

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

ANTERO RESOURCES CORPORATION 1615 WYNKOOP STREET

DENVER, CO 80202

Re:

Permit Modification Approval for IVORY UNIT 2H

47-095-02890-00-00

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: IVORY UNIT 2H

Farm Name: NEIL R STEBBINS U.S. WELL NUMBER: 47-095-02890-00-00

Horizontal 6A New Drill

Date Modification Issued: 9/5/2024

Promoting a healthy environment.

API NO. 47-095	_ 02890	
OPERATOR W	ELL NO.	Ivory Unit 2H MOD
Well Pad Nan	ne: Starke	y Pad

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

1) Well Operator: Ar	ntero Resources	Corpora	494507062	095-Tyler	Lincoln	Paden City 7.5'
_			Operator ID	County	District	Quadrangle
2) Operator's Well Nu	mber: Ivory Uni	2H MOD	Well I	Pad Name: Sta	rkey Pad	
3) Farm Name/Surfac	e Owner: Neil R	. Stebbins	Public R	load Access: H	lamilton Driv	/e
4) Elevation, current g	ground: 1107'	El	evation, propos	ed post-constru	ction: 1091	
5) Well Type (a) Go Other		_ Oil	U	nderground Sto	rage	
(b)If	Gas Shallow	X	Deep			
	Horizontal	X				
6) Existing Pad: Yes	or No Yes					
 Proposed Target For Marcellus Shale: 68 						
8) Proposed Total Ve	rtical Depth: 68	00' TVD				
9) Formation at Total	THE REAL PROPERTY AND ADDRESS OF THE PARTY AND	Marcellus	3			
10) Proposed Total M	easured Depth:	20600' M	D			
11) Proposed Horizon	ital Leg Length:	10815.2'				
12) Approximate Free	sh Water Strata D	epths:	464'			
13) Method to Detern	nine Fresh Water	Depths:	47-095-00275			
14) Approximate Salt	water Depths: 1	522'				
15) Approximate Coa	l Seam Depths:	None Ider	ntified			
16) Approximate Dep	th to Possible Vo	oid (coal m	ine, karst, other): None Antic	pated	
17) Does Proposed w directly overlying or					No X	
(a) If Yes, provide M	Mine Info: Nam	e:				
()	Dept					
	Sean					
	Own	-		RECEIVED	Gas	
				office of Oil and	- Lyrich	

AUG 28 2024

WV Department of Environmental Protection

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09/06/2024

API NO. 47-095	_ 02890	
OPERATOR WE	LL NO.	Ivory Unit 2H MOD
Well Pad Name	• Starke	v Pad

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

1) Well Operate	or: Antero	Resource	es Corpora	494507062	095-Tyler	Lincoln	Paden City 7.5'
•				Operator ID	County	District	Quadrangle
2) Operator's V	Vell Numbe	r: Ivory U	nit 2H MOD	Well Pac	Name: Starke	ey Pad	
3) Farm Name/	Surface Ow	ner: Neil	R. Stebbins	Public Roa	d Access: Han	nilton Drive	9
4) Elevation, cu	urrent groun	nd: 1107	" Ele	evation, proposed	post-construction	on: 1091'	
5) Well Type	(a) Gas	X	Oil	Unde	erground Storag	ge	
	Other						
	(b)If Gas	Shallow	X	Deep			
		Horizont	al X				
6) Existing Pad					-		
				ipated Thickness a ss- 55 feet, Associa			
8) Proposed To	tal Vertical	Depth: 6	800' TVD				
9) Formation a	t Total Vert	ical Depth:	Marcellus				
10) Proposed T	otal Measu	red Depth:	20600' M	D			
11) Proposed H	Horizontal L	eg Length:	10815.2'				On RECO
12) Approxima	ate Fresh Wa	ater Strata	Depths:	464'			Office of Oil and Gas
13) Method to	Determine I	Fresh Wate	er Depths:	7-095-00275			19 202
14) Approxima	ate Saltwater	r Depths:	1522'			E	WV Department of vironmental Protect
15) Approxima	ate Coal Sea	m Depths:	None Iden	tified			WV Department of Protection
16) Approxima	ate Depth to	Possible V	oid (coal mi	ne, karst, other):	None Anticipa	ted	
17) Does Propo directly overly					No	Х	
(a) If Yes, pro	ovide Mine	Info: Na	me:				
		De	pth:				
CK	# 403447 # 2500	Sea Sea					
	\$ 2500	Ow Ow	ner:				
	8/15/	2024					

API NO. 47- 095 - 02890

OPERATOR WELL NO. Nory Unit 2H MOD
Well Pad Name: Starkey 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	H-40	94#	100	100	CTS, 89 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	514	514	CTS, 536 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#	20600	20600	4263 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	Lead-HPQZ & 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	Office of Oil and Gas
Depths Set:	N/A	AUG 2 8 2024

Environme ital Protection

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API NO. 47-_095 _ _ 02890

OPERATOR WELL NO. _Ivory Unit 2H MOD

Well Pad Name: Starkey 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

- 21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 35.27 acres
- 22) Area to be disturbed for well pad only, less access road (acres): 14.87 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.

Office of Oil and Gas

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09/06/2024

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	c. Royalt	У	Book/Page
X: AMP IV, LP Lease AMP IV, LP	Antero Resources Corporation	1/8+		231/747
B: Robert F. & Rita K. Scardina Lease Robert F. & Rita K. Scardina	Antero Resources Corporation	1/8+		235/654
A: Moore Self Storage, North Carolina, LLC Lease Moore Self Storage, North Carolina, LLC	Antero Resources Corporation	1/8+		261/175
B: Robert F. & Rita K. Scardina Lease Robert F. & Rita K. Scardina	Antero Resources Corporation	1/8+		235/654
<u>D: Robert F. & Rita K. Scardina Lease</u> Robert F. & Rita K. Scardina	Antero Resources Corporation	1/8+		235/654
E: Bounty Minerals, LLC Lease Bounty Minerals, LLC	Antero Resources Corporation	1/8+		286/571
F: Date Palm Resources, LLC Lease Date Palm Resources, LLC	Antero Resources Corporation	1/8+		297/135
<u>G: Theresa J. Drain Lease</u> Theresa J. Drain	Antero Resources Corporation	1/8+		192/90
H: Bounty Minerals, LLC Lease Bounty Minerals, LLC SWN Production Company	SWN Production Company Antero Resources Corporation	1/8+ Assignmen	t	222/315 235/291
I: Delbert D. & Betty R. Rush Lease Delbert D. & Betty R. Rush	Antero Resources Corporation	1/8+		665/150
M: Betty Ruth Rush, et al Lease Betty Ruth Rush, et al	Antero Resources Corporation	1/8+		297/288
L: Delbert D. & Betty R. Rush Lease Delbert D. & Betty R. Rush	Antero Resources Corporation	1/8+	RECEIVED Office of Oil and Gas	665/159
P: Ronal Wayne Rush Lease Ronal Wayne Rush	Antero Resources Corporation	1/8+	AUG 19 2024	290/672
L: Delbert D. & Betty R. Rush Lease Delbert D. & Betty R. Rush	Antero Resources Corporation	1/8+	WV Department of Environmental Protection	665/159
R: Robert L. Bolner Lease Robert L. Bolner	Antero Resources Corporation	1/8+	09/06/20)24 ^{187/91}

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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
Q: Gerald W. Meckley, Jr. et al Lease		1/0	2/644
Gerald W. Meckley, Jr. et al	Triad Hunter, LLC	1/8	104/354
Triad Hunter, LLC	Blue Ridge Mountain Resources, Inc	Assignment	104/357
Blue Ridge Mountain Resources, Inc	Eclipse Resources I, LP	Assignment	
Eclipse Resources I, LP	SWN Production Company	Name Change	WVSOS
SWN Production Company	Antero Resources Corporation	Assignment	235/291
S: Arlen Glen Wells, Jr. Lease Arlen Glen Wells, Jr	Antero Resources Corporation	1/8+	211/509
T: Frank Krynicki Lease	T 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1/8	659/788
Frank Krynicki	Triad Hunter		104/354
Triad Hunter, LLC	Blue Ridge Mountain Resources, Inc	Assignment	
Blue Ridge Mountain Resources, Inc	Eclipse Resources I, LP	Assignment	104/357
Eclipse Resources I, LP	SWN Production Company	Name Change	WVSOS
SWN Production Company	Antero Resources Corporation	Assignment	235/291

^{*}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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Office of Oil and Gas

AUG 19 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
U: Gerald W. Meckley, Jr. et al Le	ease			
	Gerald W. Meckley, Jr. et al	Triad Hunter, LLC	1/8	2/640
	Triad Hunter, LLC	Blue Ridge Mountain Resources, Inc	Assignment	104/354
	Blue Ridge Mountain Resources, Inc	Eclipse Resources I, LP	Assignment	104/357
	Eclipse Resources I, LP	SWN Production Company	Name Change	WVSOS
	SWN Production Company	Antero Resources Corporation	Assignment	235/291

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

RECEIVED
Office of Oil and Gas

AUG 19 2024

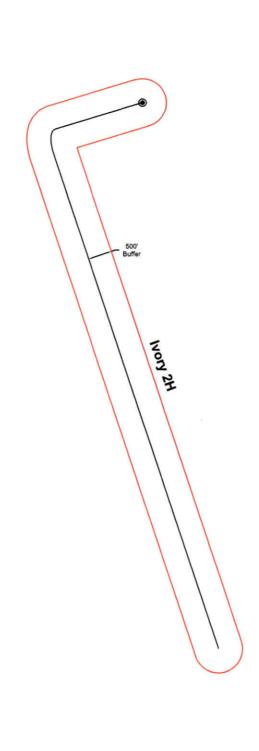
WV Department of Environmental Protection

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



LEGEND

 \odot Proposed gas well

* Existing Well, as noted

Digitized Well, as noted



The orientation of this survey is Grid North, and its coordinate base is the West Virginia Coordinate System of 1927, North Zone

Office of Oil and Gas

AUG 19 2024

WV Department of Environmental Protection

2000' 4000'

Scale: 1 inch = 2000 feet

Bridgeport Office Phone: (304) 848-5035 Fax: (304) 848-5037

PARTY CHIEF: C. Lynch

RESEARCH: J. Miller

SURVEYED: Dec. 2016 FIELD CREW: C.L., K.M.

Sheet 1 of 1

PROJECT NO: DRAWING NO:

DRAWN BY:

PREPARED:

172 Thompson Drive

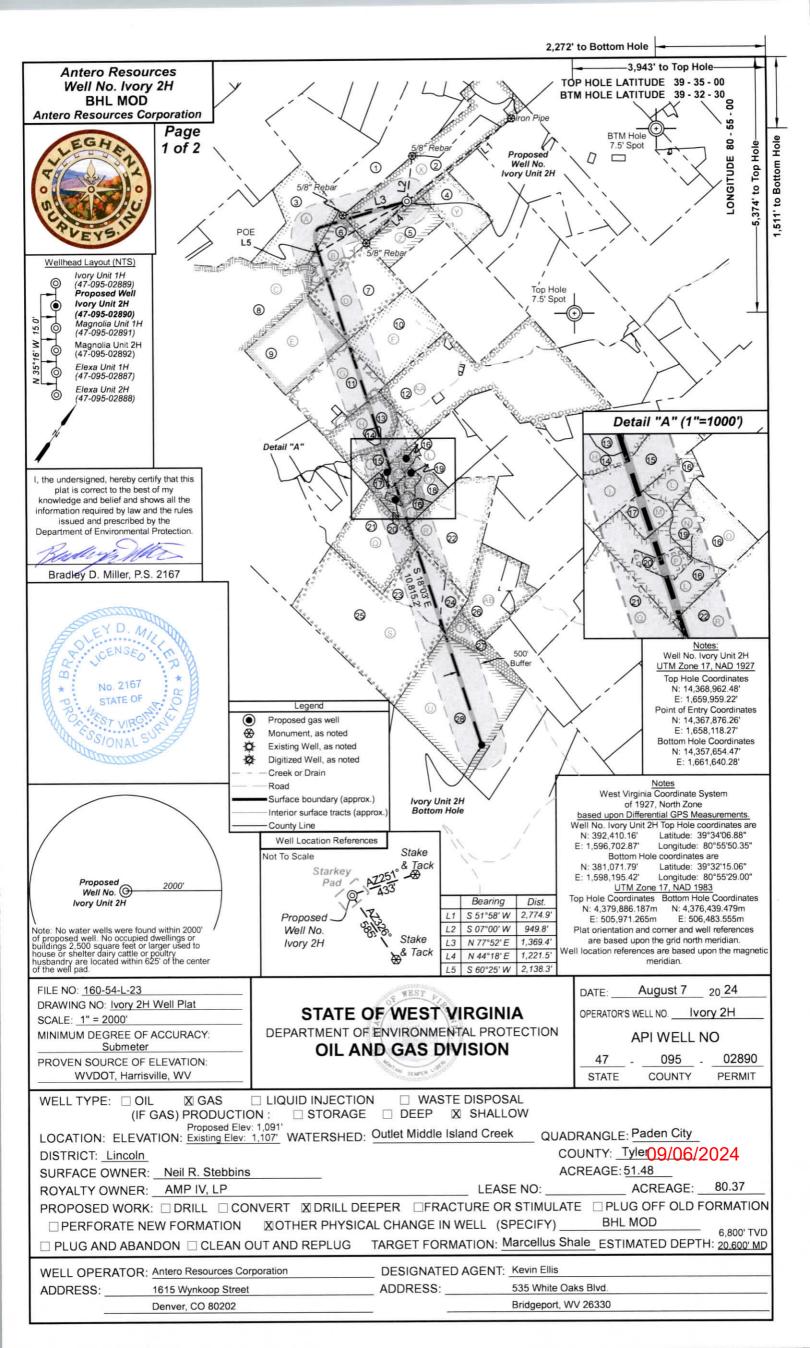
Bridgeport, WV 26330

160-54-L-23

J. McNemar

May 29, 2024

Ivory 2H AOR



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



Page 2 of 2

	Leases
Α	Moore Self Storage,
В	North Carolina, LLC Robert F. & Rita K. Scardina
C	Evon Heintzman, by Debra
0	K. Spencer as AIF
D	Robert F. & Rita K. Scardina
Е	Bounty Minerals, LLC
F	Date Palm Resources, LLC
G	Theresa J. Drain
Н	Bounty Minerals, LLC
- 1	Delbert D. & Betty R. Rush
L	Delbert D. & Betty R. Rush
M	Betty Ruth Rush, et al
N	Kimberly J. Bassett, DSSP
0	Larry M. & Betty L. Jochum, JTWROS
Р	Ronal Wayne Rush
Q	Gerald W. Meckley, Jr. et al
R	Robert L. Bolner
S	Arlen Glen Wells, Jr.
	Frank Krynicki
U	Gerald W. Meckley, Jr. et al
Х	AMP IV, LP
Υ	Robert F. & Rita K. Scardina
Z	Robert F. & Rita K. Scardina
AA	Earl Grimes, et ux
AB	Bounty Minerals, LLC

ID	TM-Par	Owner	Bk/Pg	Acres
1	5-4	Ralph D. & Sophia Judge	306/681	60.77
2	5-9.4	Neil R. Stebbins	366/436	51.48
3	4-91	Donna Kathy Johnston	184/133	54.06
4	5-12	Robert F. & Rita K. Scardina	320/646	25.00
5	5-11	Robert F. & Rita K. Scardina	320/646	25.00
6	8-14	Robert F. & Rita K. Scardina	320/646	72.79
7	8-14	Robert F. & Rita K. Scardina	320/646	72.79
8	8-12	Donna Kathy Johnston	184/133	86.89
9	8-13	Donna Kathy Johnston	184/133	50.00
10	9-1	Dickie L. Morgan	605/478	50.00
11	8-24	Theresa J. Drain	428/607	49.47
12	9-16	D.E. Grimes & Sons Farm, LLC	209/496	118.215
13	8-26	Delbert D. & Betty Ruth Rush	191/125	20.65
14	8-26.1	Donal L. & Joyce J. Rush	230/44	2.345
15	9-12	Betty Ruth Rush	162/25	23.00
16	9-14	Donal Lee & Ronal Wayne Rush	368/825	32.71
17	9-13	Betty Ruth & Delbert Rush	368/825	3.5
18	9-15	Larry M. & Betty L. Jochum; Mark Lee Jochum	391/407	7.301
19	9-15.2	***		
20	9-14.1	Ronal Wayne Rush	308/306	2.79
21	9-22	GR Meckley Family Trust	OR50/28	43.75
22	9-23	Robert L. Bolner	347/235	61.00
23	9-45	GR Meckley Family Trust	OR50/606	26.05
24	9-45.1	GR Meckley Family Trust	OR50/606	
25	8-61	GR Meckley Family Trust	OR50/28	
26	9-25	Vonlie Cooper	289/103	31.48
27	9-26	Margaret Krynicki, et al	404/293	15.00
28	13-1	GR Meckley Family Trust	OR50/28	99.00

FILE NO: 160-54-L-23 DRAWING NO: 1vory 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	DATE:August 7 20 24 OPERATOR'S WELL NOIVORY 2H API WELL NO 47 095 02890STATECOUNTYPERMIT
WELL TYPE: OIL		
WELL OPERATOR: Antero Resources Co.		aks Blvd.