

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

Thursday, December 5, 2024
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION 1615 WYNKOOP STREET

DENVER, CO 80202

Re:

Permit Modification Approval for Jessica Unit 3H

47-095-02901-00-00

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.

James A. Martin

Chief

Operator's Well Number: Jessica Unit 3H

Farm Name: Antero Resources Corporation

U.S. WELL NUMBER: 47-095-02901-00-00

Horizontal 6A New Drill

Date Modification Issued: 12/5/2024

Promoting a healthy environment.

API NO. 47- 095 - 02901

OPERATOR WELL NO. Jessica Unit 3H MOD

Well Pad Name: Shinn Pad

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

1) Well Operato	or: Antero l	Resources	Corporat	494507062	095 - Tyler	Lincoln	Paden City
·	-			Operator ID	County	District	Quadrangle
2) Operator's W	Vell Number:	Jessica U	nit 3H MC	DD Well Pad	Name: Shinn	Pad	
3) Farm Name/	Surface Own	ner: Antero Re	sources Corp	oration Public Road	d Access: Bad	ger Run R	oad
4) Elevation, cu	irrent ground	1: 1043'	Ele	evation, proposed p	oost-construction	on: 1036'	
5) Well Type	(a) Gas	X	_ Oil	Unde	rground Storag	ge	
	Other						
	(b)If Gas	Shallow		Deep			
		Horizontal	X				
6) Existing Pad			41 to 501 601 ft				
	-		3 6 6	pated Thickness at ss- 55 feet, Associa			
8) Proposed To	tal Vertical I	Depth: 670	0' TVD				
9) Formation at			Marcellus				
10) Proposed T	otal Measure	ed Depth:	18400' MI	D			
11) Proposed H	lorizontal Le	g Length:	9878.3'				
12) Approxima	te Fresh Wat	ter Strata De	pths:	328			
13) Method to	Determine Fi	resh Water I	Depths: 4	7-095-02781			
14) Approxima	te Saltwater	Depths: 14	140				
15) Approxima	15) Approximate Coal Seam Depths: N/A						
16) Approxima	te Depth to I	Possible Voi	d (coal mi	ne, karst, other): _	None Anticipat	ted	
17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes No _X							
(a) If Yes, pro	ovide Mine I	nfo: Name	:				
		Depth	:				
		Seam	:				
		Owne	r:	DECEIVE	D		
				Office of Oil a	nd Gas		

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12/06/2024

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API	NO.	47-	095	-	02901

OPERATOR WELL NO. _ Jessica Unit 3H MOD Well Pad Name: Shinn Pad

18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	<u>Grade</u>	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#	378	378	CTS, 394 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#	18400	18400	3709 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/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	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		

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API NO. 47- 095 - 02901

OPERATOR WELL NO. Jessica Unit 3H MOD

Well Pad Name: Shinn Pad

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

Drill, perforate, fracture a new vertical 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

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 38.08 acres

16.29 acres 22) Area to be disturbed for well pad only, less access road (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/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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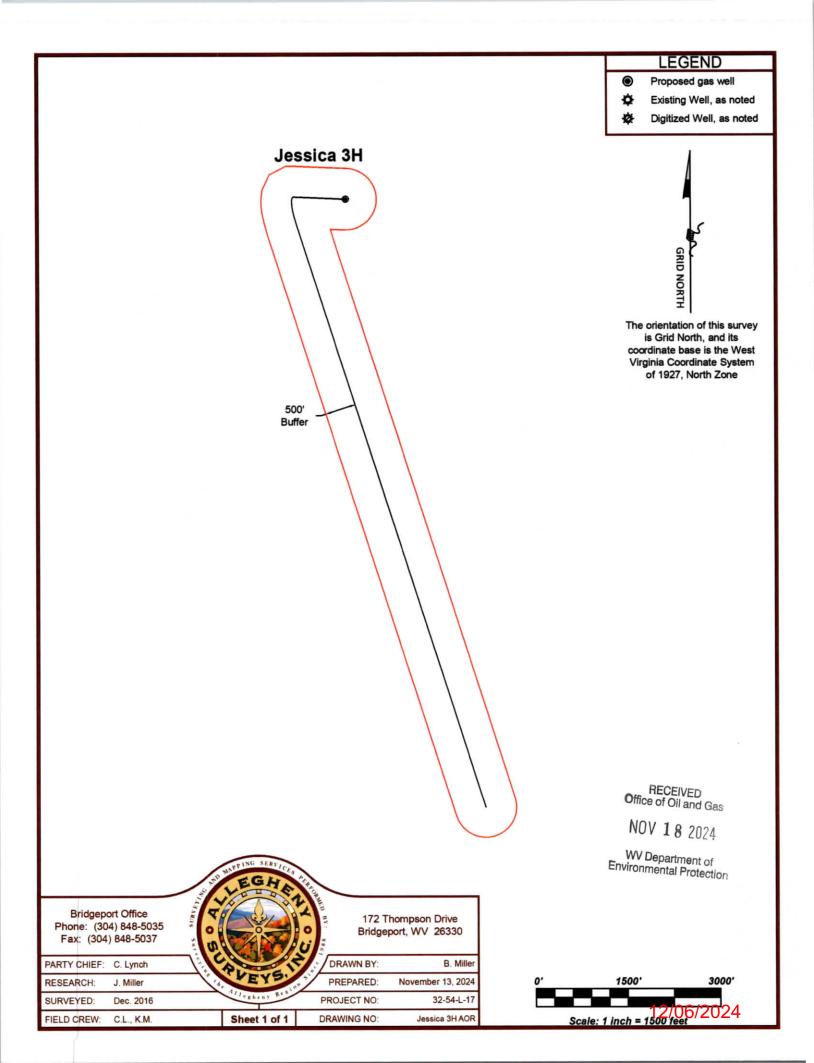
NOV 27 2024

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API NO. 47-095	02901	
OPERATOR WEL	NO. Jessica Unit	3H MOD
Well Pad Name	Shinn Pad	

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

1) Well Operator: Antero Resources Corporal 494507062 095 - Tyler Lincoln Paden City					
Operator ID County District Quadrangle					
2) Operator's Well Number: Jessica Unit 3H MOD Well Pad Name: Shinn Pad					
Farm Name/Surface Owner: Antero Resources Corporation Public Road Access: Badger Run Road					
4) Elevation, current ground: 1043' Elevation, proposed post-construction: 1036'					
5) Well Type (a) Gas X Oil Underground Storage					
Other					
(b)If Gas Shallow X Deep					
Horizontal X 6) Existing Pad: Yes or No No					
 Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s): Marcellus Shale: 6700' TVD, Anticipated Thickness- 55 feet, Associated Pressure- 2800# 					
8) Proposed Total Vertical Depth: 6700' TVD					
9) Formation at Total Vertical Depth: Marcellus					
10) Proposed Total Measured Depth: 18500' MD					
11) Proposed Horizontal Leg Length: 9878.3'					
12) Approximate Fresh Water Strata Depths: 328					
13) Method to Determine Fresh Water Depths: 47-095-02781					
14) Approximate Saltwater Depths: 1440					
15) Approximate Coal Seam Depths: N/A					
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 _X					
(a) If Yes, provide Mine Info: Name:					
CK# 4636827 Depth: NOV 18 2024					
MA C					
Seam: 1 12 Zozf Owner:					



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, e	tc. F	Royalty	Book/Page
A: Raymond B. Heintzman, et ux Lease Raymond B. Heintzman, et ux McCombs Conrad & Barrett	McCombs Conrad & Barrett Appalachian Exploration & Developme	ent, inc	1/8 Assignment	207/136 207/487
Appalachian Exploration & Development, Inc The Carter-Jones Lumber Company Applied Mechanics Corporation Triad Hunter, LLC	The Carter-Jones Lumber Company Applied Mechanics Corporation Triad Hunter, LLC Antero Resources Corporation		Assignment Assignment Assignment Assignment	233/563 258/132 385/566 496/776
B: Nevin Porter, et al Lease Nevin Porter, et al	Antero Resources Corporation		1/8+	464/467
C: Virginia A. Nalley Lease Virginia A. Nalley SEP Appalachia, LLC	SEP Appalachia, LLC Antero Resources Corporation		1/8+ Agreement	315/758 JOA
F: Virginia A. Nalley Lease Virginia A. Nalley SEP Appalachia, LLC	SEP Appalachia, LLC Antero Resources Corporation		1/8+ Agreement	315/758 JOA
E: John L. Hess Lease John L. Hess	Antero Resources Corporation		1/8+	291/554
F: Virginia A. Nalley Lease Virginia A. Nalley SEP Appalachia, LLC	SEP Appalachia, LLC Antero Resources Corporation		1/8+ Agreement	315/758 JOA
I: Jerry R. Brightwell, et ux Lease Jerry R. Brightwell, et ux	Antero Resources Corporation		1/8+	261/85
K: Bounty Minerals, LLC Lease Bounty Minerals, LLC	Antero Resources Corporation		1/8+	190/450
M: David E. Maxwell, et ux Lease David E. Maxwell, et ux	Antero Resources Corporation	RECEIVED Office of Oll and Gas	1/8+	329/434
AK: Rose Ann Lambert Lease Rose Ann Lambert	Antero Resources Corporation	NOV 18 2024	1/8+	185/323
AM: Roy L. Craig Lease Roy L. Craig	Antero Resources Corporation	WV Department of Environmental Protection	1/8+	185/328
AN: James Perry & Melissa B. Flesher Lease James Perry & Melissa B. Flesher	Antero Resources Corporation		1/8+	324/271

WW-6A1 (5/13)

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Lease Name or				
Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
AQ: BRC Appalachian Minerals I, LLC Le	ase			
	BRC Appalachian Minerals I, LLC	BRC Working Interest Company LLC	1/8+	369/648
	BRC Working Interest Company LLC	Chesapeake Appalachia, LLC	Assignment	369/784
	Chesapeake Appalachia, LLC	Statoil USA Onshore Properties Inc	Assignment	378/764
	Statoil USA Onshore Properties Inc	SWN Exchange Titleholder LLC	Assignment	470/668
	SWN Exchange Titleholder LLC	SWN Production Company LLC	Merger	9/404
	SWN Production Company LLC	Antero Exchange Properties	Assignment	544/242
	Antero Exchange Properties	Antero Resources Corporation	Merger	525/315

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

Office of Oil and Gas

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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

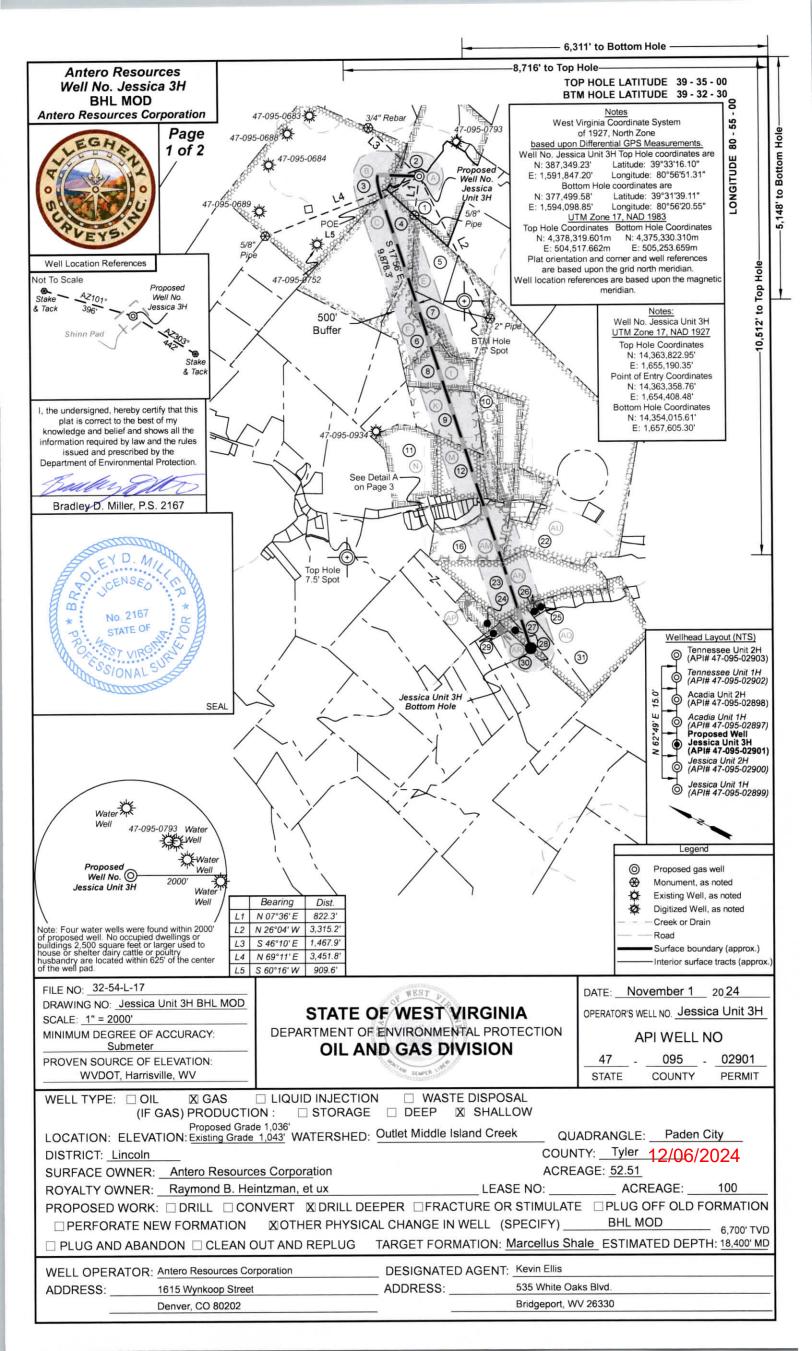
By: Tim Rady

Its: Senior Vice President of Land

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^{*}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.

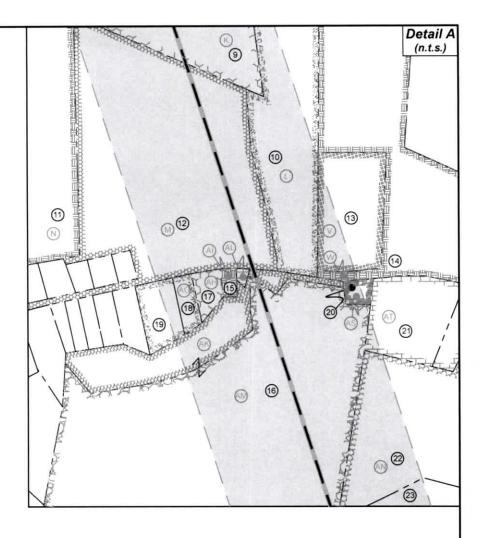
^{**}Pooling/Unitization - Antero has filed a horizontal well unitization application with the West Virginia Oil and Gas Conservation Commission that seeks to pool certain owners in this tract



Antero Resources Well No. Jessica 3H BHL MOD Antero Resources Corporation

EGH CO

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ID	TM-Par	Owner	Bk/Pg	Acres
1	8-21.2	Antero Resources Corporation	296/494	35.52
2	8-21	Antero Resources Corporation	296/490	52.51
3	8-19	Olive Branch Animal Rescue	333/804	173.48
4	8-39	Virginia A. Nalley	190/482	70.65
5	8-41	David E. & Ila Grace Kyle	272/189	118.10
6	8-39.1	Gary G. Jr. & Debbie Ann Phillips	404/299	33.13
7	8-59	Burl A. & Colleen Folger	199/135	24.00
8	8-58	Jerry R. Brightwell & Gwendolyn C. Davies	343/841	20.16
9	8-57	Douglas Ray Carson, Jr.	595/111	33.84
10	12-19	Joseph C. & Nancy E. Starkey	217/203	17.00
11	12-17	Lylde S. & Melodee A. Matheny	504/633	36.00
12	12-18	David E. & Shelley R. Maxwell	307/676	29.04
13	12-20.4	Joseph C. & Nancy E. Starkey	579/666	4.85
14	12-20.2	Shawn M. & Carrie A. Meckley	601/789	30.21
15	12A-24	Holly A. McNeely	213/778	0.26
16	12-41	Shaun M. & Carrie A. Meckley	633/569	43.28
17	12A-23	Kenneth R. Barker	358/801	0.86
18	12A-22	Carolyn A. Landis	WB84/809	0.79
19	12A-21	Carolyn A. Landis	192/451	1.54
20	12-42	Ray T. & Amy S. Fluharty	227/16	0.42
21	12-20	Gary G. Sr. & Mary E. Phillips	308/508	3.82
22	12-71	Shaun M. & Carrie A. Meckley	393/423	266.33
23	12-71.1	James Perry & Melissa Flesher	316/137	63.45
24	12-53.8	Daniel J. & Donald E. Regan	372/164	7.80
25	12-54.5	Charles R. Duke	349/511	1.01
26	12-54.6	Thomas & Nova Lee Fonner	243/392	1.12
27	12-54.2	Jane Ann Magruder	322/333	15.84
28	12-54.1	Donald Thompson	617/81	5.12
29	12-53.1	Denver R. II & Deborah L. Starcher	475/380	1.95
30	12-68	Denver R. II & Deborah L. Starcher	475/380	51.41
31	12-54	David A. Starcher	591/22	60.95

Α	Raymond B. Heintzman, et ux				
В	Nevin Porter, et al				
С	Virginia A. Nalley				
E	John L. Hess				
F	Virginia A. Nalley				
- 1	Jerry R. Brightwell, et ux				
K	Bounty Minerals, LLC				
L	Julie Ann Ford				
M	David E. Maxwell, et ux				
N	Lydle S. & Melodee A. Matheny				
٧	Joseph Clair Starkey, et ux				
W	Rose Ann Craig Lambert				
AG	Carolyn A. Landis				
AH	Kenneth R. Barker				
Al	Joshua Levi Stombock				
AK	Rose Ann Lambert				
AL	Holly A. McNeely				
AM	Roy L. Craig				
AN	James Perry & Melissa B. Flesher				
AO	Walter J. West				
AP	Donald E. Regan				
AQ	BRC Appalachian Minerals I, LLC				
AR	Teresa Jean Burgey				
AS	Kenny W. Heater				
AT	Gary W. Phillips, Sr., et ux				
AU	Lois M. & Billy J. Stern				

Leases

FILE NO: 32-54-L-17

DRAWING NO: Jessica Unit 3H 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

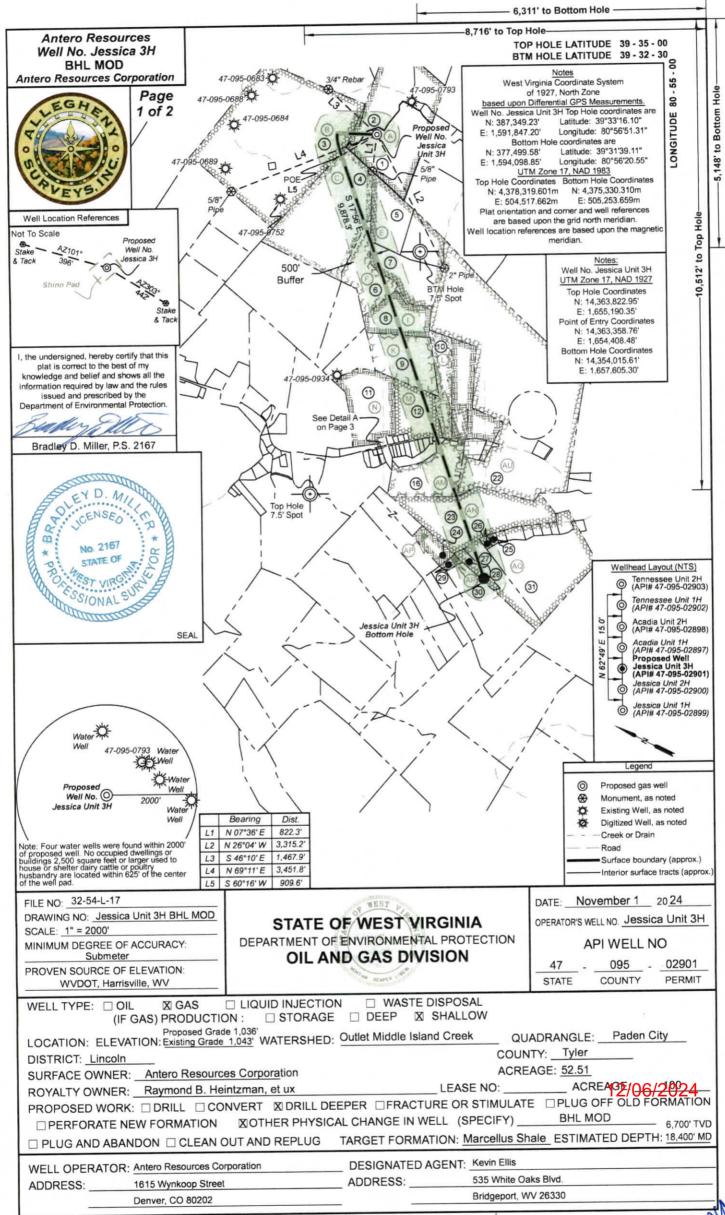
WEST

DATE: _	November 1		20_24
OPERATO	R'S WELL NO.	Jess	sica Unit 3H

API WELL NO

47	095	-	02901		
STATE	COUNTY		PERMIT		

				OIMIL	0001111	I LIXIVII I		
	LIQUID INJECTION							
(IF GAS) PRODUCTION	ON: ☐ STORAGE	□ DEEP ☒ SHALL	.OW					
Proposed Grade LOCATION: ELEVATION: Existing Grade	e 1,036' 1,043' WATERSHED:	Outlet Middle Island Cree	k QU	ADRANGLE	Paden (City		
DISTRICT: Lincoln			COUN	TY: Tyler	_12/06/2	2024		
SURFACE OWNER: Antero Resource	es Corporation		ACRE	AGE: <u>52.51</u>				
ROYALTY OWNER: Raymond B. Hei	ntzman, et ux	LEAS	E NO:	ACF	REAGE:	100		
PROPOSED WORK: ☐ DRILL ☐ CONVERT ☑ DRILL DEEPER ☐ FRACTURE OR STIMULATE ☐ PLUG OFF OLD FORMATION								
□ PERFORATE NEW FORMATION XOTHER PHYSICAL CHANGE IN WELL (SPECIFY) BHL MOD 6.700' TVD								
☐ PLUG AND ABANDON ☐ CLEAN O	UT AND REPLUG	TARGET FORMATION: N	Marcellus Sh	ale_ESTIMA	TED DEPT			
WELL OPERATOR: Antero Resources Cor	poration	_ DESIGNATED AGENT:	Kevin Ellis					
ADDRESS: 1615 Wynkoop Street		ADDRESS:	535 White Oa	ks Blvd.				
Denver, CO 80202			Bridgeport, W	V 26330				



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