

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

Monday, February 24, 2025 PERMIT MODIFICATION APPROVAL Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION 1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for Duke Unit 2H

47-103-03695-00-00

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: Duke Unit 2H

Farm Name: Dallison Lumber Company

U.S. WELL NUMBER: 47-103-03695-00-00

Horizontal 6A New Drill

Date Modification Issued: 2/24/2025

Promoting a healthy environment.

API NO. 47-103	03695	
OPERATOR WELL	NO.	Duke Unit 2H MOD
Well Pad Name:	Cedar	Pad

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

1) Well Operate	or: Antero	Resources	s Corpora	494507062	103 - Wetz	Green	Pine Grove 7.5'
•				Operator ID	County	District	Quadrangle
2) Operator's W	Vell Number	r: Duke Un	it 2H MOD	Well Pad	Name: Cedar	Pad	
3) Farm Name/	Surface Ow	ner: Dallison	Lumber Co	mpany Public Road	d Access: CR	52	
4) Elevation, cu	irrent groun	d: As-Buil	t - 1248' El	evation, proposed p	post-construction	on:	
5) Well Type	(a) Gas	X	Oil	Unde	rground Storag	ge	
	Other		500e				
	(b)If Gas	Shallow	X	Deep			
0.51.1. 5.1	**	Horizonta	1 X				
6) Existing Pad			1/3 1 .:			()	
				ipated Thickness ar ss- 55 feet, Associa			
		•					
 Proposed To Formation at 			Marcellus				
		•	26400' M				
10) Proposed T		-				-1-1-	
11) Proposed H	lorizontal Le	eg Length:	16848'	*Open to modifica	ition at a later	date	
12) Approxima	te Fresh Wa	iter Strata D	epths:	612'			
13) Method to 1	Determine F	resh Water	Depths:	17103308970000 Offset well	records. Depths have	been adjusted a	ccording to surface elevations.
14) Approxima	te Saltwater	Depths: 2	193'				
15) Approxima	te Coal Sear	m Depths:	1010'				
16) Approxima	16) Approximate Depth to Possible Void (coal mine, karst, other): None Anticipated						
17) Does Propo directly overlyi				ns Yes	No	Х	
(a) If Yes, pro	wida Mina l	Info: Nom					
(a) II Yes, pro	vide wiine i	Info: Nam Dept					
		Sean					
		Own					
RECE	EIVED Dil and Gas	OWL					
Outce							

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API NO. 47-103 -	03695	
OPERATOR WELL	NO.	Duke Unit 2H MOD
Well Pad Name:	Cedar	Pad

18)

CASING AND TUBING PROGRAM

ТҮРЕ	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	J-55	94#	100'	100'	CTS, 96 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	662'	662'	CTS, 690 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	3200'	3200'	CTS, 1303 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P110-ICY	23#	26400'	26400'	CTS, 5725 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"	0.375"	2250	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"	14,360	2500	Class G/H	~1.8
Tubing	2-3/8"	4.778"	0.19"	11,200		2	
Liners							

PACKERS

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

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API NO. 47- 103 - 03695

OPERATOR WELL NO. Duke Unit 2H MOD

Well Pad Name: Cedar Pad

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

Drill a new horizontal shallow well into the 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): 71.85 acres
- 22) Area to be disturbed for well pad only, less access road (acres): 18.45 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 G/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.

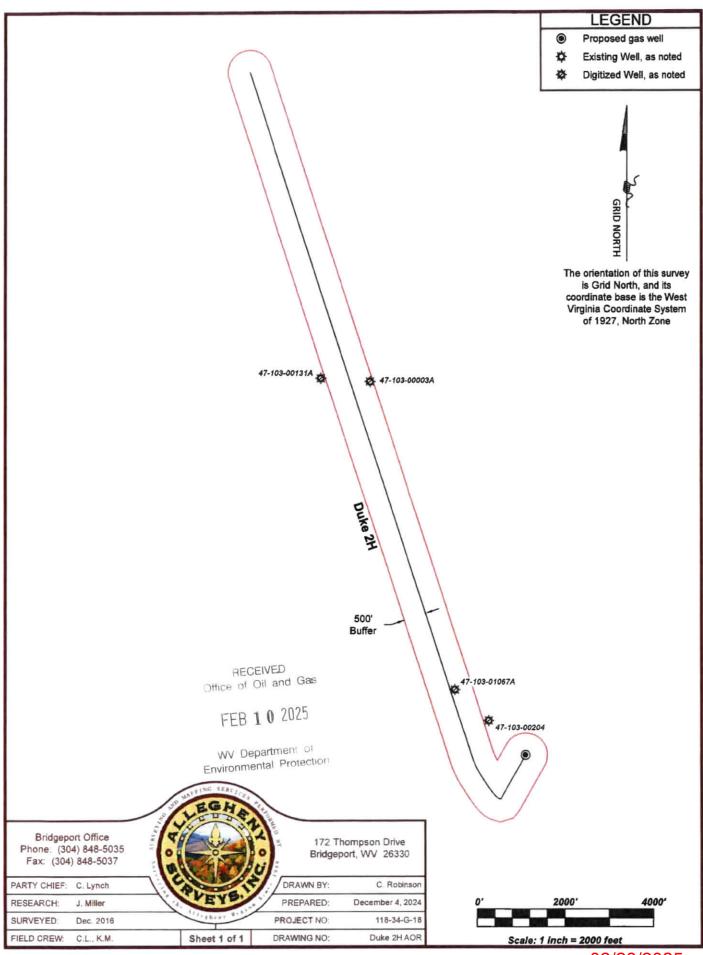
Office of Oil and Gas

*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
47103001310000	HOSTUTLER J	1	PILLAR ENERGY LLC					
47103000030000	S ASHCRAFT C SNODGRASS	1	UNKNOWN	UNKNOWN	3,248		Thirty Foot, 4th Salt Sand, Bayard	Weir, Benson, Alexander
47103010670000	PETERSON B W	93	PENNZOIL CO INC	PENNZOIL CO INC	3,177			
47103002040000	M LANTZ 3	3561	MANUFACT LIGHT &HEAT	MANUFACT LIGHT &HEAT	3,074		Gordon	Weir, Benson, Alexander

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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)

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
A: Sylvia Jean Highley Lease				
	Sylvia Jean Highley	Antero Resources Corporation	1/8+	296A/0604

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

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

Office of Oil and Ca

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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.

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

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Grantor, lessor, etc.	Grantee, lessee,	etc. Royalty	Book/Page
R: Jenkins Miller Lease			
Jenkins Miller	Hope Natural Gas Company	1/8	0107/0056
Hope Natural Gas Company	Consolidated Gas Supply Corpora	0.000 (0.000)	0233/0387
Consolidated Gas Supply Corporation	Consolidated Gas Transmission Co		066A/0069
Consolidated Gas Transmission Corporation	Eastern States Oil & Gas Inc	Assignment	076A/0232
Eastern States Oil & Gas Inc	Blazer Energy Corp	Merger	0012/0253
Blazer Energy Corp	Eastern States Oil & Gas Inc	Name Change	0012/0259
Eastern States Oil & Gas Inc	Equitable Production- Eastern Sta		wvsos
Equitable Production- Eastern States INC	Appalachian Natural Gas Trust	Assignment	079A/0244
Appalachian Natural Gas Trust	EQT Production Company	Merger	0096/0505
EQT Production Company	Antero Resources Corporation	Assignment	230A/0801
Q: Antero Minerals, LLC Lease			
Antero Minerals, LLC	Antero Resources Corporation	1/8+	250A/0847
N: Antero Minerals, LLC Lease		4.00	2504/0047
Antero Minerals, LLC	Antero Resources Corporation	1/8+	250A/0847
L: Antero Minerals, LLC Lease			
Antero Minerals, LLC	Antero Resources Corporation	1/8+	250A/0847
I: Acropolis, Inc. Lease			
Acropolis, Inc.	Antero Resources Corporation	1/8+	291A/0003
Seadou and a # employee # (Memplos). Significant and a seadon to be a seadon to	related the book your for retends to the pro-	ť)
G: Russell T. Powell Lease		46	
Russell T. Powell	Antero Resources Corporation	1/8+	331A/0172
D: Shiben Estates, Inc. Lease			
Shiben Estates, Inc.	Antero Resources Corporation	1/8+	312A/0021
B: Belinda K. Harrison Lease Belinda K. Harrison	Antero Resources Corporation	1/8+	345A/0753
beilida K. narrison	Alitero Resources corporation	1/8+	343A/0733
C: Elizabeth P. Orner Lease			
Elizabeth P. Orner	Pikewood Energy Corporation	1/8+	270A/0565
Pikewood Energy Corporation	Antero Resources Corporation	Assignment	276A/0939
B: Belinda K. Harrison Lease		RECEIVED	
Belinda K. Harrison	Antero Resources Corporation	Office of Oil and Gas 1/8+	345A/0753
To the passed (1/10) (1		CCD + 2 core	

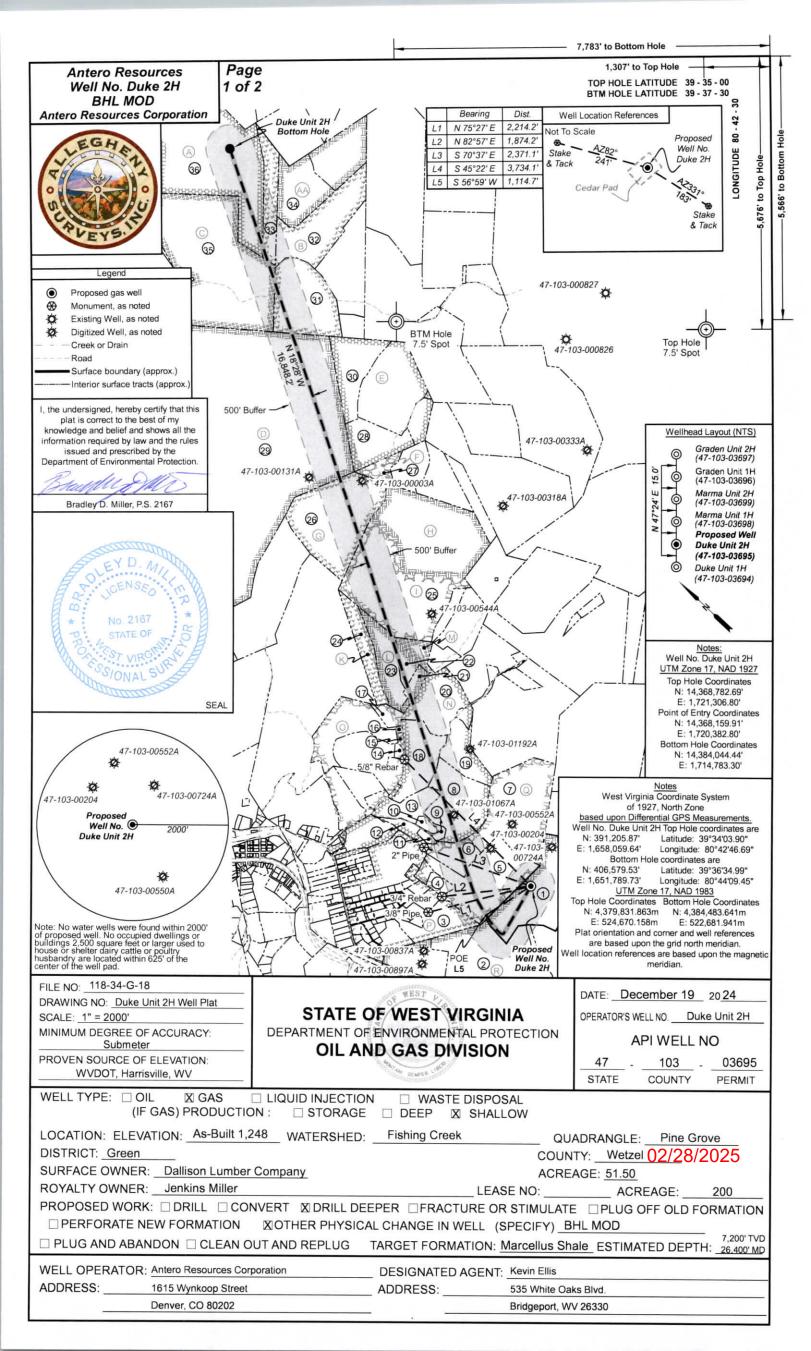
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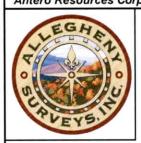
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Antero Resources Well No. Duke 2H BHL MOD Antero Resources Corporation

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	Leases
Α	Sylvia Jean Highley
В	Belinda K. Harrison
С	Elizabeth P. Orner
D	Shiben Estates, Inc.
Е	Chesapeake Appalachia, LLC
F	Chesapeake Appalachia, LLC
G	Russell T. Powell
Н	Acropolis, Inc.
1	Acropolis, Inc.
K	WSD Properties
L	Antero Minerals, LLC
М	Acropolis, Inc.
N	Antero Minerals, LLC
0	Antero Minerals, LLC
Р	Antero Minerals, LLC
Q	Antero Minerals, LLC
R	Jenkins Miller
AA	Jay H. Renner

ID	TM-Par	Owner	Bk/Pg	Acres
1	14-19	Dallson Lumber Company	357/267	51.50
2	13-83	Michelle L. Igleheart 493/370 5		58.00
3	13-54	Kenneth & Loraine Highley	230/93	20.17
4	13-39	Ruth E. Staley	512/286	3.13
5	13-40	Kenneth E. & Vicky A. VanDyne	357/204	42.33
6	13-34	Kenneth E. & Vicky A. VanDyne	357/204	14.50
7	13-26.7	John Michael & Stanley Dale Pittman	458/837	55.00
8	13-26	John M. & Stanley D. Pittman	458/837	30.52
9	13-26.1	John Michael & Stanley Dale Pittman	458/837	1.50
10	13-26.8	Robert N. & Joyce E. C. Edgell	312/523	2.01
11	13-34.1	John Michael & Stanley Dale Pittman	458/837	1.50
12	13-34	Kenneth E. & Vicky A. VanDyne	357/204	14.50
13	13-26.5	Stanley D. & Mary Jo Pittman	284/657	14.72
14	13-14.5	Donald L. & Ellen H. Anderson	335/203	1.50
15	13-14.4	Jack & Neal A. Cain	401/433	0.62
16	13-14.2	Jack & Neal A. Cain	401/433	0.42
17	13-14.3	Robert & Thomas Adams	W116/19	4.88
18	13-26.6	Stanley & Mary Jo Pittman	284/657	27.38
19	13-15.2	Blue Racer Midstream, LLC	452/546	20.00
20	13-15	Blue Racer Midstream, LLC	452/542	22.59
21	13-9.1	Karen Sue Bassett & Terry E. Roberts	339/469	4.63
22	13-9	Terry E. & Justin W. Roberts	394/528	11.70
23	13-8	Richard W. Roberts & Justin W. Roberts	394/526	22.00
24	9-51	WSD Properties LLC	441/770	13.50
25	9-42	WSD Properties LLC	441/793	149.0
26	9-41	WSD Properties LLC	441/793	48.00
27	9-29	Richard David Hornbeck	334/514	7.50
28	9-28	Richard David Hornbeck	334/514	18.75
29	9-14	Teresa Ann Ice	494/650	449.4
30	8-28	Timothy S. Harrison	408/280	25.05
31	8-8	Belinda Harrison	493/544	38.75
32	3-38	Julie Marie Lemons	493/298	39.75
33	3-39	Timothy Scott Harrison	493/300	25.25
34	3-29	Linda Kaye Gordon	482/473	26.00
35	3-37	Richard D. Hornbeck	483/191	118.00
36	3-28	Richard D. Hornbeck		120.00

FILE NO:118-34-G-18
DRAWING NO: Duke Unit 2H 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

WEST

DATE: December 19 20 24		
OPERATOR'S WELL NO Duke Unit 2H		
API WELL NO		

WVDOT, Harrisville, WV	SEMPER LINE		
WELL TYPE: □ OIL	□ LIQUID INJECTION □ WASTE DISPO DN: □ STORAGE □ DEEP ☒ SHAL		
LOCATION: ELEVATION: As-Built 1,248 WATERSHED: Fishing Creek QUADRANGLE: Pine Grove			
DISTRICT: Green COUNTY: Wetzel 02/28/2025			
SURFACE OWNER: Dallison Lumber Company ACREAGE: 51.50			
ROYALTY OWNER:Jenkins Miller	LEA	SE NO: ACREAGE:200	
PROPOSED WORK: ☐ DRILL ☐ CONVERT X DRILL DEEPER ☐ FRACTURE OR STIMULATE ☐ PLUG OFF OLD FORMATION			
☐ PERFORATE NEW FORMATION	XOTHER PHYSICAL CHANGE IN WELL (SPECIFY) BHL MOD	
☐ PLUG AND ABANDON ☐ CLEAN O	UT AND REPLUG TARGET FORMATION:	Marcellus Shale ESTIMATED DEPTH: 7,200' TVD 26,400' MD	
WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Kevin Ellis			
ADDRESS: 1615 Wynkoop Street	ADDRESS:	535 White Oaks Blvd.	
Denver, CO 80202		Bridgeport, WV 26330	