

**CONFIDENTIAL**

State of West Virginia  
Department of Environmental Protection - Office of Oil and Gas  
Well Operator's Report of Well Work

API 47 - 095 - 02273 County Tyler District Centerville  
Quad Shirley 7.5' Pad Name Dale Pad Field/Pool Name ----  
Farm name Raymond Underwood Well Number Rymer Unit 4HD 2  
Operator (as registered with the OOG) Antero Resources Corporation  
Address 1615 Wynkoop Street City Denver State CO Zip 80202

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4,364,725m Easting 511,815m  
Landing Point of Curve Northing 4,364,949.953m Easting 511,732.075m  
Bottom Hole Northing 4,366,710m Easting 511,112m

Elevation (ft) 1017' GL Type of Well  New  Existing Type of Report  Interim  Final  
Permit Type  Deviated  Horizontal  Horizontal 6A  Vertical Depth Type  Deep  Shallow  
Type of Operation  Convert  Deepen  Drill  Plug Back  Redrilling  Rework  Stimulate  
Well Type  Brine Disposal  CBM  Gas  Oil  Secondary Recovery  Solution Mining  Storage  Other \_\_\_\_\_  
Type of Completion  Single  Multiple Fluids Produced  Brine  Gas  NGL  Oil  Other \_\_\_\_\_  
Drilled with  Cable  Rotary

Drilling Media Surface hole  Air  Mud  Fresh Water Intermediate hole  Air  Mud  Fresh Water  Brine  
Production hole  Air  Mud  Fresh Water  Brine  
Mud Type(s) and Additive(s)  
Air - Foam & 4% KCL  
Mud - Polymer

Date permit issued 7/14/2015 Date drilling commenced 7/16/2015 Date drilling ceased 10/14/2015  
Date completion activities began 10/29/2015 3 Date completion activities ceased 12/7/2015  
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 55' Open mine(s) (Y/N) depths N  
Salt water depth(s) ft None Identified Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 1148' (Trace) Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

Reviewed

Reviewed by:

JLB  
2/21/2015

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WR-35  
Rev. 8/23/13

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API 47- 095 - 02273 Farm name Raymond Underwood Well number Rymer Unit 4HD

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	30"	26"	40'	New	154#/H-40	N/A	Y
Surface	24"	18 5/8"	538'	New	87.5#/J-55	N/A	Y
Coal							
Intermediate 1	17 1/2"	13 3/8"	2536'	New	61#/J-55	N/A	Y
Intermediate 2	12 1/4"	9 5/8"	10,384'	New	47#/HCP-110	N/A	Y
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	18,159'	New	23#/P-110	N/A	Y
Tubing		2-3/8"	11,540'		8.7#, 4.6#/N-80		
Packer type and depth set		N/A					

Comment Details \*On 8/17/2015 pipe became stuck in hole. 366' of pipe was left in hole. Plug was set using 20BBLS H2O, 36BBLS OTF-1 Spacer at 13.5, 57.5BBLS Class H 17.5 Tail Cement 3BBLS OTF-1 Spacer, 2.6BBLS H2O, 100BBLS 10.3 Mud Disp. Began Sidetrack on 8/22/2015.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	Class A	123 sx	15.6	1.19	146.37 Cu. Ft.	0'	8 Hrs.
Surface	Class A	1098 sx	15.6	1.18	1295.64 Cu. Ft.	0'	8 Hrs.
Coal							
Intermediate 1	Class A	2103 sx	15.6	1.18	2481.54 Cu. Ft.	0'	8 Hrs.
Intermediate 2	Class A	1089 sx (Lead), 412 sx (Tail)	14.5 (Lead), 15.6 (Tail)	1.3 (Lead), 1.18 (Tail)	1901.86 Cu. Ft.	0'	8 Hrs.
Intermediate 3							
Production	Class H	1320 sx	15.2	1.83	2415.6 Cu. Ft.	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 18,159' MD, 11,387' TVD (BHL), 11,513' TVD (Deepest Point Drilled) Loggers TD (ft) 18,119' MD  
Deepest formation penetrated Point Pleasant Plug back to (ft) N/A  
Plug back procedure N/A

Kick off depth (ft) 11,106'

\*\*Request has been made to keep this information confidential

Check all wireline logs run  caliper  density  deviated/directional  induction  
 neutron  resistivity  gamma ray  temperature  sonic

Well cored  Yes  No Conventional  Sidewall Were cuttings collected  Yes  No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING \_\_\_\_\_

Conductor - 0  
Surface - 1 above guide shoe, 1 above insert float, 1 every 4th joint to surface  
Intermediate - 1 above float joint, 1 above float collar, 1 every 4th joint to surface  
Production - 1 above float joint, 1 below float collar, 1 every 3rd joint to top of cement

WAS WELL COMPLETED AS SHOT HOLE  Yes  No DETAILS \_\_\_\_\_

WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS \_\_\_\_\_

WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED N/A







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API 47-095-02273 Farm Name Raymond Underwood Well Number Rymer Unit 4HD

## EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	29-Oct-15	17,926	18,072	60	Marcellus
2	6-Nov-15	17,754	17,900	60	Marcellus
3	6-Nov-15	17,582	17,728	60	Marcellus
4	7-Nov-15	17,410	17,555	60	Marcellus
5	7-Nov-15	17,238	17,383	60	Marcellus
6	8-Nov-15	17,066	17,211	60	Marcellus
7	8-Nov-15	16,894	17,039	60	Marcellus
8	8-Nov-15	16,722	16,867	60	Marcellus
9	9-Nov-15	16,550	16,695	60	Marcellus
10	9-Nov-15	16,378	16,523	60	Marcellus
11	9-Nov-15	16,206	16,351	60	Marcellus
12	10-Nov-15	16,033	16,179	60	Marcellus
13	10-Nov-15	15,861	16,007	60	Marcellus
14	11-Nov-15	15,689	15,835	60	Marcellus
15	11-Nov-15	15,517	15,663	60	Marcellus
16	11-Nov-15	15,345	15,491	60	Marcellus
17	11-Nov-15	15,173	15,318	60	Marcellus
18	12-Nov-15	15,001	15,146	60	Marcellus
19	12-Nov-15	14,829	14,974	60	Marcellus
20	12-Nov-15	14,657	14,802	60	Marcellus
21	13-Nov-15	14,485	14,630	60	Marcellus
22	13-Nov-15	14,313	14,458	60	Marcellus
23	13-Nov-15	14,141	14,286	60	Marcellus
24	14-Nov-15	13,968	14,114	60	Marcellus
25	14-Nov-15	13,796	13,942	60	Marcellus
26	14-Nov-15	13,624	13,770	60	Marcellus
27	14-Nov-15	13,452	13,598	60	Marcellus
28	15-Nov-15	13,280	13,426	60	Marcellus
29	15-Nov-15	13,108	13,253	60	Marcellus
30	15-Nov-15	12,936	13,081	60	Marcellus
31	15-Nov-15	12,764	12,909	60	Marcellus
32	16-Nov-15	12,592	12,737	60	Marcellus
33	16-Nov-15	12,420	12,565	60	Marcellus
34	16-Nov-15	12,248	12,393	60	Marcellus
35	16-Nov-15	12,076	12,221	60	Marcellus
36	17-Nov-15	11,903	12,049	60	Marcellus
37	17-Nov-15	11,731	11,877	60	Marcellus
38	17-Nov-15	11,559	11,705	60	Marcellus

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API 47-095-02273 Farm Name Raymond Underwood Well Number Rymer Unit 4HD

## EXHIBIT 2

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	6-Nov-15	65.9	10,675	N/A	7,128	496,940	11,635	N/A
2	6-Nov-15	70.0	10,437	8,880	8,057	481,500	10,839	N/A
3	6-Nov-15	72.4	10,501	8,751	7,843	481,030	10,720	N/A
4	7-Nov-15	73.0	10,615	8,471	8,052	481,130	10,960	N/A
5	7-Nov-15	71.4	10,348	8,603	8,024	481,460	10,685	N/A
6	8-Nov-15	71.8	10,392	8,875	8,163	481,180	10,785	N/A
7	8-Nov-15	71.0	10,551	9,438	8,869	480,720	10,637	N/A
8	8-Nov-15	71.9	10,382	8,941	8,068	481,740	10,650	N/A
9	9-Nov-15	71.0	10,522	9,352	8,941	480,280	10,724	N/A
10	9-Nov-15	71.0	10,571	10,439	8,909	476,680	10,571	N/A
11	9-Nov-15	73.0	10,489	8,787	8,276	482,970	10,690	N/A
12	10-Nov-15	72.0	10,477	8,948	8,490	480,660	10,597	N/A
13	10-Nov-15	71.0	10,511	8,619	8,301	478,940	10,553	N/A
14	11-Nov-15	72.0	10,409	9,366	8,723	480,870	10,541	N/A
15	11-Nov-15	71.0	10,387	9,001	8,343	480,100	10,584	N/A
16	11-Nov-15	72.0	10,316	8,966	8,104	479,030	10,523	N/A
17	11-Nov-15	71.0	10,251	8,621	8,274	481,330	10,520	N/A
18	12-Nov-15	71.0	10,228	9,170	8,640	481,360	10,536	N/A
19	12-Nov-15	72.0	10,274	8,776	8,247	481,054	10,503	N/A
20	12-Nov-15	72.0	10,206	9,044	7,921	479,720	10,508	N/A
21	13-Nov-15	71.0	10,251	8,951	8,379	478,686	10,425	N/A
22	13-Nov-15	71.0	10,233	9,291	7,861	477,670	10,552	N/A
23	13-Nov-15	73.0	10,360	9,166	8,143	479,560	10,455	N/A
24	14-Nov-15	73.0	10,251	9,416	8,429	479,710	10,481	N/A
25	14-Nov-15	71.0	10,151	8,783	8,526	379,360	10,424	N/A
26	14-Nov-15	72.0	10,121	8,848	8,386	480,700	10,303	N/A
27	14-Nov-15	74.0	10,299	8,805	7,982	481,300	10,419	N/A
28	15-Nov-15	73.0	10,279	9,395	8,479	479,070	10,410	N/A
29	15-Nov-15	67.0	10,047	9,531	8,333	270,527	11,222	N/A
30	15-Nov-15	72.0	10,168	10,604	7,900	478,803	10,213	N/A
31	15-Nov-15	72.0	10,307	9,745	7,997	480,070	10,374	N/A
32	16-Nov-15	70.4	10,476	9,241	8,318	359,590	10,969	N/A
33	16-Nov-15	68.3	10,240	10,339	8,000	480,420	10,616	N/A
34	16-Nov-15	73.0	10,147	10,185	8,522	479,640	10,338	N/A
35	16-Nov-15	73.0	10,157	9,524	8,004	479,390	10,361	N/A
36	17-Nov-15	71.3	9,885	9,703	8,143	424,950	11,202	N/A
37	17-Nov-15	73.0	10,164	9,770	8,326	484,150	10,331	N/A
38	17-Nov-15	74.0	9,759	9,431	7,639	482,620	10,250	N/A
AVG=		71.5	10,312	9,237	8,230	17,784,910	403,106	TOTAL



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API 47-095-002273 Farm Name Raymond Underwood Well Number Rymer Unit 4HD

## EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Fresh Water	55	N/A	55	N/A
Shale	0	358	0	358
Sandstone	358	508	358	508
Siltstone	508	688	508	688
Shale	688	718	688	718
Limestone	718	778	718	778
Shale	778	1,148	778	1,148
Shale w/ Trace Coal	1,148	1,158	1,148	1,158
Shale	1,158	1,358	1,158	1,358
Sandstone	1,358	1,408	1,358	1,408
Siltstone	1,408	1,468	1,408	1,468
Sandstone	1,468	1,528	1,468	1,528
Shale	1,528	1,558	1,528	1,558
Siltstone	1,558	1,618	1,558	1,618
Sandstone	1,618	1,648	1,618	1,648
Shale	1,648	1,913	1,648	1,913
Big Lime	1,913	2,022	1,913	2,022
Big Injun	2,022	2,570	2,022	2,570
Gantz Sandstone	2,570	2,671	2,570	2,671
Fifty Foot Sandstone	2,671	2,780	2,671	2,780
Gordon	2,780	3,085	2,780	3,085
Fifth Sandstone	3,085	3,143	3,085	3,143
Bayard	3,143	3,466	3,143	3,466
Warren	3,466	3,846	3,466	3,846
Speechley	3,846	4,223	3,846	4,223
Baltown	4,223	4,573	4,223	4,573
Bradford	4,573	4,972	4,573	4,972
Benson	4,972	5,222	4,972	5,222
Alexander	5,222	5,406	5,222	5,406
Elk	5,406	5,786	5,406	5,786
Rhinestreet	5,786	6,131	5,786	6,131
Sycamore	6,131	6,307	6,131	6,307
Middlesex	6,307	6,404	6,307	6,404
Burkett	6,404	6,436	6,404	6,436
Tully	6,436	6,469	6,436	6,469
Marcellus	6,469	6,516	6,469	6,517
Onondaga	6,516	6,762	6,517	6,763
Oriskany	6,762	7,184	6,763	7,187
Bass Island	7,184	7,277	7,187	7,280
Salina	7,277	8,093	7,280	8,097
Wills Creek	8,093	8,338	8,097	8,343
Lockport	8,338	8,548	8,343	8,553
McKenzie	8,548	8,675	8,553	8,680
Rose Hill	8,675	9,182	8,680	9,187
Tuscarora	9,182	9,421	9,187	9,427
Queenston	9,421	10,235	9,427	10,242
Reedsville	10,235	11,298	10,242	11,309
Utica	11,298	11,416	11,309	11,507
Point Pleasant	11,416	NA	11,507	NA

# Hydraulic Fracturing Fluid Product Component Information Disclosure



Job Start Date:	11/6/2015
Job End Date:	11/17/2015
State:	West Virginia
County:	Tyler
API Number:	47-095-02273-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Rymer 4HD
Longitude:	-80.86271700
Latitude:	39.43198300
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	11,513
Total Base Water Volume (gal):	17,239,068
Total Base Non Water Volume:	0

## Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Antero Resources	Base Fluid	Water	7732-18-5	100.00000	88.48598	
Sand	U.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	11.00824	
LGC-15	U.S. Well Services	Gelling Agents	Guar Gum	9000-30-0	50.00000	0.13567	
			Petroleum Distillates	64742-47-8	60.00000	0.12849	
			Suspending agent (solid)	14808-60-7	3.00000	0.02075	
			Surfactant	68439-51-0	3.00000	0.00814	
HCL Acid (12.6%-18.0%)	U.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.50000	0.10095	
			Hydrogen Chloride	7647-01-0	18.00000	0.02411	
WFRA-405	U.S. Well Services	Friction Reducer	Anionic Polyacrylamide	9003-06-9	40.00000	0.02355	
			Water	7732-18-5	40.00000	0.02355	
			Petroleum Distillates	64742-47-8	20.00000	0.00948	
			Ethoxylated alcohol blend	68002-97-1	5.00000	0.00294	
SI-1100	U.S. Well Services	Scale Inhibitor					



			Water	7732-18-5	80.00000	0.01036
			Ethylene Glycol	107-21-1	25.00000	0.00366
			Copolymer of Maleic and Acrylic acid	52255-49-9	10.00000	0.00153
			Potassium salt of diethylene triamine penta (methylene phosphonic acid)	15827-60-8	7.50000	0.00131
			Hexamethylene tramine penta (methylene phosphonic acid)	34690-00-1	5.00000	0.00084
			Phosphino carboxylic acid polymer	71050-62-9	5.00000	0.00084
			Hexamethylene diamine penta (methylene phosphonic acid)	23605-74-5	2.00000	0.00034
K-BAC 1020	U.S. Well Services	Anti-Bacterial Agent				
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00420
			Deionized Water	7732-18-5	28.00000	0.00240
AP One	U.S. Well Services	Gel Breakers				
			Ammonium Persulfate	7727-54-0	100.00000	0.00241
AI-302	U.S. Well Services	Acid Corrosion Inhibitors				
			Water	7732-18-5	95.00000	0.00022
			2-Propyn-1-olcompound with methyloxirane	38172-91-7	15.00000	0.00003
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.						

\* Total Water Volume sources may include fresh water, produced water, and/or recycled water

\*\* Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)



Antero Resources  
1615 Wynkoop Street  
Denver, CO 80202  
Office 303.357.7310  
Fax 303.357.7315

September 29, 2016

West Virginia Department of Environmental Protection  
Oil & Gas Conservation Commission  
Attn: Ms. Carrie Brooks  
601 57<sup>th</sup> Street, SE  
Charleston, WV 25304

RE: **DEEP WELL STATUS & REQUEST FOR CONFIDENTIALITY**  
Pursley Unit 2HD (API# 47-095-02175)  
Lucy Unit 3HD (API# 47-095-02272)  
Rymer Unit 4HD (API# 47-095-02273)

Ms. Brooks,

Antero Resources Corporation (Antero) is in receipt of your letter dated September 15, 2016 requesting information regarding the above deep wells. Please note that both the Pursley Unit 2HD and Lucy Unit 3HD wells have not been drilled or completed.

The Rymer Unit 4HD has been drilled and completed and a copy of the well records and logs have been included with this response. Per Code of State Regulations 39CSR 1.4.6, Antero respectfully requests all information submitted with respect to this well be kept confidential for a period of one year.

If you have any questions please feel free to contact me at (303) 357-7323.

Thank you in advance for your consideration.

Sincerely,

A handwritten signature in black ink that reads "Ashlie Steele". The signature is written in a cursive, flowing style.

Ashlie Steele  
Permitting Supervisor  
Antero Resources Corporation

Enclosures

Released  
by OGCC



Antero Resources  
1615 Wynkoop Street  
Denver, CO 80202  
Office 303.357.7310  
Fax 303.357.7315

September 27, 2017

West Virginia Department of Environmental Protection  
Oil & Gas Conservation Commission  
Attn: Ms. Carrie Brooks  
601 57<sup>th</sup> Street, SE  
Charleston, WV 25304

RE: **DEEP WELL REQUEST FOR CONFIDENTIALITY**  
Rymer Unit 4HD (API# 47-095-02273)

Ms. Brooks,

The Rymer Unit 4HD has been drilled and completed and a copy of the well records and logs were submitted 9/29/2016. Since this well was drilled in an area with limited exploration and information available, Antero respectfully requests to keep this information proprietary for an additional period of one year per Code of State Regulations 39CSR 12.2.b.

If you have any questions please feel free to contact me at (303) 357-7233.

Thank you in advance for your consideration.

Sincerely,

A handwritten signature in blue ink, appearing to read "Kara Quackenbush".

Kara Quackenbush  
Permitting Agent  
Antero Resources Corporation

Enclosures



CONFIDENTIAL

LATITUDE 39°27'30"

8,349'

10,645' TO BOTTOM HOLE

LATITUDE 39°27'30"

LONGITUDE 80°50'00"

9,628'

LONGITUDE 80°50'00"

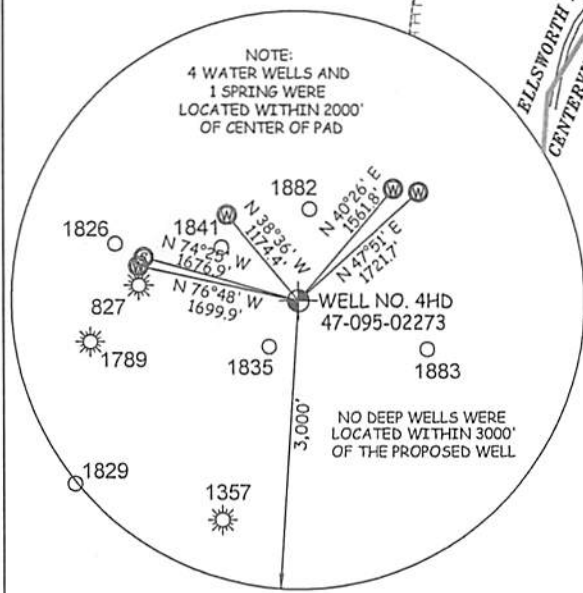
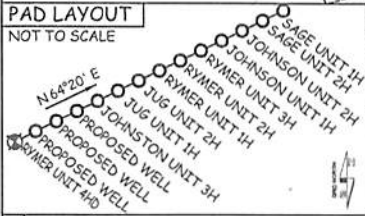
Antero Resources Corporation  
Well No. Rymer Unit 4HD  
47-095-02273 (AS DRILLED)

- NOTE
1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.
  2. TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALLEGHENY SURVEYS, INC.
  3. AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
  4. WLS IS NOT CERTIFYING THE DATA AND INFORMATION PROVIDED LISTED IN NOTES 2 AND 3, ONLY THE RELATIONSHIP TO THE DATA AND INFORMATION PROVIDED TO THE LEASE BOUNDARIES.
  5. WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.
  6. UNIT BOUNDARY SHOWN HEREON IS GREATER THAN 400' FROM THE AS-DRILLED WELLBORE. AS-DRILLED WELLBORE CONFORMS TO THE 400' UNIT BOUNDARY SETBACK REQUIREMENTS.

WV NORTH ZONE  
GRID NORTH

AS DRILLED DATA:  
WELL 4HD TOP HOLE INFORMATION:  
N: 342,337ft E: 1,615,048ft  
LAT: 39°25'54.84" LON: 80°51'46.42"  
BOTTOM HOLE INFORMATION:  
N: 348,890ft E: 1,612,850ft  
LAT: 39°26'59.27" LON: 80°52'15.70"  
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:  
WELL 4HD TOP HOLE INFORMATION:  
N: 4,364,725m E: 511,815m  
BOTTOM HOLE INFORMATION:  
N: 4,366,710m E: 511,112m



STATE OF WEST VIRGINIA, DIVISION  
OF ENVIRONMENTAL PROTECTION,  
OFFICE OF OIL AND GAS

WILLOW LAND SURVEYING PLLC  
220 MASONIC AVE. PENNSBORO  
WEST VIRGINIA 26415

JOB # 13-104WA  
DRAWING # RYMER4HDAD  
SCALE 1" = 1000'  
MINIMUM DEGREE OF ACCURACY SUBMETER  
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENERGY  
DIVISION OF OIL AND GAS

LEGEND	
-----	Surface Owner Boundary Lines +/-
-----	Interior Surface Tracts +/-
⊕	Found monument, as noted
○-----	Proposed Well Path
○-----	As Drilled Well Path

DATE 02/16/2016  
OPERATOR'S WELL # RYMER UNIT #4HD

WELL TYPE: OIL \_\_\_ GAS  LIQUID INJECTION \_\_\_ WASTE DISPOSAL \_\_\_ 47 - 095 - 02273  
(IF "GAS") PRODUCTION  STORAGE \_\_\_ DEEP  SHALLOW \_\_\_ STATE COUNTY PERMIT  
LOCATION: ELEVATION 1,036' ORIGINAL - 1,017' AS-DRILLED WATERSHED HEADWATERS MIDDLE ISLAND CREEK  
QUADRANGLE SHIRLEY 7.5' DISTRICT CENTERVILLE COUNTY TYLER

SURFACE OWNER RAYMOND UNDERWOOD ACREAGE 96 ACRES +/-  
OIL & GAS ROYALTY OWNER RAYMOND V. UNDERWOOD ET UX; ROBERT L. BROWN ET UX; LEASE ACREAGE 96 ACRES+; 97.75 ACRES+;  
CATHY JO ASH ET AL; JOHN ROBERT SPENCE ET UX 315.25 AC+; 21 ACRES+

PROPOSED WORK: DRILL \_\_\_ CONVERT \_\_\_ DRILL DEEPER \_\_\_ REDRILL \_\_\_ FRACTURE OR STIMULATE \_\_\_  
PLUG OFF OLD FORMATION \_\_\_ PERFORATE NEW FORMATION \_\_\_ OTHER PHYSICAL CHANGE IN WELL  
(SPECIFY) (X) AS DRILLED PLUG & ABANDON CLEAN OUT & REPLUG  
TARGET FORMATION POINT PLEASANT ESTIMATED DEPTH 6,909' TVD 11,386' MD  
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM  
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD  
FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

CONFIDENTIAL

COUNTY NAME

PERMIT



CONFIDENTIAL

LATITUDE 39°27'30"

8,349'

10,645' TO BOTTOM HOLE

LATITUDE 39°27'30"

LONGITUDE 80°50'00"

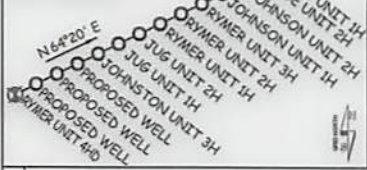
5,109' TO BOTTOM HOLE

LONGITUDE 80°50'00"

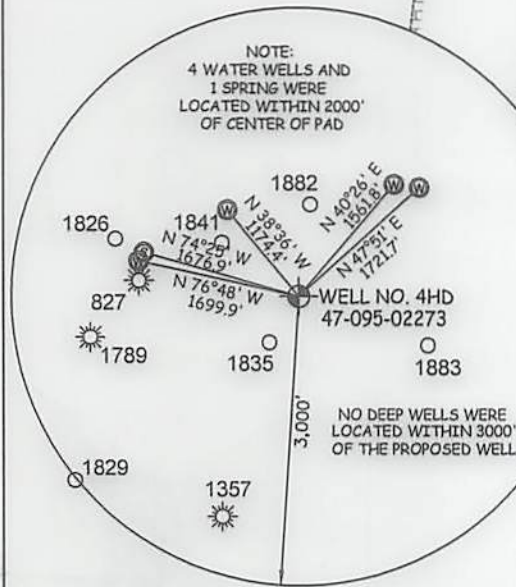
Antero Resources Corporation  
Well No. Rymer Unit 4HD  
47-095-02273 (AS DRILLED)

- NOTE
1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.
  2. TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALLEGHENY SURVEYS, INC.
  3. AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
  4. WLS IS NOT CERTIFYING THE DATA AND INFORMATION PROVIDED LISTED IN NOTES 2 AND 3, ONLY THE RELATIONSHIP TO THE DATA AND INFORMATION PROVIDED TO THE LEASE BOUNDARIES.
  5. WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.
  6. UNIT BOUNDARY SHOWN HEREON IS GREATER THAN 400' FROM THE AS-DRILLED WELLBORE. AS-DRILLED WELLBORE CONFORMS TO THE 400' UNIT BOUNDARY SETBACK REQUIREMENTS.

PAD LAYOUT  
NOT TO SCALE



NOTE:  
4 WATER WELLS AND  
1 SPRING WERE  
LOCATED WITHIN 2000'  
OF CENTER OF PAD



NO DEEP WELLS WERE  
LOCATED WITHIN 3000'  
OF THE PROPOSED WELL

AS DRILLED DATA:  
WELL 4HD TOP HOLE INFORMATION:  
N: 348,337ft E: 1,615,048ft  
LAT: 39°25'54.84" LON: 80°51'46.42"  
BOTTOM HOLE INFORMATION:  
N: 348,890ft E: 1,612,850ft  
LAT: 39°26'59.27" LON: 80°52'15.70"  
WEST VIRGINIA COORDINATE  
SYSTEM OF 1927 NORTH ZONE.  
ZONE WAS DERIVED FROM  
MEASUREMENTS TAKEN WITH  
TRIMBLE GEOXT SUBMETER  
MAPPING GRADE GPS UNIT.  
PLAT ORIENTATION, CORNER,  
AND WELL REFERENCE TIE LINES  
ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:  
WELL 4HD TOP HOLE INFORMATION:  
N: 4,364,725m E: 511,815m  
BOTTOM HOLE INFORMATION:  
N: 4,366,710m E: 511,112m



STATE OF WEST VIRGINIA, DIVISION  
OF ENVIRONMENTAL PROTECTION,  
OFFICE OF OIL AND GAS

WILLOW LAND SURVEYING PLLC  
220 MASONIC AVE. PENNSBORO  
WEST VIRGINIA 26415

JOB # 13-104WA  
DRAWING # RYMER4HDAD  
SCALE 1" = 1000'  
MINIMUM DEGREE OF  
ACCURACY SUBMETER  
PROVEN SOURCE OF ELEV.  
SUBMETER MAPPING GRADE GPS

LEGEND	
-----	Surface Owner Boundary Lines +/-
-----	Interior Surface Tracts +/-
⊕	Found monument, as noted
○-----○	Proposed Well Path
○-----○	As Drilled Well Path
DATE 02/16/2016	
OPERATOR'S WELL# RYMER UNIT #4HD	

CONFIDENTIAL

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PLUG OFF OLD FORMATION \_\_\_ PERFORATE NEW FORMATION \_\_\_ OTHER PHYSICAL CHANGE IN WELL

(SPECIFY) (X) AS DRILLED PLUG & ABANDON CLEAN OUT & REPLUG

TARGET FORMATION POINT PLEASANT ESTIMATED DEPTH 6,909' TVD 11,386' MD

WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM

ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD



FORM MW-9 DENVER CO 80505 CHARLESTON WV 26313  
 ADDRESS 1812 MILLIKOOP STREET ADDRESS 2400 D BIG TREE ROAD  
 MEGG OPERATOR VITEBO RESOURCES CORP DESIGNATED AGENT DIANNA STAMBER - CI CONSERVATION SYSTEM  
 TARGET FORMATION POINT BLEASANT ESTIMATED DEPTH 8'000, LWD 11'388, MD  
 (SPECIFY) (X) AS DRILLED BONE & AROUND CLEAN OUT & BEING  
 BONE OFF OLD FORMATION BEFORE NEW FORMATION OTHER PHYSICAL CHANGE IN MEGG  
 PROPOSED WORK: DRILL COMPLETE DRILL DEEPER REDRILL FRACTURE OR STIMULATE

DIVISION OF OIL AND GAS  
 DEPARTMENT OF ENERGY  
 STATE OF WEST VIRGINIA

SUBMETER MAPPING GRADE 692  
 PROVEN SOURCE OF ELEV  
 ACCURACY SUBMETER  
 MINIMUM DEGREE OF  
 SCALE 1" = 1000'  
 DRAWING # RYMER40144D  
 JOB # 13-10414A

OPERATOR'S MEGG # RYMER40144D  
 DATE 05/20/2018

--- 0 --- AS 1st Well Path  
 --- 0 --- AS 2nd Well Path  
 --- 0 --- AS 3rd Well Path  
 --- 0 --- AS 4th Well Path  
 --- 0 --- AS 5th Well Path  
 --- 0 --- AS 6th Well Path  
 --- 0 --- AS 7th Well Path  
 --- 0 --- AS 8th Well Path  
 --- 0 --- AS 9th Well Path  
 --- 0 --- AS 10th Well Path

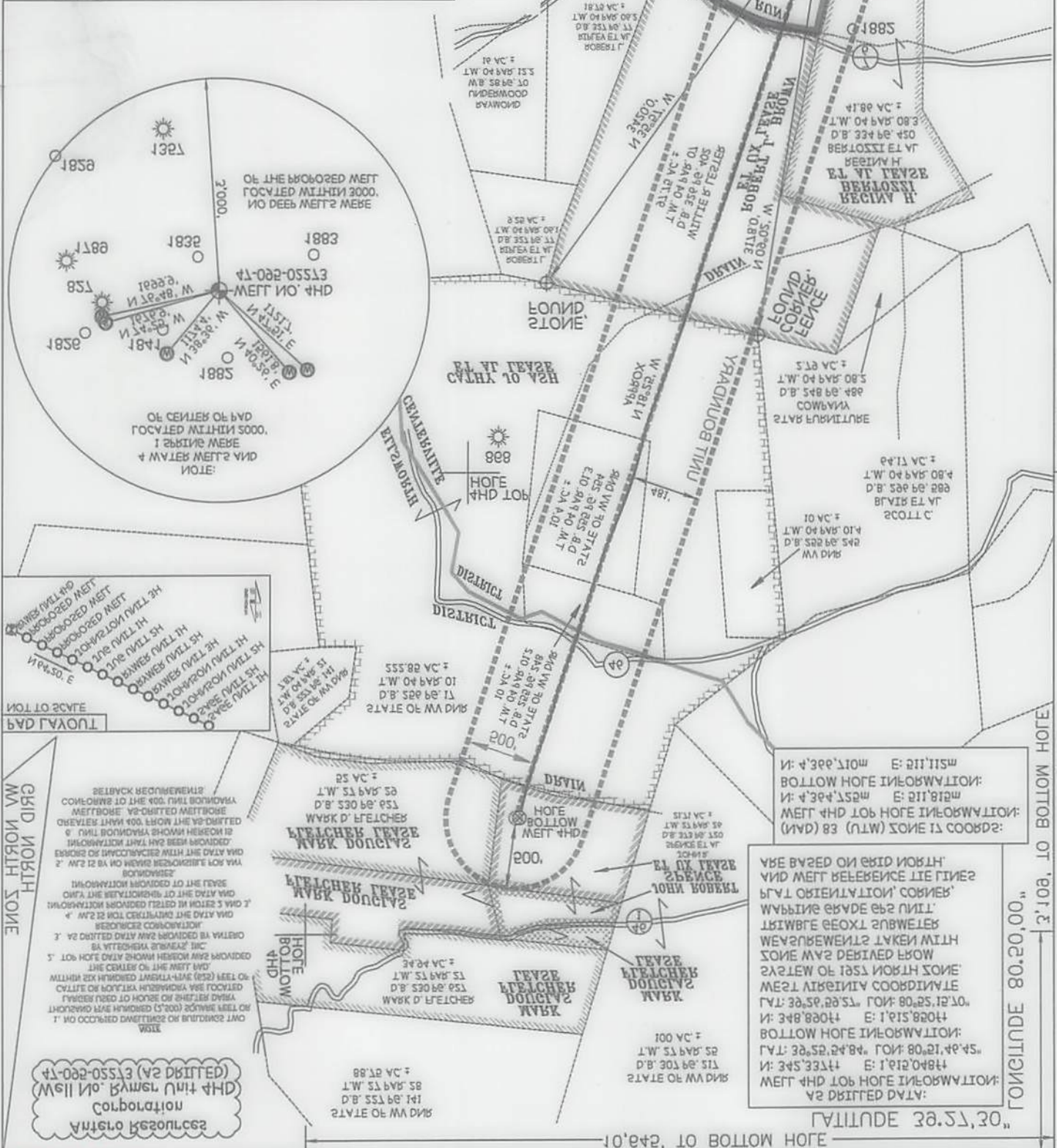
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STATE OF WV DEPT OF ENERGY  
 DIVISION OF OIL AND GAS



WEST VIRGINIA STATE  
 550 WASHINGTON AVE' BIRMINGHAM  
 WILLOW LAWN SUBLEASING B/C

OFFICE OF OIL AND GAS  
 OF ENVIRONMENTAL PROTECTION,  
 STATE OF WEST VIRGINIA, DIVISION



GRID NORTH  
 MW NORTH ZONE

WELL #1  
 WELL #2  
 WELL #3  
 WELL #4  
 WELL #5  
 WELL #6  
 WELL #7  
 WELL #8  
 WELL #9  
 WELL #10

VITEBO RESOURCES  
 CORPORATION

1812 MILLIKOOP STREET  
 DENVER, CO 80505

GRID NORTH  
 MW NORTH ZONE

WELL #1  
 WELL #2  
 WELL #3  
 WELL #4  
 WELL #5  
 WELL #6  
 WELL #7  
 WELL #8  
 WELL #9  
 WELL #10

CONFIDENTIAL

LONGITUDE 80.20.00"  
 LONGITUDE 80.20.00"  
 LONGITUDE 80.20.00"