

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

API 47 - 017 - 06847 County Doddridge District West Union  
 Quad West Union 7.5' Pad Name Strickling Pad Field/Pool Name -----  
 Farm name John Paul Strickling, et al Well Number Buffett 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 4353668.821m Easting 518630.932m  
 Landing Point of Curve Northing 4353275.08m Easting 518114.48m  
 Bottom Hole Northing 4350694.384m Easting 519202.297m

Elevation (ft) 1065' 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 7/13/2017 Date drilling commenced 9/5/2017 Date drilling ceased 3/30/2018  
 Date completion activities began 7/2/2018 Date completion activities ceased 10/11/2018  
 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 None Identified Open mine(s) (Y/N) depths No  
 Salt water depth(s) ft None Identified 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

Reviewed by:

WR-35  
Rev. 8/23/13

API 47-017 - 06847 Farm name John Paul Strickling, et al Well number Buffett 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"	95'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	389'	New	54.5#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2650'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	16839'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	7146'		4.7#, P-110		
Packer type and depth set		N/A					

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

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	284 sx	15.6	1.18	335	0'	8 Hrs.
Surface	Class A	325 sx	15.6	1.2	390	0'	8 Hrs.
Coal							
Intermediate 1	Class A	920 sx	15.6	1.18	1086	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	783sx (Lead) 1539 sx (Tail)	14(Lead), 15.2 (Tail)	1.45 (Lead), 1.83 (Tail)	3952	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 16838' MD, 6756' TVD (BHL), 6781' (Deepest Point Drilled) Loggers TD (ft) 16838' MD

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

Plug back procedure N/A

Kick off depth (ft) 6386.5'

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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PRODUCING FORMATION(S)	DEPTHS	
Marcellus	6646' (TOP) TVD	7201' (TOP) MD

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 3600 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 10175.1 mcfpd Oil 132.51 bpd NGL --- bpd Water 510.39 bpd  
GAS MEASURED BY  Estimated  Orifice  Pilot

LITHOLOGY/ FORMATION	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.

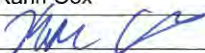
Drilling Contractor Frontier Drilling LLC  
Address 207 Carlton Drive City Eighty Four State PA Zip 15330

Logging Company Nine Energy Service  
Address 125 Museum Rd City Washington State PA Zip 15301

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

Stimulating Company US Well Services  
Address 533 Industrial Park Road City Lane Jew State WV Zip 26378

Please insert additional pages as applicable.

Completed by Karin Cox Telephone 303-357-6820  
Signature  Title Permitting Agent Date 2/1/2019

API 47-017-06847 Farm Name John Paul Strickling, et al Well Number Buffet Unit 1H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	7/2/2018	16693.7	16749	48	Marcellus
2	7/2/2018	16492.688	16662.198	48	Marcellus
3	7/3/2018	16291.676	16461.186	48	Marcellus
4	7/3/2018	16090.664	16260.174	48	Marcellus
5	7/3/2018	15889.652	16059.162	48	Marcellus
6	7/4/2018	15688.64	15858.15	48	Marcellus
7	7/4/2018	15487.628	15657.138	48	Marcellus
8	7/5/2018	15286.616	15456.126	48	Marcellus
9	7/5/2018	15085.604	15255.114	48	Marcellus
10	7/6/2018	14884.592	15054.102	48	Marcellus
11	7/6/2018	14683.58	14853.09	48	Marcellus
12	7/7/2018	14482.568	14652.078	48	Marcellus
13	7/7/2018	14281.556	14451.066	48	Marcellus
14	7/7/2018	14080.544	14250.054	48	Marcellus
15	7/7/2018	13879.532	14049.042	48	Marcellus
16	7/8/2018	13678.52	13848.03	48	Marcellus
17	7/9/2018	13477.508	13647.018	48	Marcellus
18	7/10/2018	13276.496	13446.006	48	Marcellus
19	7/10/2018	13075.484	13244.994	48	Marcellus
20	7/11/2018	12874.472	13043.982	48	Marcellus
21	7/12/2018	12673.46	12842.97	48	Marcellus
22	7/12/2018	12472.448	12641.958	48	Marcellus
23	7/12/2018	12271.436	12440.946	48	Marcellus
24	7/13/2018	12070.424	12239.934	48	Marcellus
25	7/13/2018	11869.412	12038.922	48	Marcellus
26	7/13/2018	11668.4	11837.91	48	Marcellus
27	7/14/2018	11467.388	11636.898	48	Marcellus
28	7/14/2018	11266.376	11435.886	48	Marcellus
29	7/14/2018	11065.364	11234.874	48	Marcellus
30	7/14/2018	10864.352	11033.862	48	Marcellus
31	7/15/2018	10663.34	10832.85	48	Marcellus
32	7/15/2018	10462.328	10631.838	48	Marcellus
33	7/15/2018	10261.316	10430.826	48	Marcellus
34	7/16/2018	10060.304	10229.814	48	Marcellus
35	7/16/2018	9859.292	10028.802	48	Marcellus
36	7/16/2018	9658.28	9827.79	48	Marcellus
37	7/16/2018	9457.268	9626.778	48	Marcellus
38	7/17/2018	9256.256	9425.766	48	Marcellus
39	7/17/2018	9055.244	9224.754	48	Marcellus
40	7/17/2018	8854.232	9023.742	48	Marcellus
41	7/17/2018	8653.22	8822.73	48	Marcellus
42	7/18/2018	8452.208	8621.718	48	Marcellus
43	7/18/2018	8251.196	8420.706	48	Marcellus
44	7/18/2018	8050.184	8219.694	48	Marcellus
45	7/19/2018	7849.172	8018.682	48	Marcellus
46	7/19/2018	7648.16	7817.67	48	Marcellus
47	7/19/2018	7447.148	7616.658	48	Marcellus
48	7/19/2018	7246.136	7415.646	48	Marcellus



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**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	7/2/2018	66.2	7659.3	5323	4141	270500	7420	N/A
2	7/2/2018	71.2345	7918.65	5819	4021	402400	7642	N/A
3	7/3/2018	69.3	7774.2	5790	3890	403100	7625	N/A
4	7/3/2018	71.8	7974.3	6054	3757	401500	8020	N/A
5	7/3/2018	71.9379	7660.71	5513	4231	402590	7734	N/A
6	7/4/2018	70.7	7893.3	5972	4144	400700	7541	N/A
7	7/4/2018	70.0318	7853.747	6144	3683	402450	7669	N/A
8	7/5/2018	72.8	7899.6	6106	4753	406900	8977	N/A
9	7/5/2018	72.9223	7770.977	6089	4270	402700	7609	N/A
10	7/6/2018	72.1	7972.5	6569	4370	402600	7578	N/A
11	7/6/2018	72.5	8110	6307	4125	405800	7549	N/A
12	7/7/2018	75.8525	8022.263	6266	4133	402750	7541	N/A
13	7/7/2018	77.6297	8034.627	6110	4314	400560	7650	N/A
14	7/7/2018	77.9868	8001.272	5969	4538	404600	7613	N/A
15	7/7/2018	76.4212	7802.93	6061	3927	402880	7483	N/A
16	7/8/2018	76.7308	8070.678	5999	4306	400390	7907	N/A
17	7/9/2018	78.8534	7966.649	5755	3893	403640	8039	N/A
18	7/10/2018	78.3125	7668.696	5835	3909	402900	7928	N/A
19	7/10/2018	74.2449	7523.474	5683	5165	402420	8600	N/A
20	7/11/2018	79.5644	7577.934	5942	4897	402300	8039	N/A
21	7/12/2018	79.8025	7643.151	4762	4809	401900	7967	N/A
22	7/12/2018	73.271	7388.085	5934	4705	401000	7927	N/A
23	7/12/2018	75.474	7305.686	5702	4086	409100	7884	N/A
24	7/13/2018	79.0123	7401.708	5690	4234	403550	7951	N/A
25	7/13/2018	78.8396	7529.461	5590	4128	404300	7606	N/A
26	7/13/2018	79.1221	7269.464	5473	4264	413600	7553	N/A
27	7/14/2018	79.2199	7759.896	5807	3982	401700	7403	N/A
28	7/14/2018	77.7085	7751.823	6238	4374	401700	7436	N/A
29	7/14/2018	77.2049	7499.565	5733	3933	402300	7427	N/A
30	7/14/2018	79.1871	7773.549	5752	4238	401550	7387	N/A
31	7/15/2018	78.846	7463.335	5936	4158	399700	7411	N/A
32	7/15/2018	78.1905	7325.214	6011	4194	400600	7447	N/A
33	7/15/2018	79.156	7554.286	5585	3750	401500	7379	N/A
34	7/16/2018	79.2661	7714.116	5910	4516	402000	7353	N/A
35	7/16/2018	78.7719	7514.207	5878	4190	402000	8401	N/A
36	7/16/2018	79.2782	7438.105	6190	4701	402980	8542	N/A
37	7/16/2018	78.7465	7748.172	6274	4717	402700	7400	N/A
38	7/17/2018	79.3968	7410.44	5877	4818	402100	7390	N/A
39	7/17/2018	78.9961	7322.083	6771	4812	402100	7462	N/A
40	7/17/2018	78.6791	7594.804	6050	4355	401500	7406	N/A
41	7/17/2018	79.2825	7741.651	6481	4768	402480	7221	N/A
42	7/18/2018	77.0981	7603.186	5931	4430	402920	7787	N/A
43	7/18/2018	78.4579	7462.313	5985	4670	402100	7371	N/A
44	7/18/2018	79.1	7680.1	5973	4310	403400	7215	N/A
45	7/19/2018	79.8	7510.4	5523	4930	406450	7199	N/A
46	7/19/2018	79.88	7478.393	5763	4395	401700	7354	N/A
47	7/19/2018	79.2221	7288.843	5957	4206	403750	7297	N/A
48	7/19/2018	79.5	7264.3	5804	4495	411220	7228	N/A
	AVG=	<b>77</b>	<b>7,658</b>	<b>5,914</b>	<b>4,326</b>	<b>19,215,580</b>	<b>367,568</b>	TOTAL

API 47-017-06847 Farm Name John Paul Strickling, et al Well Number Buffett Unit 1H				
EXHIBIT 3				
LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Sandstone	0	187	0	187
Sandstone tr coal	est 187	267	est 187	267
Sandy shale	est 267	807	est 267	807
Calcareous Shale	est 807	1,187	est 807	1,187
Shale tr coal	est 1187	1,207	est 1187	1,207
Sandy Shale	est 1207	1,527	est 1207	1,527
Sandstone	est 1527	1,567	est 1527	1,567
Silty shale	est 1567	1,667	est 1567	1,667
Sandstone	est 1667	1,787	est 1667	1,787
Sandy shale	est 1787	1,949	est 1787	1,995
Big Lime	1,949	2,501	1,995	2,578
Fifty Foot Sandstone	2,501	2,718	2,578	2,804
Gordon	2,718	2,921	2,804	3,020
Fifth Sandstone	2,921	2,977	3,020	3,080
Bayard	2,977	3,777	3,080	3,944
Speechley	3,777	4,051	3,944	4,237
Balltown	4,051	4,570	4,237	4,789
Bradford	4,570	5,002	4,789	5,256
Benson	5,002	5,267	5,256	5,540
Alexander	5,267	6,259	5,540	6,611
Sycamore	6,259	6,432	6,611	6,818
Middlesex	6,432	6,566	6,818	7,020
Burkett	6,566	6,597	7,020	7,079
Tully	6,597	6,646	7,079	7,201
Marcellus	6,646	N/A	7,201	N/A

\*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:	7/2/2018
Job End Date:	7/19/2018
State:	West Virginia
County:	Doddridge
API Number:	47-017-06847-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Buffett 1H
Latitude:	39.33222600
Longitude:	-80.78375100
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,714
Total Base Water Volume (gal):	15,776,554
Total Base Non Water Volume:	0



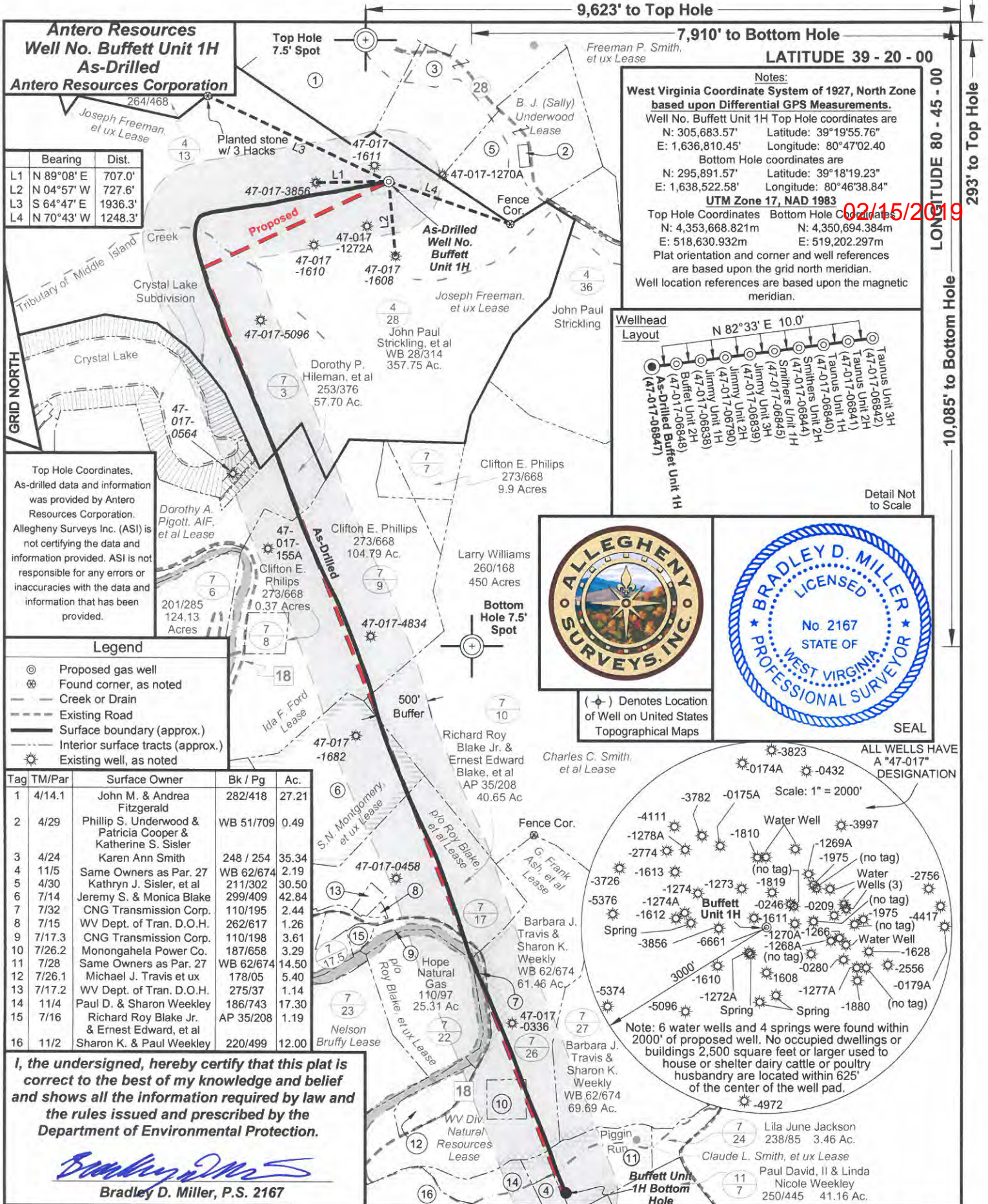
## Hydraulic Fracturing Fluid Composition:

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	Carrier/Base Fluid	Water	7732-18-5	100.00000	87.06952	
Sand	U.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	12.71573	
HCL Acid (12.6%-17.5%)	U.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.40000	0.13252	
			Hydrogen Chloride	7647-01-0	17.50000	0.03081	
WFRA-405	U.S. Well Services, LLC	Friction Reducer	2-Propenoic acid, polymer with 2-propanamide	29003-06-9	30.00000	0.01565	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.01260	
LGC-15	U.S. Well Services, LLC	Gelling Agents	Guar Gum	9000-30-0	50.00000	0.00709	
			Petroleum Distillates	64742-47-8	60.00000	0.00672	
			Suspending agent (solid)	14808-60-7	3.00000	0.00108	
			Surfactant	68439-51-0	3.00000	0.00043	









FILE NO: 51-30-WU-14  
DRAWING NO: Buffett 1H Well Plat 11-16  
SCALE: 1" = 1200'  
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: December 28 2018  
OPERATOR'S WELL NO. Buffett Unit 1H  
API WELL NO. 47 - 017 - 06847  
STATE COUNTY PERMIT

WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
(IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW

LOCATION: ELEVATION: As-Built - 1065' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: West Union  
DISTRICT: West Union WV Division of Natural Resources COUNTY: Doddridge  
SURFACE OWNER: John Paul Strickling, et al S.N. Montgomery, et ux; Charles C. Smith, et al ACREAGE: 357.75 90; 114  
ROYALTY OWNER: Dorothy A. Pigott, AIF, et al; G. Frank Ash, et al; Claude L. Smith, et ux LEASE NO: ACREAGE: 600; 140; 58.70; 51  
PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled 6,756' TVD  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 16,838' MD

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System  
ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road  
Denver, CO 80202 Charleston, WV 25313