

#### west virginia department of environmental protection

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

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

Tuesday, June 7, 2022
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION 1615 WYNKOOP STREET

DENVER, CO 80202

Re:

Permit Modification Approval for SMELT 1H

47-085-10423-00-00

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: SMELT 1H

Farm Name: ELMER W PIERCE

U.S. WELL NUMBER: 47-085-10423-00-00

Horizontal 6A New Drill

Date Modification Issued: 6/7/2022

Promoting a healthy environment.

API NO. 47- 085 _ 10423
OPERATOR WELL NO. Smell Unit 1H MOD
Wall Dad Name: Cashew Pad

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

1) Well Operat	or: Antero	Resources	Corporat	494507062	085-Ritchie	Union	Oxford 7.5'
				Operator ID	County	District	Quadrangle
2) Operator's V	Well Number	r: Smelt Uni	t 1H MOD	Well Pad	Name: Cash	ew Pad	
3) Farm Name/	Surface Ow	ner: Elmer	W. Pierce	Public Road	d Access: Plea	sant Hollo	w Road
4) Elevation, cu	urrent groun	nd: 1040'	Ele	evation, proposed p	ost-construction	on: ~1019	•
5) Well Type	(a) Gas Other	<u>X</u>	_ Oil	Unde	rground Storag	ge	
	(b)If Gas	Shallow Horizontal	X	Deep			
6) Existing Pad	: Yes or No			<del></del>			
7) Proposed Ta Marcellus Sh	rget Formati ale: 6900' T\	ion(s), Depth VD, Anticipate	(s), Antici	pated Thickness ar ss- 55 feet, Associat	nd Expected Pr ted Pressure- 2	essure(s): 850#	
8) Proposed To	tal Vertical	Depth: 690	0' TVD				
9) Formation at	Total Verti	ical Depth:	Marcellus				
10) Proposed T	otal Measur	red Depth:	23,200' MI	D			
11) Proposed H	orizontal Le	eg Length:	13,654.5'				
12) Approxima	te Fresh Wa	iter Strata Dej	pths:	53', 236'			
13) Method to I 14) Approximat			• —	7-085-07654, 47-	085-03102		
15) Approximat				fied			
				e, karst, other): N	one Anticipate	ed	
17) Does Propodirectly overlying	sed well located as a constant of the second	ation contain on to an activ	coal seam e mine?	s Yes	No	×	
(a) If Yes, pro	vide Mine Ir	nfo: Name:					
		Depth:					RECEIVED Office of Oil and Gas
		Seam:					MAY <b>3 1</b> 2022
		Owner	•				100/0
						En	WV Department of Vironmental Protection

Page 1 of 3

5/26/22<sup>06/10/2022</sup>

WW-6B	
(04/15)	

API NO. 47- 085 - 10423

OPERATOR WELL NO. Smelt Unit 1H MOD

Well Pad Name: Cashew Pad

18)

### **CASING AND TUBING PROGRAM**

TYPE	Size	New		Weight non A	FOOTA CE. E.	INTERVALS:	CEMENT:
	(in)	<u>or</u>	<u>Grade</u>	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	Left in Well	Fill-up
		Used		(10/10)	Dinnig (III)	<u>(ft)</u>	(Cu. Ft.)/CTS
Conductor	20"	New	H-40	79#	80	80	CTS, 77 Cu. Ft.
Fresh Water	13-3/8"	New	J/K-55	54.5#	300	300	CTS, 417 Cu. Ft.
Coal	9-5/8"	New	J/K-55	36#	2500	2500	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110CY	20#	23,200	23,200	CTS, 4929 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"	0.375"	2250	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"	14,360	2500	Class G/H	~1.8
Tubing	2-3/8"	4.778"	0.19"	11,200			<u> </u>
Liners							

### **PACKERS**

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

WW-6B	
(10/14)	

API NO. 47- 085	-	10423
-----------------	---	-------

OPERATOR WELL NO. Smelt Unit 1H MOD

Well Pad Name: Cashew 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): 33.75 acres
- 22) Area to be disturbed for well pad only, less access road (acres): 14.29 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

### 25) Proposed borehole conditioning procedures:

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

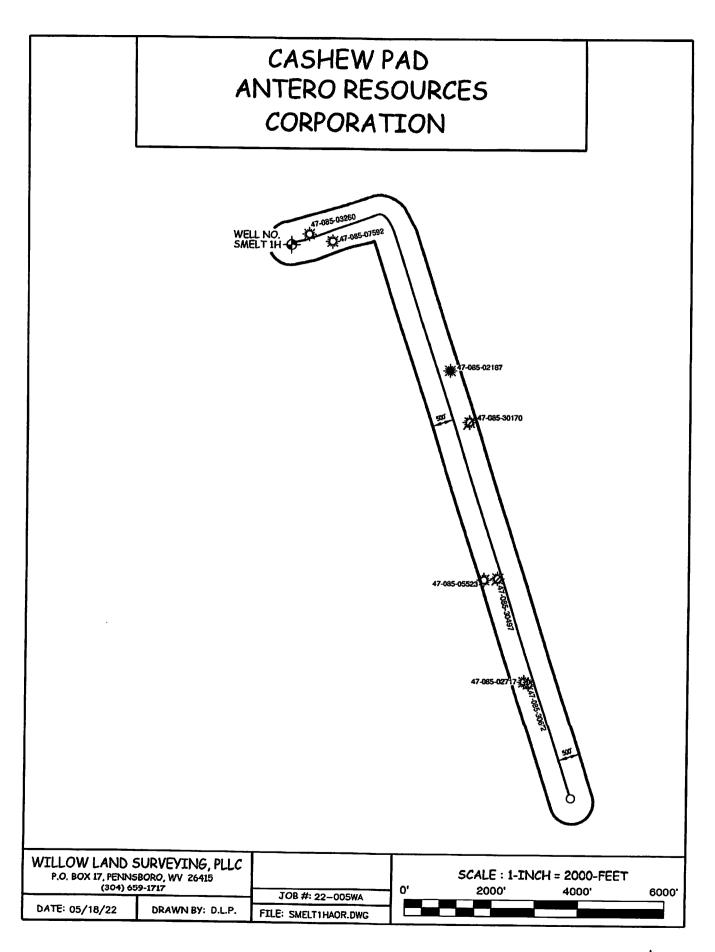
Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

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.

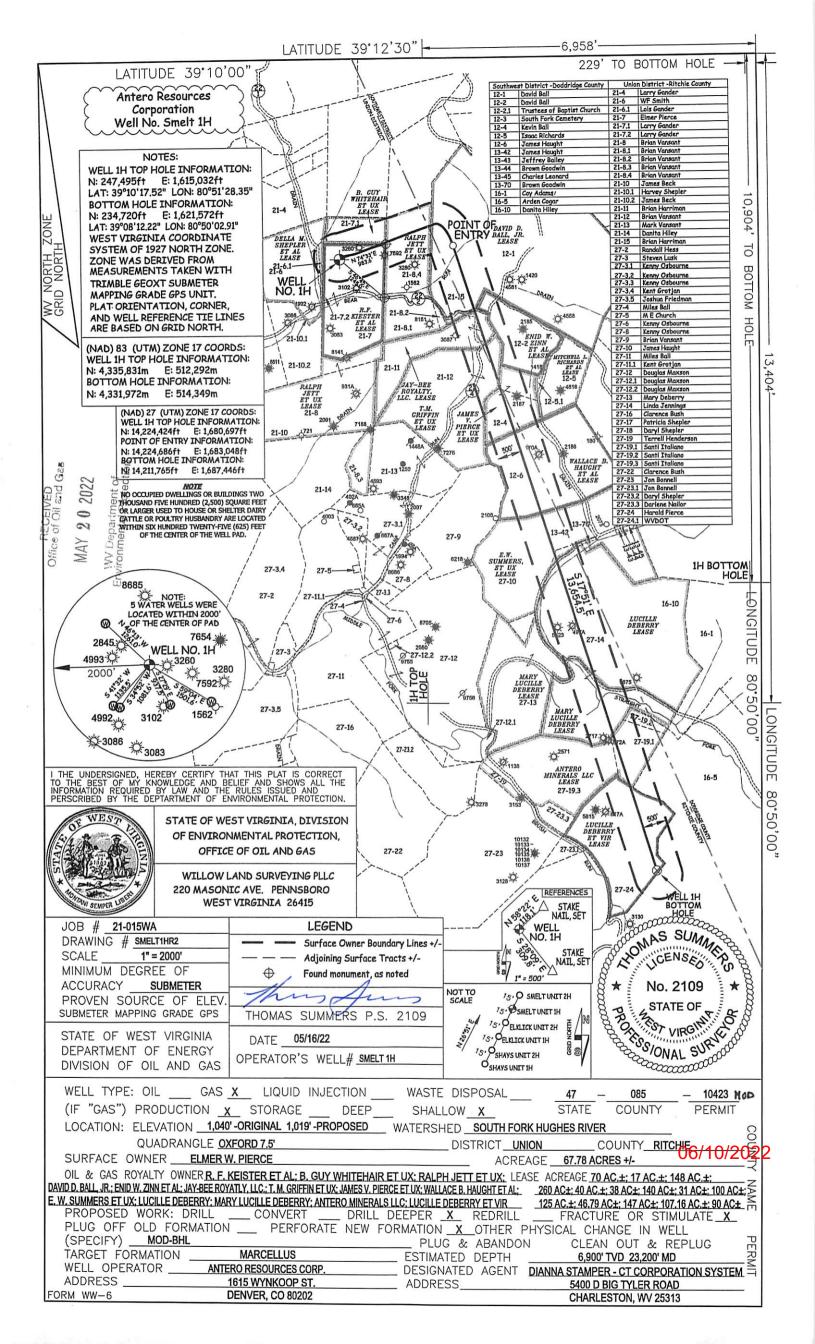
\*Note: Attach additional sheets as needed.

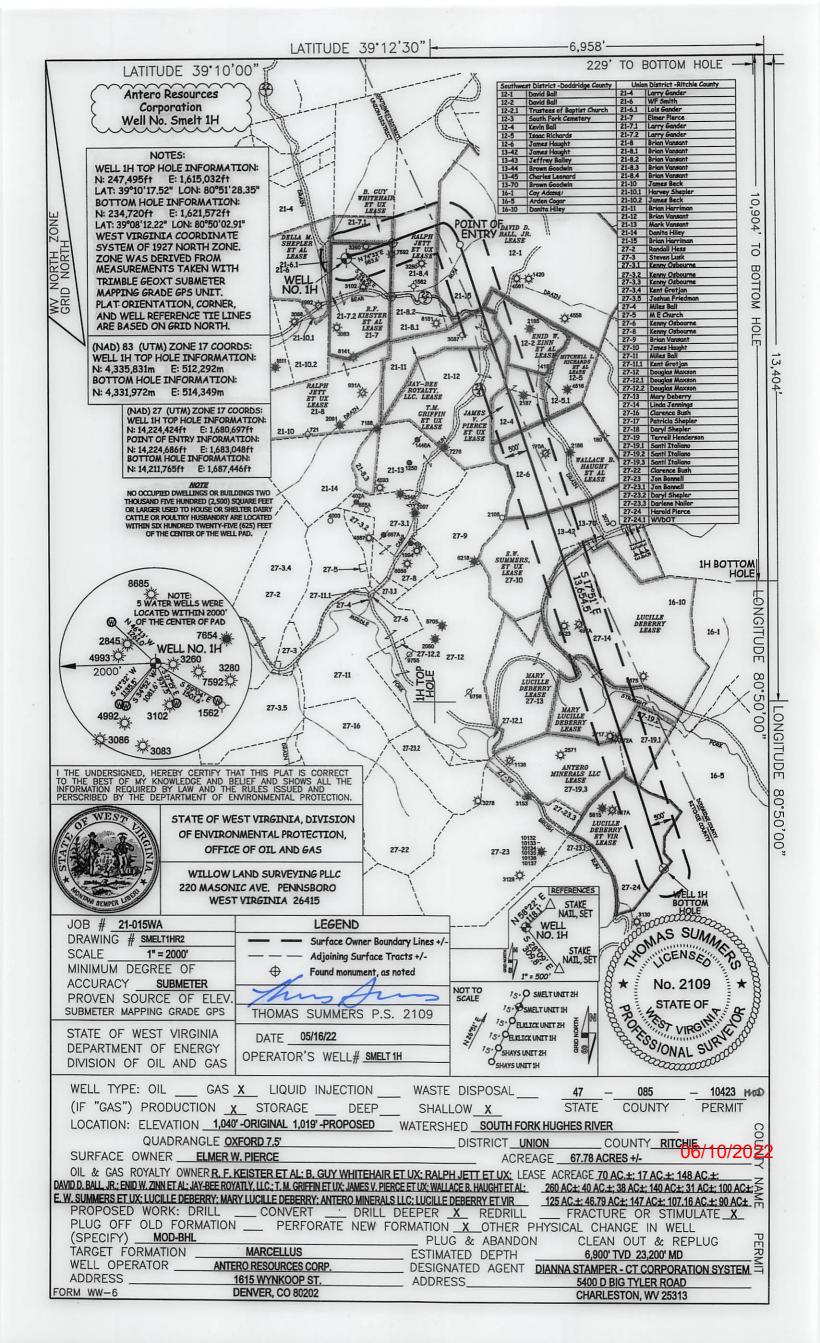
5M 5/20/2222





UWI (APINum)	Well Name	Well Number	- portator	Historical Operator	TD	Perforated Interval (shallowest, deepest)	Perforated Formation(s)	Producible Formation(s) not perf'd
47017021870000	H J PIERCE	1	DIVERSIFIED PROD LLC	UNITED OPERATING CO	2,224	White the same of the same of	Weir	
47085032600000	RLKEISTER	3	R & R OIL & GAS LLC	OIL STATES SALES	2,013			Big Injun, Pocono
47017301700000	HENRY HESS 1	4887	PITTSBURGH&W VA GAS	PITTSBURGH&W VA GAS	1,905		Big Injun	Pocono
47085075920000	JETT MYRTLE ET AL	1	STALNAKER GENE INC	JETT MYRTLE ET AL			Big Injun	Pocono
47085055230000	DEBERRY LUCILLE C		ROSS & WHARTON GAS	CONSOL GAS SUPLY CRP	5,231		Riley, Lower Huron, Bensos, Angola	Pocono
47085304970000	LUCILLE DEBERRY		DEEM F S	DEEM F S	5,036	1894 - 1924	Weir	Big Injun, Benson, Alexander
47085027170000	JIPIERCE		DALE DAVID DBA DD OI	LYNCH BRENNIE	2 200			Pocono
47085306720000	J I PIERCE 1		PITTSBURGH&W VA GAS		2,460		Big Injun	Benson, Alexander
		4033	THISBORGHAW VA GAS	PITTSBURGH&W VA GAS	2,018		Big Injun	Benson, Alexander





Smelt Unit 1H MOD

## 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
R.F. Keister, et al Lease			
R.F. Keister, et al	G.L. Yaste	1/8	0105/0504
G.L. Yaste	D.L.Y., Inc.	Assignment	0112/0302
D.L.Y.m Inc.	Betty Jean Stalkner and Rosalee Roberts	Assignment	0132/0565
Betty Jean Stalkner and Rosalee Roberts	R & S Gas Company	Assignment	0147/0548
R & S Gas Company	BET-RO Inc	Assignment	0147/0554
BET-RO Inc	Roberts Energy Corporation	Assignment	0240/0036
Roberts Energy Corporation	Antero Resources Corporation	Assignment	0329/0138
B. Guy Whitehair Lease			
B. Guy Whitehair, et ux	L.E. Mossor and Harry Haddox	1/8	0107/0343
LE. Mossor and Harry Haddox	Francis Friestad	Assignment	0089/0497
Francis Friestad	W.H. Thomson	Assignment	0152/0213
W.H. Thomson	BET-RO Inc	Assignment	0177/0011
BET-RO Inc.	Jesam Energy	Assignment	0204/0134
Jesam Energy	Roberts Energy	Assignment	0204/0705
Roberts Energy	Key Oil Company	Assignment	0258/0619
Key Oil Company	Antero Resources Appalachian Corporation	Assignment	0263/0629
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	0046/0523
Ralph Jett, et ux Lease			
Ralph Jett, et ux	W.R. Development Co. Inc.	1/8	0191/0378
W.R. Development Co. Inc.	Whittle Corporation	Assignment	0254/0910
Whittle Corporation	Antero Resources Appalachian Corporation	Assignment	0255/0526
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	0015/0702
David D. Ball, et ux Lease			
David Dale Ball Jr.	Antero Resources Corporation	1/8+	04170123
Enid W. Zinn et al Lease			
Enid W. Zinn, et al	Consolidated Gas Supply Corporation	1/8	0103/0080
Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation	Assignment	0135/0583
Consolidated Gas Transmission Corporation	CNG Development Company	Assignment	0139/0041
CNG Development Company	CNG Producing Company	Merger	0167/0210
CNG Producing Company	Dominion Exploration and Production, Inc	Merger	0049/0340
Dominion Exploration and Production, Inc	CONSOL Gas Company	Name Change	0293/0252
CONSOL Gas Company	CNX Gas Company	Merger	0293/0252
CNX Gas Company	Antero Resources Corporation	Assignment	0409/0672
Jay-Bee Royalty, ILC Lease			
Jay-Bee Royalty, LLC	Antero Resources Corporation	1/8+	0330/0506



Smelt Unit 1H MOD

## 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
T.M. Griffin, et ux Lease			
T.M. Griffin, et ux	The Philadelphia Company of West Virginia	1/8	0029/0385
The Philadelphia Company of West Virginia	Pittsburgh and West Virginia Gas Company	Assignment	0032/0253
Pittsburgh and West Virginia Gas Company	Equitable Gas Company	Conveyance	0126/0473
Equitable Gas Company	Equitrans, Inc.	Assignment	0154/0475
Equitrans, Inc.	EQT Capital Corporation	Merger	0006/0751
EQT Capital Corporation	Equitable Resources, Inc.	Merger	0023/0032
Equitable Resources, Inc.	Equitrans, LP	Assignment	0329/0645
Equitrans, LP	Equitable Production - Eastern States, Inc	Assignment	0234/0830
Equitable Production - Eastern States, Inc	Equitable Production Company	Merger	0281/0346
Equitable Production Company	EQT Production Company	Name Change	0218/0346
EQT Production Company	Antero Resources Corporation	Assignment	0323/0964
Enid W. Zinn et al Lease			
Enid W. Zinn, et al	Consolidated Gas Supply Corporation	1/8	0103/0080
Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation	Assignment	0135/0583
Consolidated Gas Transmission Corporation	CNG Development Company	Assignment	0139/0041
CNG Development Company	CNG Producing Company	Merger	0167/0210
CNG Producing Company	Dominion Exploration and Production, Inc	Merger	0049/0340
Dominion Exploration and Production, Inc	CONSOL Gas Company	Name Change	0293/0252
CONSOL Gas Company	CNX Gas Company	Merger	0293/0252
CNX Gas Company	Antero Resources Corporation	Assignment	0409/0672
James V. Pierce, et ux Lease			
James V. Pierce	Consolidated Gas Supply Corporation	1/8	0102/0228
Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation	Assignment	0135/0583
Consolidated Gas Transmission Corporation	CNG Development Company	Assignment	0139/0041
CNG Development Company	CNG Producing Company	Merger	0167/0210
CNG Producing Company	Dominion Exploration and Production, Inc	Merger	0049/0340
Dominion Exploration and Production, Inc	CONSOL Gas Company	Name Change	0293/0252
CONSOL Gas Company	CNX Gas Company	Merger	0293/0252
CNX Gas Company	Antero Resources Corporation	Assignment	0409/0672
Wallace B Haught, et al Lease			
Wallace B. Haught, et al	Consolidated Gas Supply Corporation	1/8	0095/0375
Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation	Assignment	0135/0583
Consolidated Gas Transmission Corporation	CNG Development Company	Assignment	0139/0041
CNG Development Company	CNG Producing Company	Merger	0167/0210
CNG Producing Company	Dominion Exploration and Production, Inc	Merger	0049/0340
Dominion Exploration and Production, Inc	CONSOL Gas Company	Name Change	0293/0252
CONSOL Gas Company	CNX Gas Company	Merger	0293/0252
CNX Gas Company	Antero Resources Corporation	Assignment	0409/0672



### 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
E.W. Summers, et ux Lease			
E.W. Summers, et ux	G.W. Thompson	1/8	0025/0260
G.W. Thompson	The Philadelphia Company of West Virginia	Assignment	Unrecorded
The Philadelphia Company of West Virginia	Pittsburgh and West Virginia Gas Company	Assignment	0032/0253
Pittsburgh and West Virginia Gas Company	Equitable Gas Company	Conveyence	0126/0473
Equitable Gas Company	Equitrans, Inc	Assignment	0154/0475
Equitrans, Inc	EQT Capital Corporation	Merger	0006/0751
EQT Capital Corporation	Equitable Resources, Inc	Merger	0023/0032
Equitable Resources, Inc	Equitrans, LP	Assignment	0329/0645
Equitrans, LP	Equitable Production - Eastern States, Inc	Assignment	0234/0830
Equitable Production - Eastern States, Inc	Equitable Production Company	Merger	0218/0346
Equitable Production Company	EQT Production Company	Name Change	0218/0346
<b>EQT Production Company</b>	Antero Resources Corporation	Assignment	0487/0641
Lucille DeBerry Lease			
Lucille DeBerry, widow	Consolidated Gas Supply Corporation	1/8	0096/0201
Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation	Assignment	0135/0583
Consolidated Gas Transmission Corporation	CNG Transmission Corporation	Name Change	0332/0563
CNG Transmission Corporation	Mike Ross Inc	Assignment	0227/0130
Mike Ross Inc	Antero Resources Corporation	Assignment	0455/0632
Mary Lucille DeBerry Lease			
Mary Lucille De Berry	Antero Resources	1/8+	0330/0338
Antero Minerals, LLC Lease			
Antero Minerals, LLC	Antero Resources Corporation	1/8	0394/0103

<sup>\*</sup>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.



# 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
Lucille Deberry, et vir Lease				Doole 1 age
	Consolidated Gas Supply Corporation Consolidated Gas Transmission Corporation CNG Development Company CNG Producing Company Dominion Exploration & Production Inc	Hope Natural Gas Company Consolidated Gas Supply Corporation Consolidated Gas Transmission Corporation I CNG Development Company CNG Producing Company Dominion Exploration & Production Inc CONSOL Gas Company CNX Gas Company LLC Antero Resources Corporation	1/8 Name Change Assignment Assignment Merger Merger Name Change Merger Assignment	0081/0474 WV SOS 0169/0756 0176/0601 WV SOS WV SOS 0006/0634 0308/0581

"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.

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	
_	Tim Rady Lade	
Its:	VP of Land	

Page 1 of 1

5/26/2018 P2/2018 PRZ



Stansberry, Wade A <wade.a.stansberry@wv.gov>

### Expedited Modification Horizontal H6A Well Work Permits API: (47-085-10421 & 47-085-10423) CORRECTED

1 message

Stansberry, Wade A <wade.a.stansberry@wv.gov>

Wed, Jun 8, 2022 at 2:28 PM

To: Mallory Stanton <mstanton@anteroresources.com>, Diane Blair <dblair@anteroresources.com>, Dani DeVito <ddevito@shalepro.com>, "Greynolds, Kenneth L" <kenneth.l.greynolds@wv.gov>, Arlene Mossor <amossor@wvassessor.com>

#### CORRECTED SUBJECT LINE

On Wed, Jun 8, 2022 at 2:27 PM Stansberry, Wade A <wade.a.stansberry@wv.gov> wrote: I have attached a copy of the newly issued well permit numbers:

47-085-10421 - SHAYS 1H 47-085-10423 - SMELT 1H

These will serve as your copy.

Thank you,

Wade A. Stansberry

**Environmental Resource Specialist 3** 

West Virginia Department of Environmental Protection

Office of Oil & Gas

601 57th St. SE

Charleston, WV 25304

(304) 926-0499 ext. 41115

(304) 926-0452 fax

Wade.A.Stansberry@wv.gov