

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

Page \_\_\_\_\_ of \_\_\_\_\_  
RECEIVED  
Office of Oil and Gas  
OCT 12 2017  
WV Department of  
Environmental Protection

API 47 - 085 - 10274 County Ritchie District Clay  
Quad Pennsboro 7.5' Pad Name Zinn Pad Field/Pool Name -----  
Farm name Ernest E. Zinn et al Well Number Alliance Unit 1H  
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 4352305m Easting 505341m  
Landing Point of Curve Northing 4352175.862m Easting 504954.663m  
Bottom Hole Northing 4349657m Easting 505979m

Elevation (ft) 1120' 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 01/29/2016 Date drilling commenced 02/07/2016 Date drilling ceased 05/19/2016  
Date completion activities began 11/01/2016 Date completion activities ceased 03/31/2017  
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 107' Open mine(s) (Y/N) depths No  
Salt water depth(s) ft 1567' Void(s) encountered (Y/N) depths No  
Coal depth(s) ft None Identified Cavern(s) encountered (Y/N) depths No  
Is coal being mined in area (Y/N) No

**APPROVED**

NAME: Michael Hoff  
DATE: 10-25-17

Reviewed by:

**02/16/2018**

API 47-085 - 10274 Farm name Ernest E. Zinn et al Well number Alliance Unit 1H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade w/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	40'	New	94#, K-55	N/A	Y
Surface	17-1/2"	13-3/8"	636'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2526'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	16012'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6771'		5.95#, N-80		
Packer type and depth set		N/A					

Comment Details \_\_\_\_\_

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry w1 (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	Class A	95 sx	15.5	1.19	113	0'	8 Hrs.
Surface	Class A	745 sx	15.6	1.19	887	0'	8 Hrs.
Coal							
Intermediate 1	Class A	972 sx	15.6	1.18	1147	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	879 sx (Lead) 1451 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.44 (Lead), 1.84 (Tail)	3936	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 16012' MD, 8427' TVD (BHL), 6432' (Deepest Point Drilled) Loggers TD (ft) 15995' MD

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 6037'

\*\* This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Normal Unit 1H API #47-085-10169). Please reference the wireline logs submitted with Form WR-35 for Normal Unit 1H. A Cement Bond Log has been included with this submittal.

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

API 47- 085 - 10274 Farm name Ernest E. Zinn et al Well number Alliance Unit 1H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)

**\*PLEASE SEE ATTACHED EXHIBIT 1**


Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)

**\*PLEASE SEE ATTACHED EXHIBIT 2**


Please insert additional pages as applicable.

API 47- 085 - 10274 Farm name Ernest E. Zinn et al Well number Alliance Unit 1H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
Marcellus	6379' (TOP) TVD	6836' (TOP) MD

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump  
 SHUT-IN PRESSURE Surface 3000 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 8127 mcfpd Oil 111 bpd NGL --- bpd Water 736 bpd GAS MEASURED BY  Estimated  Orifice  Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H <sub>2</sub> S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	

**\*PLEASE SEE ATTACHED EXHIBIT 3**


Please insert additional pages as applicable.

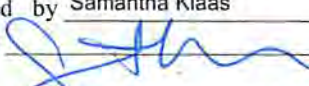
Drilling Contractor Patterson – UTI Drilling Company LLC  
 Address 207 Carlton Drive City Eighty Four State PA Zip 15330

Logging Company Allied Horizontal Wireline Services  
 Address 381 Colonial Manor Rd. City North Huntingdon State PA Zip 15642

Cementing Company C&J Energy Services  
 Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

Stimulating Company Halliburton  
 Address 121 Champion Way Suite 200 City Canonsburg State PA Zip 15317

Please insert additional pages as applicable.

Completed by Samantha Klaas Telephone 303-357-6759  
 Signature  Title Permitting Agent Date 10/11/2017

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

## API 47-085-10274 Farm Name Ernest E. Zinn et al Well Number Alliance Unit 1H

**EXHIBIT 1**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	11/1/2016	15715	15884	60	Marcellus
2	12/13/2016	15514	15683	60	Marcellus
3	12/13/2016	15313	15482	60	Marcellus
4	12/14/2016	15112	15282	60	Marcellus
5	12/23/2016	14912	15081	60	Marcellus
6	12/26/2016	14711	14880	60	Marcellus
7	12/27/2016	14510	14679	60	Marcellus
8	12/28/2016	14309	14479	60	Marcellus
9	12/29/2016	14109	14278	60	Marcellus
10	12/30/2016	13908	14077	60	Marcellus
11	12/30/2016	13707	13876	60	Marcellus
12	12/31/2016	13506	13676	60	Marcellus
13	1/1/2017	13306	13475	60	Marcellus
14	1/2/2017	13105	13274	60	Marcellus
15	1/2/2017	12904	13073	60	Marcellus
16	1/3/2017	12703	12873	60	Marcellus
17	1/4/2017	12503	12672	60	Marcellus
18	1/4/2017	12302	12471	60	Marcellus
19	1/5/2017	12101	12270	60	Marcellus
20	1/6/2017	11900	12070	60	Marcellus
21	1/8/2017	11700	11869	60	Marcellus
22	1/8/2017	11499	11668	60	Marcellus
23	1/10/2017	11298	11467	60	Marcellus
24	1/10/2017	11097	11267	60	Marcellus
25	1/11/2017	10896	11066	60	Marcellus
26	1/12/2017	10696	10865	60	Marcellus
27	1/12/2017	10495	10664	60	Marcellus
28	1/13/2017	10294	10463	60	Marcellus
29	1/13/2017	10093	10263	60	Marcellus
30	1/14/2017	9893	10062	60	Marcellus
31	1/14/2017	9692	9861	60	Marcellus
32	1/15/2017	9491	9660	60	Marcellus
33	1/15/2017	9290	9460	60	Marcellus
34	1/16/2017	9090	9259	60	Marcellus
35	1/17/2017	8889	9058	60	Marcellus
36	1/17/2017	8688	8857	60	Marcellus
37	1/18/2017	8487	8657	60	Marcellus
38	1/18/2017	8287	8456	60	Marcellus
39	1/19/2017	8086	8255	60	Marcellus
40	1/19/2017	7885	8054	60	Marcellus
41	1/20/2017	7684	7854	60	Marcellus
42	1/20/2017	7484	7653	60	Marcellus
43	1/21/2017	7283	7452	60	Marcellus
44	2/23/2017	7082	7251	60	Marcellus
45	2/23/2017	6881	7051	60	Marcellus

02/16/2018

API 47-085-10274 Farm Name Ernest E. Zinn et al Well Number Alliance Unit 1H

**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 (bbbls)	Amount of Nitrogen/ other (units)
1	12/12/2016	69.2	7392	5456.0	2949.0	511302	10914.5	N/A
2	12/13/2016	78.5	7759	5488.0	2830.0	513200	12201.7	N/A
3	12/13/2016	77.6	7330	5561.0	2730.0	512979	11004.6	N/A
4	12/14/2016	73.2	7177	5793.0	2991.0	504692	10660.8	N/A
5	12/23/2016	67.0	7702	5771.0	3595.0	511520	13906.7	N/A
6	12/26/2016	79.1	7487	5363.0	4493.0	513091	10581.2	N/A
7	12/27/2016	77.5	7006	5500.0	3278.0	512468	10444.0	N/A
8	12/28/2016	75.9	7180	6537.0	3381.0	511767	10578.5	N/A
9	12/29/2016	74.5	7413	5805.0	4456.0	513037	13591.0	N/A
10	12/30/2016	77.3	7110	5806.0	3490.0	512647	10562.5	N/A
11	12/30/2016	72.0	7471	5744.0	5297.0	397554	10262.5	N/A
12	12/31/2016	74.3	7393	5511.0	4434.0	512401	10764.7	N/A
13	1/1/2017	73.9	7514	5543.0	4044.0	514633	11802.0	N/A
14	1/2/2017	75.8	7099	5530.0	3455.0	513804	10502.6	N/A
15	1/2/2017	78.7	7027	5581.0	3754.0	513443	10478.0	N/A
16	1/3/2017	76.4	6914	5382.0	3623.0	514722	10723.1	N/A
17	1/4/2017	75.0	6975	5617.0	3287.0	515011	10501.3	N/A
18	1/4/2017	79.1	7334	5274.0	3050.0	512489	10446.4	N/A
19	1/5/2017	77.3	7188	5979.0	2955.0	510035	11389.2	N/A
20	1/6/2017	76.5	6980	5416.0	2932.0	515336	10704.5	N/A
21	1/8/2017	78.5	7292	5277.0	4032.0	507042	13502.7	N/A
22	1/8/2017	75.9	7238	5369.0	4299.0	512946	10542.2	N/A
23	1/10/2017	77.8	7011	5155.0	3559.0	513531	10379.6	N/A
24	1/10/2017	67.5	7467	5673.0	4782.0	512853	18560.0	N/A
25	1/11/2017	79.0	6927	5508.0	3577.0	513039	10355.0	N/A
26	1/12/2017	76.6	6815	5304.0	3642.0	514802	10318.1	N/A
27	1/12/2017	78.0	7224	5549.0	4276.0	512409	13341.0	N/A
28	1/13/2017	79.2	7066	5446.0	3511.0	513030	10352.4	N/A
29	1/13/2017	78.3	6639	5234.0	3816.0	511836	10434.1	N/A
30	1/14/2017	77.0	7012	5799.0	3274.0	512071	11494.7	N/A
31	1/14/2017	73.7	6605	5730.0	3586.0	510751	10283.1	N/A
32	1/15/2017	78.9	7216	5392.0	3129.0	511619	10399.5	N/A
33	1/15/2017	73.7	6512	5369.0	3725.0	513167	10272.2	N/A
34	1/16/2017	79.1	6685	5788.0	3231.0	511704	10797.1	N/A
35	1/17/2017	80.4	6718	5938.0	3743.0	511955	10333.3	N/A
36	1/17/2017	78.8	6548	6439.0	3471.0	510666	10316.6	N/A
37	1/18/2017	78.7	6875	5334.0	4337.0	473382	11041.3	N/A
38	1/18/2017	77.7	6547	5294.0	3465.0	514238	10310.5	N/A
39	1/19/2017	77.4	6380	5352.0	3280.0	512007	10258.5	N/A
40	1/19/2017	77.0	6501	5620.0	4180.0	513362	10402.0	N/A
41	1/20/2017	78.2	6541	5297.0	3461.0	513474	10353.4	N/A
42	1/20/2017	77.0	6447	5484.0	3640.0	512823	10201.5	N/A
43	1/21/2017	79.8	6540	5586.0	5057.0	460762	11759.8	N/A
44	2/23/2017	78.4	6869	5599.0	3532.0	514052	11145.6	N/A
45	2/23/2017	79.9	6551	5862.0	3709.0	513841	10215.8	N/A
	<b>AVG=</b>	<b>76.6</b>	<b>7,015</b>	<b>5,579</b>	<b>3,674</b>	<b>22,857,493</b>	<b>499,390</b>	<b>TOTAL</b>

## 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	107'	N/A	107'	N/A
Shale/ Siltstone	est. 30	285	est. 30	285
Sandstone	est. 285	425	est. 285	425
Shale/ Siltstone	est. 425	645	est. 425	645
Sandstone	est. 645	725	est. 645	725
Limestone	est. 725	805	est. 725	805
Sandstone/ Shale	est. 805	905	est. 805	905
Shale	est. 905	985	est. 905	985
Sandstone	est. 985	1305	est. 985	1305
Siltstone	est. 1305	1405	est. 1305	1405
Sandstone	est. 1405	1465	est. 1405	1465
Sandstone	est. 1465	1625	est. 1465	1625
Shale / Sandstone	est. 1625	1685	est. 1625	1685
Sandstone	est. 1685	1979	est. 1685	1985
Big Lime	1979	2557	1985	2587
Gantz	2557	2870	2587	2918
Fifty Foot Sandstone	2870	2968	2918	3022
Gordon	2968	3339	3022	3419
Fifth Sandstone	3339	3417	3419	3502
Bayard	3417	3909	3502	4022
Speechley	3909	4160	4022	4291
Baltown	4160	4636	4291	4794
Bradford	4636	4993	4794	5174
Benson	4993	5228	5174	5422
Alexander	5228	5519	5422	5728
Elk	5519	5807	5728	6032
Rhinestreet	5807	6134	6032	6396
Sycamore	6134	6227	6396	6521
Middlesex	6227	6332	6521	6701
Burkett	6332	6360	6701	6768
Tully	6360	6379	6768	6836
Marcellus	6379	NA	6836	NA

\*Please note Antero determines formation tops based on mud logs that are only run on one well on a multi-well pad. The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

## Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	12/12/2016
Job End Date:	2/23/2017
State:	West Virginia
County:	Ritchie
API Number:	47-085-10274-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Alliance 1H
Latitude:	39.32005833
Longitude:	-80.93805556
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,439
Total Base Water Volume (gal):	17,530,711
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
Fresh Water	Operator	Base Fluid					
			Water	7732-18-5	100.00000	86.30955	Density = 8.340
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.12740	



SAND-PREMIUM WHITE-30/50, BULK	Halliburton	Proppant					
				Listed Below			
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor					
				Listed Below			
SP BREAKER	Halliburton	Breaker					
				Listed Below			
LP-70	Halliburton	Scale Inhibitor					
				Listed Below			
MC B-8614	Halliburton	Biocide					
				Listed Below			
SAND-PREMIUM WHITE-40/70, BULK	Halliburton	Proppant					
				Listed Below			
SAND-COMMON WHITE - 100 MESH, 3307 LB BAG	Halliburton	Proppant					
				Listed Below			
HYDROCHLORIC ACID	Halliburton	Solvent					

				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			
FR-76	Halliburton	Friction Reducer					
				Listed Below			
Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.							
			Crystalline silica, quartz	14808-60-7	100.00000	13.50506	
			Hydrochloric acid	7647-01-0	60.00000	0.03764	
			Inorganic salt	Proprietary	30.00000	0.02307	
			Acrylamide acrylate copolymer	Proprietary	30.00000	0.02307	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02307	
			Guar gum	9000-30-0	100.00000	0.01849	
			Ethylene Glycol	107-21-1	60.00000	0.00992	
			Glutaraldehyde	111-30-8	30.00000	0.00311	
			Neutralized Polyacrylic Emulsion	Proprietary	10.00000	0.00165	
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00052	
			Sodium persulfate	7775-27-1	100.00000	0.00026	
			Ethanol	64-17-5	1.00000	0.00010	
			Methanol	67-56-1	60.00000	0.00008	
			Ethoxylated alcohols	Proprietary	30.00000	0.00003	
			Fatty acids, tall oil	Proprietary	30.00000	0.00003	

			Reaction product of acetophenone, formaldehyde, thiourea and oleic acid in dimethyl formamide	68527-49-1	30.00000	0.00003	
			Olefins	Proprietary	5.00000	0.00001	
			Propargyl alcohol	107-19-7	10.00000	0.00001	
			Phosphoric acid	7664-38-2	0.10000	0.00001	
			Sodium sulfate	7757-82-6	0.10000	0.00000	

\* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water

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

\*\*\* If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

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)

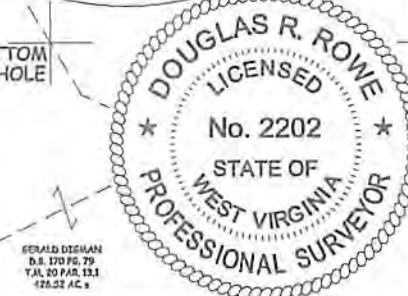
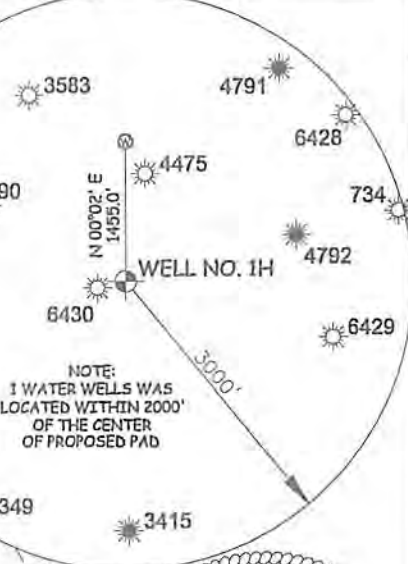
LATITUDE 39°20'00"

6,094'

LATITUDE 39°20'00"

Antero Resources Corporation  
Well No. Alliance Unit 1H  
47-085-10274 AS DRILLED

AS DRILLED DATA:  
WELL 1H TOP HOLE INFORMATION:  
N: 301,938ft E: 1,593,125ft  
LAT: 39°19'12.20" LON: 80°56'17.54"  
BOTTOM HOLE INFORMATION:  
N: 293,211ft E: 1,595,071ft  
LAT: 39°17'46.26" LON: 80°55'51.01"  
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 1H TOP HOLE INFORMATION:  
N: 4,352,305m E: 505,341m  
BOTTOM HOLE INFORMATION:  
N: 4,349,657m E: 505,979m



JOB # 15-038WA  
DRAWING # ALLIANCE1HAD  
SCALE 1" = 1000'  
MINIMUM DEGREE OF ACCURACY SUBMETER  
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

DOUGLAS R. ROWE P.S. 2202

DATE 09/29/17

OPERATOR'S WELL# ALLIANCE UNIT #1H

API WELL #

47 - 085 - 10274

STATE COUNTY PERMIT

QUADRANGLE PENNSBORO 7.5' DISTRICT CLAY COUNTY RITCHIE

SURFACE OWNER ERNEST E. ZINN ET AL ACREAGE 129.5 ACRES +/-

OIL & GAS ROYALTY OWNER HAROLD H. BLOCH ET UX; STEVE JACKSON; RONALD J. CASTELOW; MARLEEN J. TAYLOR; LEASE ACREAGE 131.5 AC±; 117 AC±; 35.5 AC±; 59 AC±; M.H. JONES ET UX; LEWIS HUFF ET UX; B.C. HAMMOND ET UX; RICHARD SHAHAN ET UX; JOHN H. MILLER ET UX; MAGGIE GARNER; JOHN MILLER ET UX; CARLTON BOYCE ET UX; GEROLD HALL 200 AC±; 164 AC±; 73 AC±; 1 AC±; 24 AC±; 72.5 AC±; 21.25 AC±; 207 AC±; 41.5 AC±

PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION

OTHER PHYSICAL CHANGE IN WELL (SPECIFY) AS DRILLED

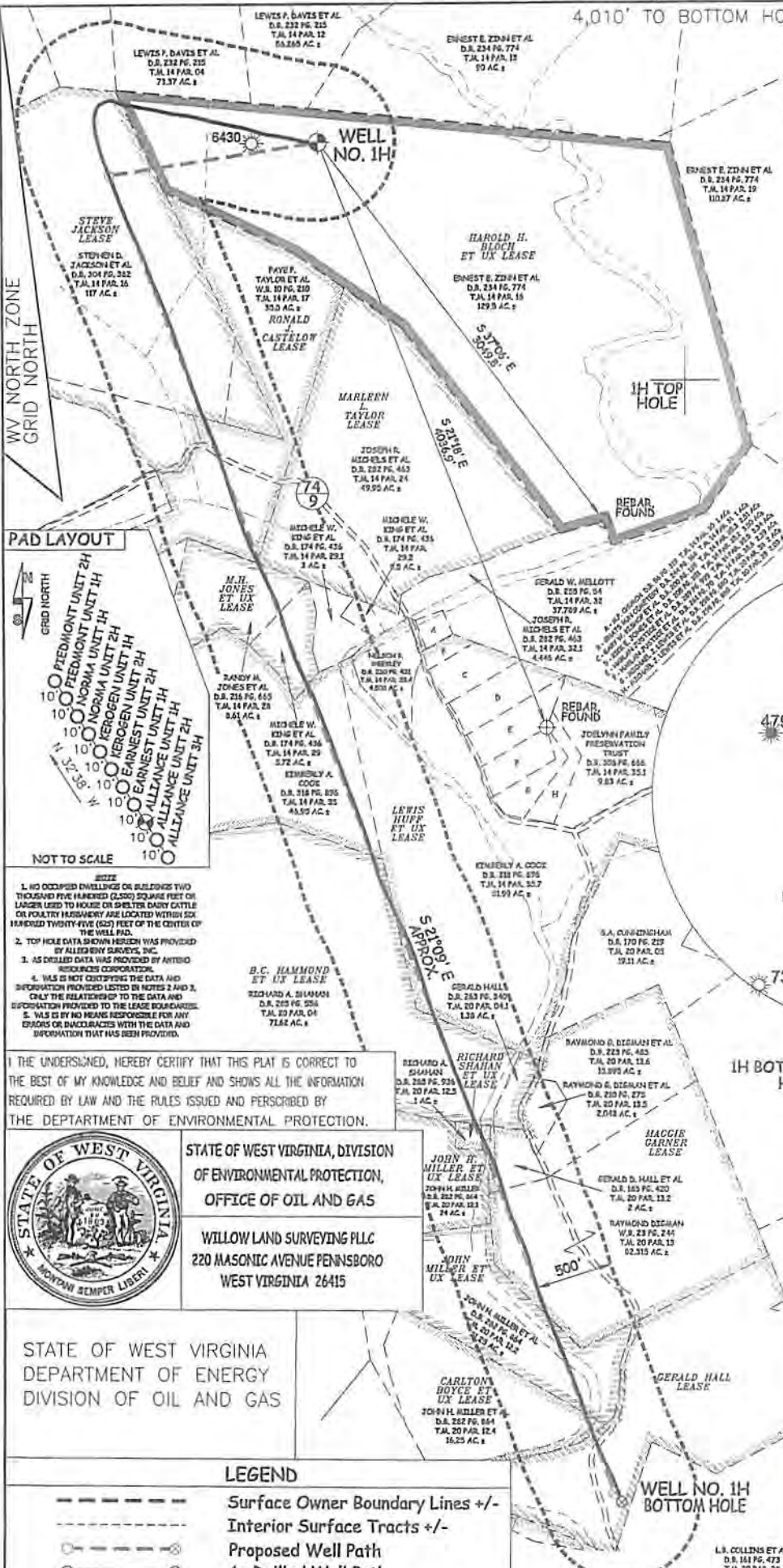
PLUG & ABANDON CLEAN OUT & REPLUG ESTIMATED DEPTH 6,428' TVD 16,012' MD

TARGET FORMATION MARCELLUS

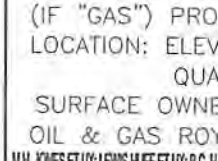
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER CT CORPORATION SYSTEM

ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313

FORM WW-6 DENVER, CO 80202



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 PERSCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
WILLOW LAND SURVEYING PLLC  
220 MASONIC AVENUE PENNSBORO WEST VIRGINIA 26415

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

LEGEND  
--- Surface Owner Boundary Lines +/-  
- - - Interior Surface Tracts +/-  
- - - Proposed Well Path  
- - - As Drilled Well Path

WELL TYPE: OIL \_\_\_ GAS X LIQUID INJECTION \_\_\_ WASTE DISPOSAL \_\_\_  
(IF "GAS") PRODUCTION X STORAGE \_\_\_ DEEP \_\_\_ SHALLOW X  
LOCATION: ELEVATION AS DRILLED - 1,120' WATERSHED NORTH FORK HUGHES RIVER STATE COUNTY PERMIT  
QUADRANGLE PENNSBORO 7.5' DISTRICT CLAY COUNTY RITCHIE

SURFACE OWNER ERNEST E. ZINN ET AL ACREAGE 129.5 ACRES +/-

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PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION

OTHER PHYSICAL CHANGE IN WELL (SPECIFY) AS DRILLED

PLUG & ABANDON CLEAN OUT & REPLUG ESTIMATED DEPTH 6,428' TVD 16,012' MD

TARGET FORMATION MARCELLUS

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

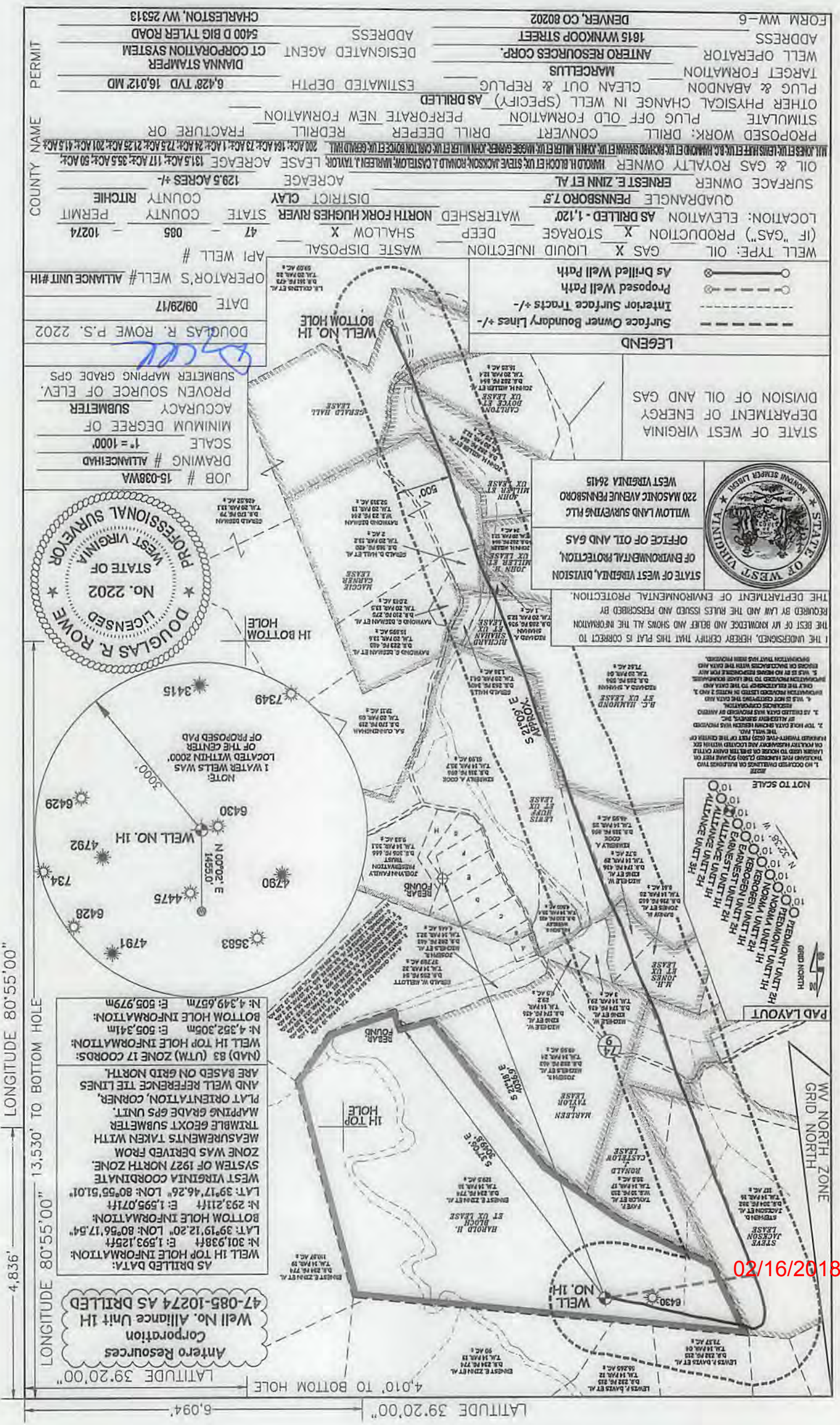
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313

FORM WW-6 DENVER, CO 80202

LONGITUDE 80°55'00" 13,530' TO BOTTOM HOLE LONGITUDE 80°55'00" COUNTY NAME PERMIT

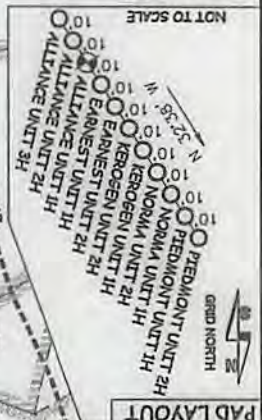
09/21/2018

02/16/2018



STATE OF WEST VIRGINIA  
 DIVISION OF ENVIRONMENTAL PROTECTION  
 OFFICE OF OIL AND GAS  
 WYLLIOW LAND SURVEYING P.L.C.  
 220 MASONIC AVENUE PENNSBORO  
 WEST VIRGINIA 26415

THE DEPARTMENT OF ENVIRONMENTAL PROTECTION  
 REQUIRES BY LAW AND THE RULES ISSUED AND PERFORMED BY  
 THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION  
 I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAN IS CORRECT TO  
 THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION  
 REQUIRED BY LAW AND THE RULES ISSUED AND PERFORMED BY  
 THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



AS DRILLED DATA:  
 WELL 1H TOP HOLE INFORMATION:  
 N: 301.938ft E: 1.593.125ft  
 LAT: 39°19'12.20" LON: 80°56'17.54"  
 BOTTOM HOLE INFORMATION:  
 N: 293.211ft E: 1.595.071ft  
 LAT: 39°17'46.26" LON: 80°55'51.01"  
 SYSTEM OF 1927 NORTH ZONE.  
 ZONE WAS DERIVED FROM  
 MEASUREMENTS TAKEN WITH  
 TRIMBLE 680XT SUBMETER  
 MAPPING GRADE GPS UNIT.  
 PLAT ORIENTATION, CORNER,  
 AND WELL REFERENCE TIE LINES  
 (NAD) 83 (UTM) ZONE 17 COORDS:  
 WELL 1H TOP HOLE INFORMATION:  
 N: 4.352.300m E: 505.341m  
 N: 4.349.657m E: 505.979m  
 BOTTOM HOLE INFORMATION:

Antero Resources  
 Corporation  
 Well No. Alliance Unit 1H  
 47-085-10274 AS DRILLED



JOB # 15-038VA  
 DRAWING # ALLIANCEHAD  
 SCALE 1" = 1000'  
 MINIMUM DEGREE OF  
 ACCURACY  
 SUBMETER  
 PROVEN SOURCE OF ELEV.  
 SUBMETER MAPPING GRADE GPS

DATE 09/29/17  
 OPERATOR'S WELL # ALLIANCE UNIT #1H

WELL TYPE: OIL  
 GAS X LIQUID INJECTION  
 WASTE DISPOSAL  
 API WELL #

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

LEGEND  
 Surface Owner Boundary Lines +/-  
 Interior Surface Tracts +/-  
 Proposed Well Path  
 As Drilled Well Path

WELL NO. 1H  
 BOTTOM HOLE  
 1H TOP HOLE

WATERSHED NORTH FORK HUGHES RIVER  
 DISTRICT CLAY  
 COUNTY RITCHIE  
 STATE COUNTY PERMIT  
 47 085 10274

WELL OPERATOR  
 ANTERO RESOURCES CORP.  
 1615 WYNKOOP STREET  
 DENVER, CO 80202

DESIGNATED AGENT  
 DIANNA STAMPER  
 CT CORPORATION SYSTEM  
 5400 D BIG TYLER ROAD  
 CHARLESTON, WV 25313

ESTIMATED DEPTH  
 6,428' TVD 16,012' MD

PERMIT

FORM WV-6