conservation Commission that seeks to pool certain owners in this tract

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> > AUG 23 2024

WV Department of Environmental Protection

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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Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
A: Roy Emmett Huffman & Linda Gay Huffman Lease				
	Roy Emmett Huffman & Linda Gay Huffman	Antero Resources Corporation	1/8+	349/177

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AUG 23 2024

WV Department of Environmental Protection

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

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator:	Antero Resources Corporation	
By:	Tim Rady	
Its:	Senior Vice President of Land	