

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

RECEIVED
Office of Oil and Gas

OCT 12 2017

WV Department of
Environmental Protection

API 47-085-10169 County Ritchie District Clay
Quad Pennsboro 7.5' Pad Name Zinn Pad Field/Pool Name -----
Farm name Ernest E. Zinn et al Well Number Norma 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 4352321m Easting 505331m
Landing Point of Curve Northing 43525217.904m Easting 505179.669m
Bottom Hole Northing 4354976m Easting 504133m

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 12/16/2014 Date drilling commenced 02/08/2016 Date drilling ceased 06/15/2016
Date completion activities began 10/30/2016 Date completion activities ceased 03/30/2017
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: _____

API 47- 085 - 10169 Farm name Ernest E. Zinn et al Well number Norma Unit 1H

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	24"	20"	40'	New	94#, K-55	N/A	Y
Surface	17-1/2"	13-3/8"	633'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2535'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	15674'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6506'		5.95#, N-80		
Packer type and depth set		N/A					

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	95 sx	15.6	1.19	113	0'	8 Hrs.
Surface	Class A	760 sx	15.6	1.18	897	0'	8 Hrs.
Coal							
Intermediate 1	Class A	980 sx	15.6	1.18	1156	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	842 sx (Lead) 1433 sx (Tail)	13.41 (Lead), 15.1 (Tail)	1.44 (Lead), 1.84 (Tail)	3849	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 15674' MD, 6430' TVD (BHL), 6445' (Deepest Point Drilled) Loggers TD (ft) 15640' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 5804'

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 - 10169 Farm name Ernest E. Zinn et al Well number Norma 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 - 10169 Farm name Ernest E. Zinn et al Well number Norma Unit 1H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus</u>	<u>6386' (TOP)</u> TVD	<u>6609' (TOP)</u> 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 8486 mcfpd Oil 143 bpd NGL --- bpd Water 792 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 ₂ 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 [Signature] Title Permitting Agent Date 10/11/2017

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

API 47-085-10169 Farm Name Ernest E. Zinn et al Well Number Norma Unit 1H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	10/30/2016	15380	15547	60	Marcellus
2	1/27/2017	15181	15349	60	Marcellus
3	1/27/2017	14983	15150	60	Marcellus
4	1/28/2017	14785	14952	60	Marcellus
5	1/28/2017	14586	14754	60	Marcellus
6	1/29/2017	14388	14555	60	Marcellus
7	1/30/2017	14190	14357	60	Marcellus
8	1/30/2017	13992	14159	60	Marcellus
9	1/31/2017	13793	13961	60	Marcellus
10	1/31/2017	13595	13762	60	Marcellus
11	2/1/2017	13397	13564	60	Marcellus
12	2/2/2017	13198	13366	60	Marcellus
13	2/2/2017	13000	13167	60	Marcellus
14	2/3/2017	12802	12969	60	Marcellus
15	2/3/2017	12603	12771	60	Marcellus
16	2/4/2017	12405	12572	60	Marcellus
17	2/5/2017	12207	12374	60	Marcellus
18	2/5/2017	12008	12176	60	Marcellus
19	2/5/2017	11810	11977	60	Marcellus
20	2/6/2017	11612	11779	60	Marcellus
21	2/6/2017	11414	11581	60	Marcellus
22	2/7/2017	11215	11382	60	Marcellus
23	2/7/2017	11017	11184	60	Marcellus
24	2/7/2017	10819	10986	60	Marcellus
25	2/8/2017	10620	10788	60	Marcellus
26	2/8/2017	10422	10589	60	Marcellus
27	2/9/2017	10224	10391	60	Marcellus
28	2/9/2017	10025	10193	60	Marcellus
29	2/10/2017	9827	9994	60	Marcellus
30	2/10/2017	9629	9796	60	Marcellus
31	2/11/2017	9430	9598	60	Marcellus
32	2/11/2017	9232	9399	60	Marcellus
33	2/12/2017	9034	9201	60	Marcellus
34	2/12/2017	8835	9003	60	Marcellus
35	2/13/2017	8637	8804	60	Marcellus
36	2/13/2017	8439	8606	60	Marcellus
37	2/14/2017	8241	8408	60	Marcellus
38	2/14/2017	8042	8209	60	Marcellus
39	2/15/2017	7844	8011	60	Marcellus
40	2/15/2017	7646	7813	60	Marcellus
41	2/16/2017	7447	7615	60	Marcellus
42	2/16/2017	7249	7416	60	Marcellus
43	2/16/2017	7051	7218	60	Marcellus
44	2/17/2017	6852	7020	60	Marcellus
45	2/17/2017	6654	6821	60	Marcellus

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	1/26/2017	68.6	7455	0.0	4662	343855	11350.6	N/A
2	1/27/2017	73.4	7205	5376.0	3940	358663	8135.3	N/A
3	1/27/2017	73.5	7276	5359.0	4430	356642	10069.5	N/A
4	1/28/2017	74.1	7082	5290.0	3928	356140	9149.1	N/A
5	1/28/2017	68.9	7168	5097.0	3689	354673	9944.5	N/A
6	1/29/2017	70.6	7166	5435.0	4220	355761	9414.3	N/A
7	1/30/2017	75.8	7191	5488.0	3852	355817	9462.3	N/A
8	1/30/2017	73.4	7069	5238.0	3357	354527	7795.3	N/A
9	1/31/2017	73.6	6871	5336.0	3544	355371	7614.9	N/A
10	1/31/2017	75.3	7257	5634.0	3344	357088	9278.7	N/A
11	2/1/2017	78.2	7191	5271.0	3295	355308	8207.2	N/A
12	2/2/2017	76.3	7228	5276.0	3341	355644	7592.2	N/A
13	2/2/2017	78.5	7603	5427.0	3265	354572	9356.7	N/A
14	2/3/2017	76.7	7016	5285.0	3410	356555	7585.0	N/A
15	2/3/2017	78.1	7616	5219.0	3417	330495	9581.6	N/A
16	2/4/2017	79.5	7549	5312.0	3815	357142	9450.3	N/A
17	2/5/2017	77.5	6972	4932.0	3568	356347	7640.5	N/A
18	2/5/2017	79.4	7185	5397.0	3379	359069	7642.3	N/A
19	2/5/2017	77.0	7107	5119.0	4198	354755	8519.3	N/A
20	2/6/2017	73.1	7335	5114.0	4017	356042	9717.1	N/A
21	2/6/2017	77.1	7110	5305.0	4694	356592	7513.3	N/A
22	2/7/2017	76.7	7005	5240.0	4209	352788	7554.3	N/A
23	2/7/2017	77.2	7132	5258.0	3580	355754	7530.7	N/A
24	2/7/2017	76.6	6935	5158.0	4261	353960	7442.2	N/A
25	2/8/2017	68.1	7876	5312.0	6178	290111	9517.1	N/A
26	2/8/2017	75.0	6934	5270.0	3795	361197	7550.5	N/A
27	2/9/2017	75.7	6972	5096.0	3807	355126	7567.9	N/A
28	2/9/2017	78.6	7146	5101.0	3259	358031	7679.8	N/A
29	2/10/2017	71.3	6928	4956.0	2840	360946	7746.9	N/A
30	2/10/2017	74.7	6962	5270.0	3625	347110	7359.3	N/A
31	2/11/2017	78.5	7072	5327.0	3539	356671	7549.6	N/A
32	2/11/2017	78.9	7165	5030.0	3510	355078	7533.9	N/A
33	2/12/2017	75.3	6432	5070.0	3020	355830	7473.2	N/A
34	2/12/2017	78.0	6546	4864.0	3385	355087	7496.6	N/A
35	2/13/2017	78.3	6511	5202.0	3706	354485	7529.1	N/A
36	2/13/2017	80.3	6570	5263.0	3855	355029	7427.5	N/A
37	2/14/2017	79.2	6632	5154.0	3779	357230	7583.1	N/A
38	2/14/2017	80.4	6719	5500.0	3514	356744	7474.2	N/A
39	2/15/2017	77.1	6297	5295.0	3309	356598	7401.1	N/A
40	2/15/2017	78.1	6398	5598.0	3467	355200	7421.9	N/A
41	2/16/2017	77.2	6509	5706.0	3476	355547	7472.8	N/A
42	2/16/2017	78.6	6566	5571.0	3488	353370	7288.6	N/A
43	2/16/2017	75.0	6211	6211.0	3865	355160	7299.6	N/A
44	2/17/2017	76.5	6412	6008.0	3551	356117	7430.9	N/A
45	2/17/2017	77.4	6564	5359.0	3748	356070	7367.8	N/A
	AVG=	76.0	6,981	5,194	3,736	15,910,297	366,719	TOTAL

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	1980	est. 1685	1985
Big Lime	1980	2555	1985	2561
Gantz	2555	2844	2561	2851
Fifty Foot Sandstone	2844	2967	2851	2973
Gordon	2967	3338	2973	3344
Fifth Sandstone	3338	3414	3344	3420
Bayard	3414	3913	3420	3919
Speechley	3913	4160	3919	4166
Baltown	4160	4636	4166	4642
Bradford	4636	4995	4642	5002
Benson	4995	5229	5002	5235
Alexander	5229	5515	5235	5521
Elk	5515	5810	5521	5816
Rhinestreet	5810	6131	5816	6158
Sycamore	6131	6228	6158	6282
Middlesex	6228	6334	6282	6461
Burkett	6334	6363	6461	6532
Tully	6363	6386	6532	6609
Marcellus	6386	NA	6609	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: 2/17/2017
Job End Date: 2/17/2017
State: West Virginia
County: Ritchie
API Number: 47-085-10169-00-00
Operator Name: Antero Resources Corporation
Well Name and Number: Norma 1H
Latitude: 39.32019444
Longitude: -80.93831944
Datum: NAD27
Federal Well: NO
Indian Well: NO
True Vertical Depth: 6,433
Total Base Water Volume (gal): 15,402,180
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	88.78645	Density = 8.330
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.13622	

LP-70	Halliburton	Scale Inhibitor								
					Listed Below					
WG-36 GELLING AGENT	Halliburton	Gelling Agent								
					Listed Below					
SAND-PREMIUM WHITE-40/70, BULK	Halliburton	Proppant								
					Listed Below					
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor								
					Listed Below					
FR-76	Halliburton	Friction Reducer								
					Listed Below					
HYDROCHLORIC ACID	Halliburton	Solvent								
					Listed Below					
MC B-8614	Halliburton	Biocide								
					Listed Below					
SAND-COMMON WHITE - 100 MESH, 3307 LB BAG	Halliburton	Proppant								
					Listed Below					

SP BREAKER	Halliburton	Breaker								
					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	11.00722				
			Hydrochloric acid	7647-01-0	60.00000	0.04670				
			Guar gum	9000-30-0	100.00000	0.03405				
			Inorganic salt	Proprietary	30.00000	0.02109				
			Acrylamide acrylate copolymer	Proprietary	30.00000	0.02109				Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02109				
			Ethylene Glycol	107-21-1	60.00000	0.00866				
			Glutaraldehyde	111-30-8	30.00000	0.00272				
			Neutralized Polyacrylic Emulsion	Proprietary	10.00000	0.00144				
			Sodium persulfate	7775-27-1	100.00000	0.00048				
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00045				
			Methanol	67-56-1	60.00000	0.00010				
			Ethanol	64-17-5	1.00000	0.00009				
			Fatty acids, tall oil	Proprietary	30.00000	0.00004				
			Ethoxylated alcohols	Proprietary	30.00000	0.00004				
			Reaction product of acetophenone, formaldehyde, thiourea and oleic acid in dimethyl formamide	68527-49-1	30.00000	0.00004				
			Olefins	Proprietary	5.00000	0.00002				
			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
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* 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"

6,126'

10,052' TO BOTTOM HOLE

LATITUDE 39°22'30"

LONGITUDE 80°55'00"

4,786' LONGITUDE 80°55'00"

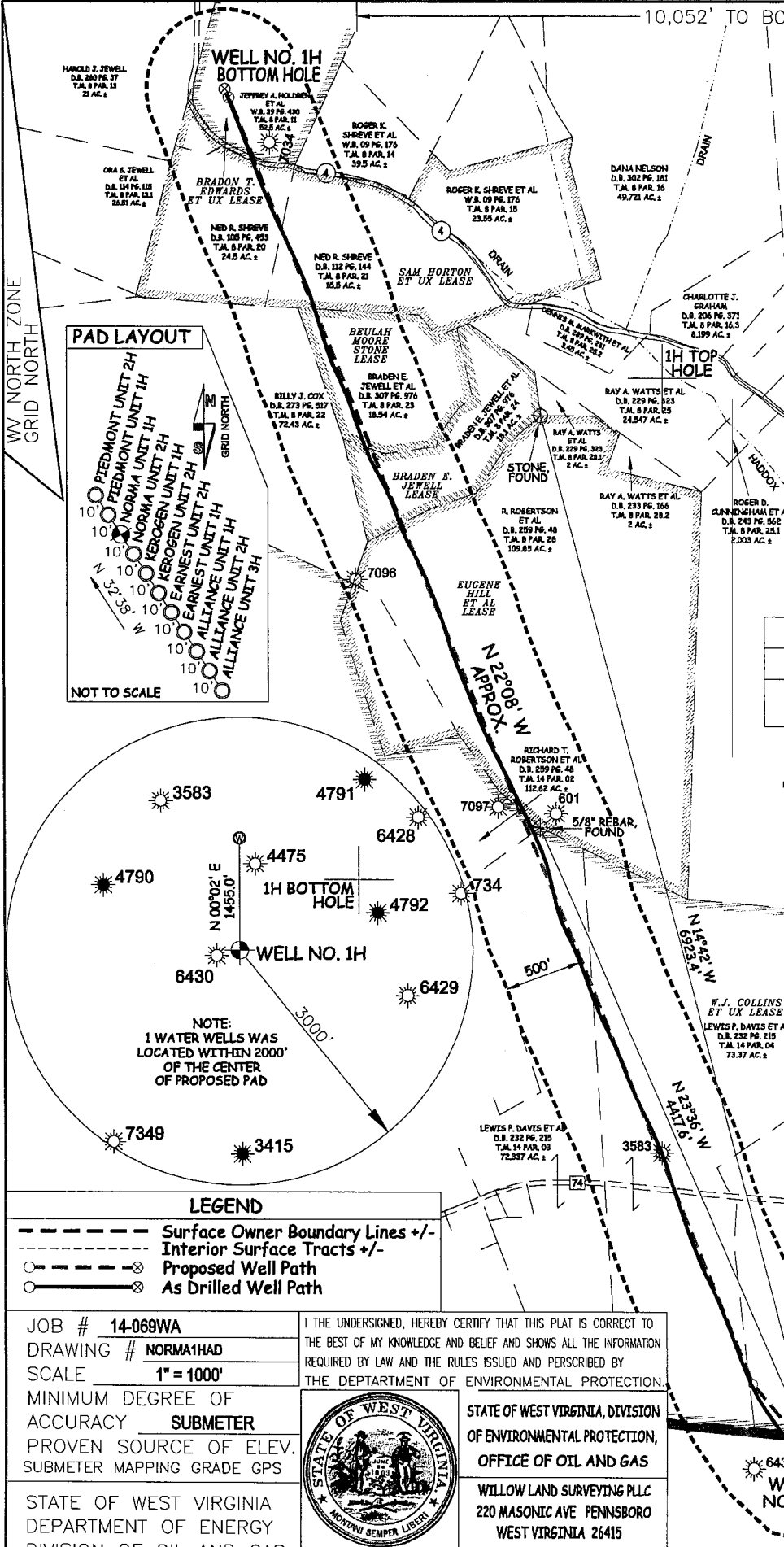
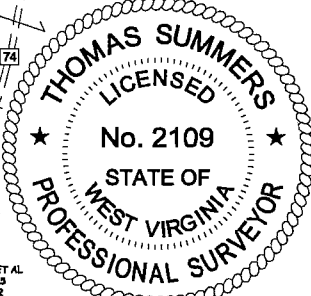
Antero Resources Corporation
Well No. Norma Unit 1H
47-085-10169 AS DRILLED

AS DRILLED DATA:
WELL 1H TOP HOLE INFORMATION:
N: 301,989ft E: 1,593,093ft
LAT: 39°19'12.70" LON: 80°56'17.96"
BOTTOM HOLE INFORMATION:
N: 310,770ft E: 1,589,305ft
LAT: 39°20'38.88" LON: 80°57'07.96"
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.

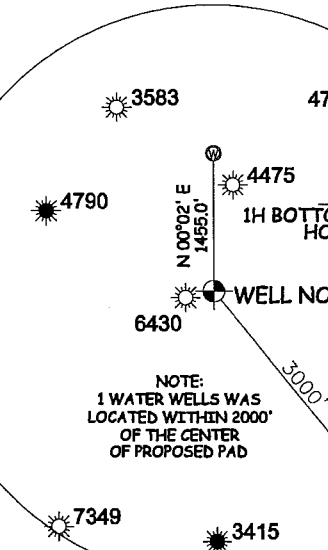
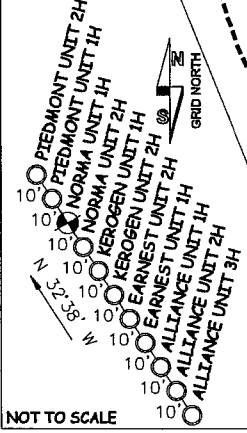
(NAD) 83 (UTM) ZONE 17 COORDS:
WELL 1H TOP HOLE INFORMATION:
N: 4,352,321m E: 505,331m
BOTTOM HOLE INFORMATION:
N: 4,354,976m E: 504,133m

Thomas Summers
THOMAS SUMMERS P.S. 2109
DATE 09/29/17

- 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.



PAD LAYOUT



LEGEND

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

JOB # 14-069WA
DRAWING # NORMA1HAD
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

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 AVE PENNSBORO WEST VIRGINIA 26415

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

WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL

OPERATOR'S WELL # NORMA UNIT #1H

LATITUDE 39°20'00"

6,126'

10,052' TO BOTTOM HOLE

LATITUDE 39°22'30"

LONGITUDE 80°55'00" 11,243' TO BOTTOM HOLE

4,786' LONGITUDE 80°55'00"

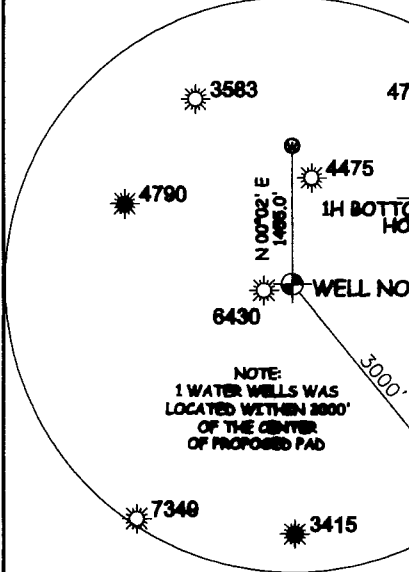
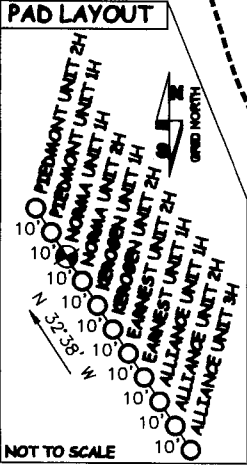
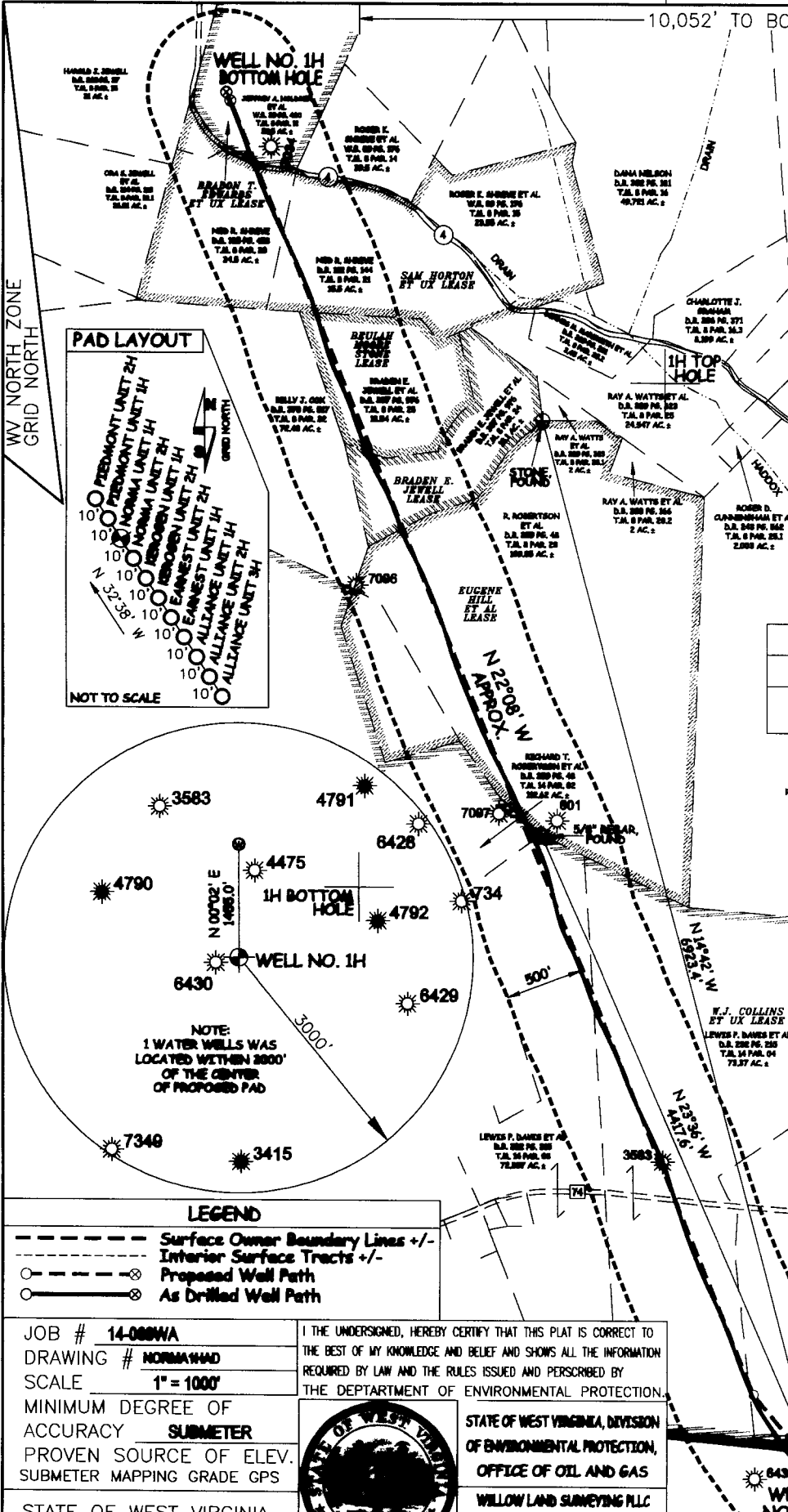
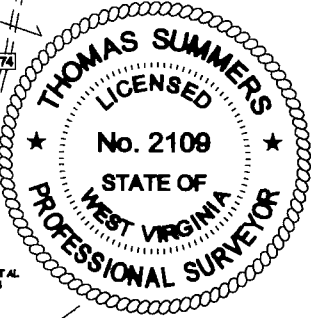
Antero Resources Corporation
Well No. Norma Unit 1H
47-085-10169 AS DRILLED

AS DRILLED DATA:
WELL 1H TOP HOLE INFORMATION:
N: 301,989ft E: 1,593,093ft
LAT: 39°19'12.70" LON: 80°56'17.96"
BOTTOM HOLE INFORMATION:
N: 310,770ft E: 1,589,305ft
LAT: 39°20'38.88" LON: 80°57'07.96"
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE.
ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIABLE GEOST 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: 4,352,321m E: 505,331m
BOTTOM HOLE INFORMATION:
N: 4,354,976m E: 504,133m

Thomas Summers
THOMAS SUMMERS P.S. 2109
DATE 09/29/17

1. NO OCCUPIED PARCELS OR BUILDINGS TWO THOUSAND FEET DISTANCE TO BE SHOWN FROM THE CENTER OF THE WELL OR FROM ANY OTHER POINT OF INTEREST ON THE SURFACE OF THE PROPERTY.
2. TOP HOLE DATA SUBMITTED WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
3. AS DRILLED DATA SUBMITTED WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
4. THIS IS A FIELD SURVEY AND THE INFORMATION CONTAINED HEREIN IS NOT TO BE USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT WAS OBTAINED.
5. THIS IS AN INTERIM SURVEY AND THE INFORMATION CONTAINED HEREIN IS NOT TO BE USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT WAS OBTAINED.



NOTE:
1 WATER WELLS WAS LOCATED WITHIN 3000' OF THE CENTER OF PROPOSED PAD

LEGEND

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

JOB # **14-088WA**
DRAWING # **NORMA1HAD**
SCALE **1" = 1000'**
MINIMUM DEGREE OF ACCURACY **SUBMETER**
PROVEN SOURCE OF ELEV. **SUBMETER MAPPING GRADE GPS**

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 PERSCIBED 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 AVE PENNSBORO WEST VIRGINIA 26105

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



WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL

OPERATOR'S WELL # **NORMA UNIT #1H**