



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, August 12, 2024
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for MAGNOLIA UNIT 2H
47-095-02892-00-00

Lateral Extension

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: MAGNOLIA UNIT 2H
Farm Name: NEIL R STEBBINS
U.S. WELL NUMBER: 47-095-02892-00-00
Horizontal 6A New Drill
Date Modification Issued: 08/12/2024

Promoting a healthy environment.

08/16/2024

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

1) Well Operator: Antero Resources Corpora 494507062 095-Tyler Lincoln Paden City 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Magnolia Unit 2H MOD Well Pad Name: Starkey Pad

3) Farm Name/Surface Owner: Neil R. Stebbins Public Road Access: Hamilton Drive

4) Elevation, current ground: 1107' Elevation, proposed post-construction: 1091'

5) Well Type (a) Gas Oil Underground Storage
Other _____
(b) If Gas Shallow Deep
Horizontal

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus Shale: 6800' TVD, Anticipated Thickness- 55 feet, Associated Pressure- 2800#

8) Proposed Total Vertical Depth: 6800' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 18700' MD

11) Proposed Horizontal Leg Length: 10792'

12) Approximate Fresh Water Strata Depths: 464'

13) Method to Determine Fresh Water Depths: 47-095-00275

14) Approximate Saltwater Depths: 1522'

15) Approximate Coal Seam Depths: None Identified

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

(a) If Yes, provide Mine Info: Name: _____
CK#4033947 Depth: _____
* 2500' Seam: _____
Owner: _____

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08/16/2024
8-7-24

WW-6B
(04/15)

API NO. 47- 095 - 02892
 OPERATOR WELL NO. Magnolia Unit 2H MOD
 Well Pad Name: Starkey 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, 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#	18700	18700 ✓	3784 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				RECEIVED Office of Oil and Gas AUG 7 2024 WV Department of Environmental Protection
Sizes:	N/A				
Depths Set:	N/A				

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): 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.

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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

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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.

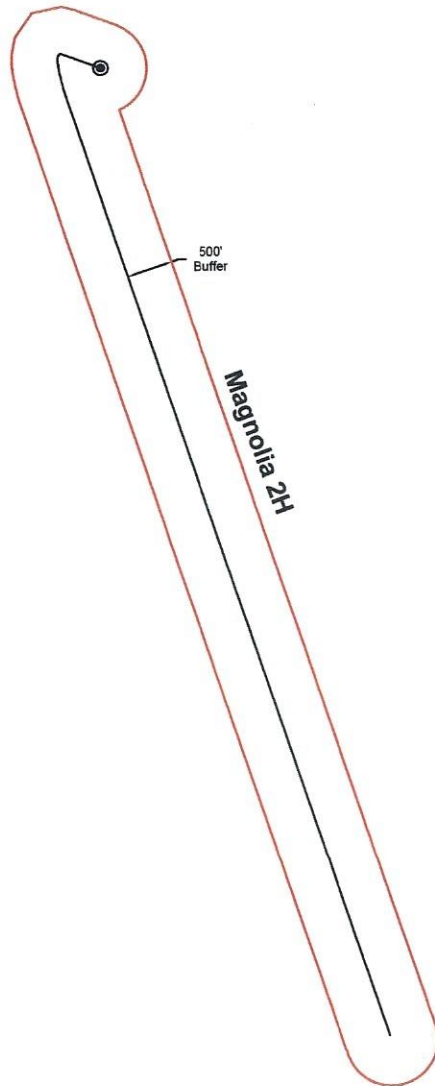
*Note: Attach additional sheets as needed.

LEGEND

- Proposed gas well
- ⊙ Existing Well, as noted
- ⊙ Digitized Well, as noted



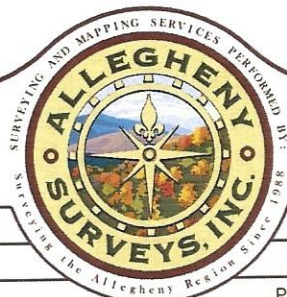
The orientation of this survey is Grid North, and its coordinate base is the West Virginia Coordinate System of 1927, North Zone



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

172 Thompson Drive
Bridgeport, WV 26330

PARTY CHIEF: C. Lynch	DRAWN BY: J. McNemar
RESEARCH: J. Miller	PREPARED: May 29, 2024
SURVEYED: Dec. 2016	PROJECT NO: 159-54-L-23
FIELD CREW: C.L., K.M.	DRAWING NO: Magnolia 2H AOR

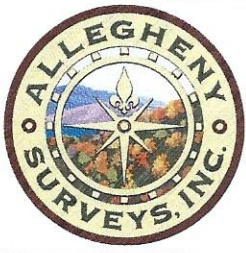
Sheet 1 of 1



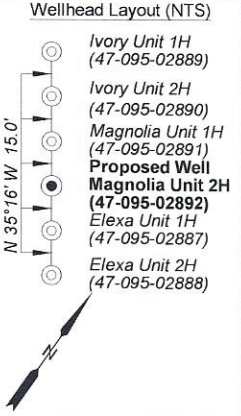
Scale: 1 inch = 2000 feet

08/16/2024

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

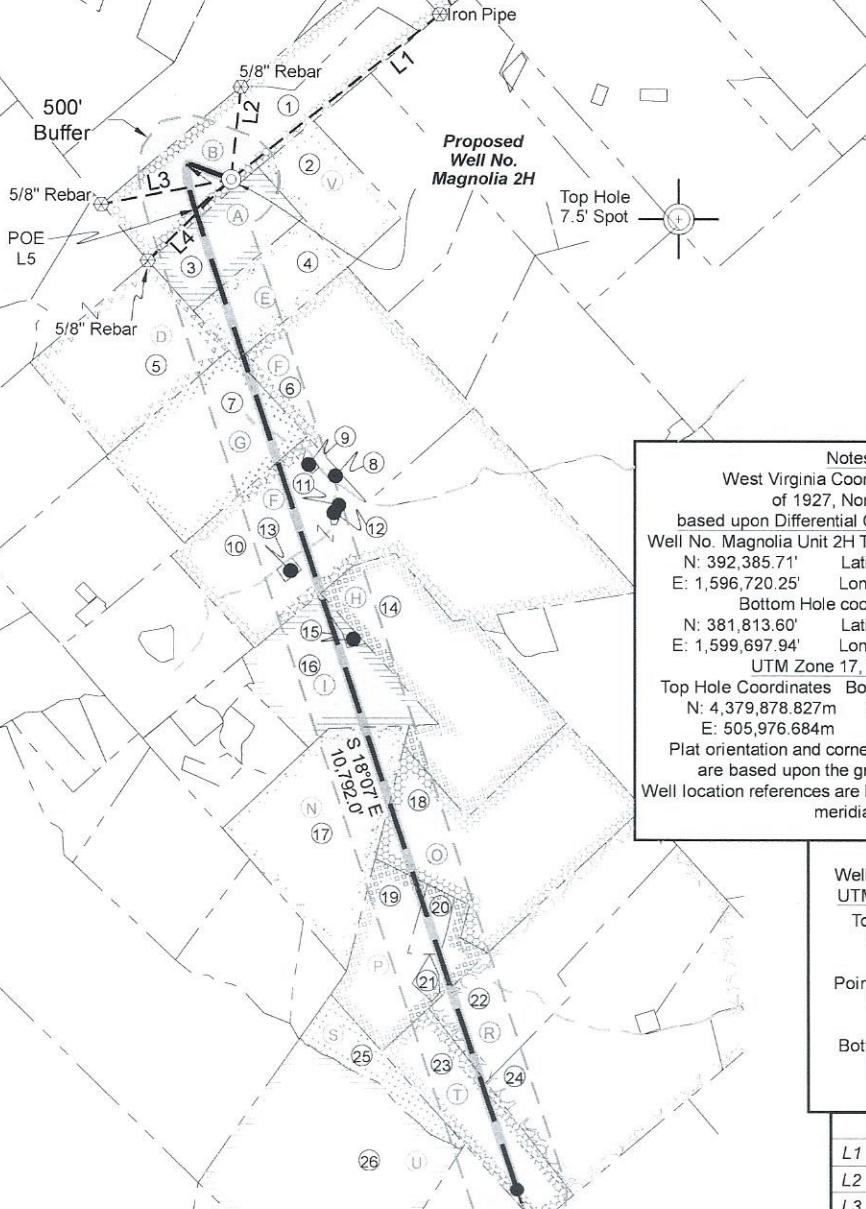
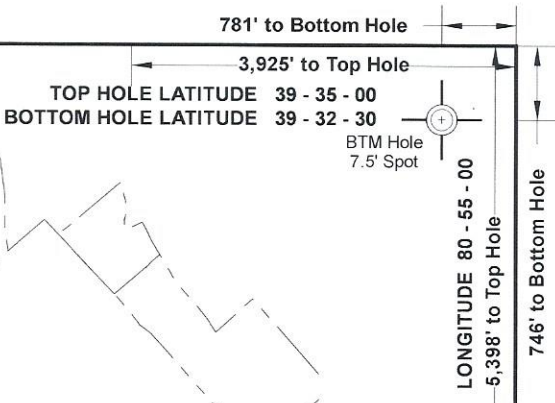
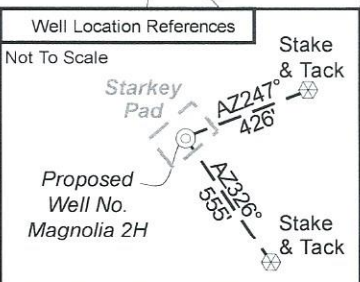
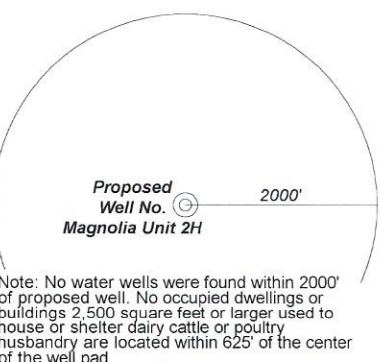
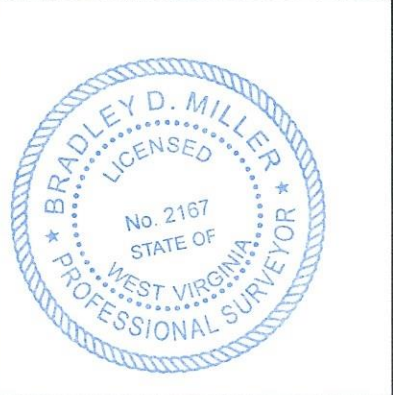


Page
1 of 2



I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the rules issued and prescribed by the Department of Environmental Protection.

Bradley D. Miller
 Bradley D. Miller, P.S. 2167



Notes
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
 Well No. Magnolia Unit 2H Top Hole coordinates are
 N: 392,385.71' Latitude: 39°34'06.64"
 E: 1,596,720.25' Longitude: 80°55'50.13"
 Bottom Hole coordinates are
 N: 381,813.60' Latitude: 39°32'22.63"
 E: 1,599,697.94' Longitude: 80°55'09.97"
 UTM Zone 17, NAD 1983
 Top Hole Coordinates Bottom Hole Coordinates
 N: 4,379,878.827m N: 4,376,673.131m
 E: 505,976.684m E: 506,937.538m
 Plat orientation and corner and well references are based upon the grid north meridian.
 Well location references are based upon the magnetic meridian.

Notes:
 Well No. Magnolia Unit 2H UTM Zone 17, NAD 1927
 Top Hole Coordinates
 N: 14,368,938.34'
 E: 1,659,977.00'
 Point of Entry Coordinates
 N: 14,368,617.44'
 E: 1,659,605.48'
 Bottom Hole Coordinates
 N: 14,358,421.00'
 E: 1,663,129.70'

	Bearing	Dist.
L1	S 51°21' W	2,776.4'
L2	S 05°48' W	972.2'
L3	N 79°01' E	1,381.5'
L4	N 45°42' E	1,216.5'
L5	S 50°08' W	491.1'

- Legend
- Proposed gas well
 - ⊗ Monument, as noted
 - ⊙ Existing Well, as noted
 - ⊕ Digitized Well, as noted
 - - - Creek or Drain
 - Road
 - Surface boundary (approx.)
 - Interior surface tracts (approx.)
 - County Line

FILE NO: 159-54-L-23
 DRAWING NO: Magnolia 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: July 24 20 24
 OPERATOR'S WELL NO. Magnolia 2H
 API WELL NO
 47 - 095 - 02892
 STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
 LOCATION: ELEVATION: Existing Elev: 1,107' Proposed Elev: 1,091' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Paden City
 DISTRICT: Lincoln COUNTY: Tyler
 SURFACE OWNER: Neil R. Stebbins ACREAGE: 51.48
 ROYALTY OWNER: AMP IV, LP LEASE NO: ACREAGE: 80.37
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) BHL MOD
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 18,700' MD 6,800' TVD

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Kevin Ellis
 ADDRESS: 1615 Wynkoop Street ADDRESS: 535 White Oaks Blvd.
 Denver, CO 80202 Bridgeport, WV 26330



Leases	
A	Robert F. & Rita K. Scardina
B	AMP IV, LP
D	Robert F. & Rita K. Scardina
E	Robert F. & Rita K. Scardina
F	Earl Grimes, et ux
G	Date Palm Resources, LLC
H	Breck Minerals, LP
I	Bounty Minerals, LLC
N	Robert L. Bolner
O	Ethan A. & Marsh L. Riffle, JTWROS
P	Bounty Minerals, LLC
R	Blanche B. Bailey & Shelby R. Bailey
S	Frank Krynicki
T	MMA Mineral Group, LLC
U	Gerald W. Meckley, Jr., et al
X	Robert F. & Rita K. Scardina

ID	TM-Par	Owner	Bk/Pg	Acres
1	5-9.4	Neil R. Stebbins	366/436	51.48
2	5-12	Robert F. & Rita K. Scardina	320/646	25.00
3	5-11	Robert F. & Rita K. Scardina	320/646	25.00
4	5-10	Robert F. & Rita K. Scardina	320/646	25.00
5	8-14	Robert F. & Rita K. Scardina	320/646	72.79
6	9-3	D.E. Grimes & Sons Farm, LLC	209/496	67.00
7	9-1	Dickie L. Morgan	605/478	50.00
8	9-2	D.E. Grimes & Sons Farm, LLC	209/496	1.59
9	9-16.3	Timothy Grimes & Pamela Robinson	OR204/32	0.55
10	9-16	D.E. Grimes & Sons Farm, LLC	209/496	118.22
11	9-16.4	Darrell Kurt Grimes & Amy J. Grimes	617/383	0.24
12	9-16.1	Darrell K. & Amy J. Grimes	OR87/558	0.25
13	9-16.2	Donald Kevin Grimes & Aleta Karen Grimes	315/612	0.75
14	9-15.1	Larry M. & Betty L. Jochum; Mark Lee Jochum	573/794	75.00
15	9-43.1	Larry M. & Betty L. Jochum; Mark Lee Jochum	573/794	1.47
16	9-43	Larry M. & Betty L. Jochum; Mark Lee Jochum	573/794	36.55
17	9-23	Robert L. Bolner	347/235	61.00
18	9-24	Ethan A. & Marsha L. Riffle	299/26	82.00
19	9-25	Vonlie Cooper	289/103	31.48
20	9-25.1	Dawayne S. Cooper & Peggy Cooper	OR101/744	5.00
21	9-25.2	Mary & Dallas Yeater	361/326	1.76
22	9-27	Robert Livio Bolner	226/593	59.00
23	13-2	Idona Cooper Estate	109/234	30.00
24	9-28	Constance Heintzman	WB43/505	104.50
25	9-26	Margaret Krynicki, et al	404/293	15.00
26	13-1	GR Meckley Family Trust	OR50/28	99.00

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ADDRESS: 1615 Wynkoop Street ADDRESS: 535 White Oaks Blvd.
Denver, CO 80202 Bridgeport, WV 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
<u>B: AMP IV, LP Lease</u> AMP IV, LP	Antero Resources Corporation	1/8+	231/747
<u>A: Robert F. & Rita K. Scardina Lease</u> Robert F. & Rita K. Scardina	Antero Resources Corporation	1/8+	235/654
<u>E: Robert F. & Rita K. Scardina Lease</u> Robert F. & Rita K. Scardina	Antero Resources Corporation	1/8+	235/654
<u>F: Earl Grimes, et ux Lease</u> Earl Grimes, et ux John Richmond Gas Corporation of WV John Richmond Jack Holden, Driller – Operator Nancy J. Holden Triad Hunter, LLC	John Richmond Gas Corporation of WV John Richmond Jack Holden, Driller – Operator Nancy J. Holden Triad Hunter, LLC Antero Resources Corporation	1/8 Assignment Assignment Assignment Assignment Assignment Assignment	210/296 211/149 212/270 212/315 290/758 402/569 496/776
<u>G: Date Palm Resources, LLC Lease</u> Date Palm Resources, LLC	Antero Resources Corporation	1/8+	297/135
<u>F: Earl Grimes, et ux Lease</u> Earl Grimes, et ux John Richmond Gas Corporation of WV John Richmond Jack Holden, Driller – Operator Nancy J. Holden Triad Hunter, LLC	John Richmond Gas Corporation of WV John Richmond Jack Holden, Driller – Operator Nancy J. Holden Triad Hunter, LLC Antero Resources Corporation	1/8 Assignment Assignment Assignment Assignment Assignment Assignment	210/296 211/149 212/270 212/315 290/758 402/569 496/776
<u>H: Breck Minerals, LP Lease</u> Breck Minerals, LP	Antero Resources Corporation	1/8+	306/62
<u>I: Bounty Minerals, LLC Lease</u> Bounty Minerals, LLC	Antero Resources Corporation	1/8+	301/445
<u>N: Robert L. Bolner Lease</u> Robert L. Bolner	Antero Resources Corporation	1/8+	187/91
<u>O: Ethan A. & Marsh L. Riffle, JTWROS Lease</u> Ethan A. & Marsh L. Riffle, JTWROS	Antero Resources Corporation	1/8+	236/369
<u>P: Bounty Minerals, LLC Lease</u> Bounty Minerals, LLC	Antero Resources Corporation	1/8+	269/176

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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
R: Blanche B. Bailey & Shelby R. Bailey Lease			
Blanche B. Bailey & Shelby R. Bailey	Triad Hunter, LLC	1/8	380/210
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

*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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- (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
<u>T: MMA Mineral Group, LLC Lease</u>	MMA Mineral Group, LLC	Antero Resources Corporation	1/8+	301/339

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**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

**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