

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

API 47 - 017 - 06820 County Doddridge District West Union
 Quad West Union 7.5' Pad Name Middle Pad Field/Pool Name ----
 Farm name Antero Resources Corporation Well Number Goldsmith 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 4352588.671m Easting 516690.762m
 Landing Point of Curve Northing 4352688.97m Easting 516570.38m
 Bottom Hole Northing 4355153.15m Easting 515491.76m

Elevation (ft) 843' 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 6/19/2017 Date drilling commenced 9/29/2017 Date drilling ceased 3/24/2018
 Date completion activities began 7/16/2018 Date completion activities ceased 9/27/2018
 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 - 06820 Farm name Antero Resources Corporation Well number Goldsmith 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"	112'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	548'	New	54#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2625'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	15789'	New	23#, HCP-110	N/A	Y
Tubing		2-3/8"	6517'		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 ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	204 sx	15.6	1.18	241	0'	8 Hrs.
Surface	Class A	445 sx	15.6	1.21	538	0'	8 Hrs.
Coal							
Intermediate 1	Class A	870 sx	15.6	1.21	1053	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	659 sx (Lead) 1484 sx (Tail)	14(Lead), 15.2 (Tail)	1.45 (Lead), 1.83 (Tail)	3671	-600' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 15789' MD, 6421' TVD (BHL), 6427' (Deepest Point Drilled) Loggers TD (ft) 15789' MD

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

Plug back procedure N/A

Kick off depth (ft) 5669'

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

WR-35
Rev. 8/23/13

API 47- 017 - 06820 Farm name Antero Resources Corporation Well number Goldsmith Unit 1H

PRODUCING FORMATION(S)	DEPTHS	
Marcellus	6353' (TOP) TVD	6582' (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 13607.33 mcfpd Oil 139.1 bpd NGL --- bpd Water 661.24 bpd GAS MEASURED BY Estimated Orifice Pilot

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

***PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

Drilling Contractor Frontier Drilling LLC
Address 562 Spring Run Road City Pennsboro State WV Zip 26415

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 Hallburton
Address 121 Champion Way City Canonsburg State PA Zip 15317

Please insert additional pages as applicable.

Completed by Karin Cox Telephone 303-357-6820
Signature _____ Title Permitting Agent Date _____

API 47-017-06820 Farm Name Antero Resources Corp Well Number Goldsmith Unit 1H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	7/16/2018	15594.6	15687.9	60	Marcellus
2	7/17/2018	15395.478	15563.413	60	Marcellus
3	7/17/2018	15196.356	15364.291	60	Marcellus
4	7/18/2018	14997.234	15165.169	60	Marcellus
5	7/18/2018	14798.112	14966.047	60	Marcellus
6	7/19/2018	14598.99	14766.925	60	Marcellus
7	7/20/2018	14399.868	14567.803	60	Marcellus
8	7/20/2018	14200.746	14368.681	60	Marcellus
9	7/20/2018	14001.624	14169.559	60	Marcellus
10	7/21/2018	13802.502	13970.437	60	Marcellus
11	7/23/2018	13603.38	13771.315	60	Marcellus
12	7/23/2018	13404.258	13572.193	60	Marcellus
13	7/24/2018	13205.136	13373.071	60	Marcellus
14	7/24/2018	13006.014	13173.949	60	Marcellus
15	7/24/2018	12806.892	12974.827	60	Marcellus
16	7/25/2018	12607.77	12775.705	60	Marcellus
17	7/25/2018	12408.648	12576.583	60	Marcellus
18	7/25/2018	12209.526	12377.461	60	Marcellus
19	7/26/2018	12010.404	12178.339	60	Marcellus
20	7/26/2018	11811.282	11979.217	60	Marcellus
21	7/27/2018	11612.16	11780.095	60	Marcellus
22	7/27/2018	11413.038	11580.973	60	Marcellus
23	7/28/2018	11213.916	11381.851	60	Marcellus
24	7/28/2018	11014.794	11182.729	60	Marcellus
25	7/28/2018	10815.672	10983.607	60	Marcellus
26	7/29/2018	10616.55	10784.485	60	Marcellus
27	7/30/2018	10417.428	10585.363	60	Marcellus
28	7/30/2018	10218.306	10386.241	60	Marcellus
29	7/30/2018	10019.184	10187.119	60	Marcellus
30	7/31/2018	9820.062	9987.997	60	Marcellus
31	7/31/2018	9620.94	9788.875	60	Marcellus
32	8/2/2018	9421.818	9589.753	60	Marcellus
33	8/2/2018	9222.696	9390.631	60	Marcellus
34	8/2/2018	9023.574	9191.509	60	Marcellus
35	8/3/2018	8824.452	8992.387	60	Marcellus
36	8/3/2018	8625.33	8793.265	60	Marcellus
37	8/4/2018	8426.208	8594.143	60	Marcellus
38	8/4/2018	8227.086	8395.021	60	Marcellus
39	8/5/2018	8027.964	8195.899	60	Marcellus
40	8/5/2018	7828.842	7996.777	60	Marcellus
41	8/6/2018	7629.72	7797.655	60	Marcellus
42	8/6/2018	7430.598	7598.533	60	Marcellus
43	8/6/2018	7231.476	7399.411	60	Marcellus
44	8/7/2018	7032.354	7200.289	60	Marcellus
45	8/7/2018	6833.232	7001.167	60	Marcellus
46	8/7/2018	6634.11	6802.045	60	Marcellus

API 47-017-06820 Farm Name Antero Resources Corp Well Number Goldsmith 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 (bbls)	Amount of Nitrogen/ other (units)
1	7/16/2018	64.91	7810	6909	4080	246500	10403	N/A
2	7/17/2018	73.9	7501	5274	3535	415700	8515	N/A
3	7/17/2018	70.28	7381	6492	3367	417280	8617	N/A
4	7/18/2018	71	7804	5607	4826	405460	9083	N/A
5	7/18/2018	70.7	7681	5464	3770	410000	8370	N/A
6	7/19/2018	63.85	7372	5740	3710	406000	8657	N/A
7	7/20/2018	64.87	7802	5687	3637	415860	8513	N/A
8	7/20/2018	55.8	8090	5825	3971	409660	11035	N/A
9	7/20/2018	64.1	7343	6118	4921	412200	8198	N/A
10	7/21/2018	70	7327	5547	4961	405300	8082	N/A
11	7/23/2018	62.23	6970	5790	5149	404860	11108	N/A
12	7/23/2018	60.3	7839	5729	4160	406020	10537	N/A
13	7/24/2018	71.09	7175	5913	4035	404880	8178	N/A
14	7/24/2018	67.8	7250	6093	4224	409380	8398	N/A
15	7/24/2018	69.75	7023	4812	4977	407800	8308	N/A
16	7/25/2018	69.87	7271	5736	4054	414460	8151	N/A
17	7/25/2018	72.3	7314	5024	4010	409180	8463	N/A
18	7/25/2018	63.47	7400	5879	4673	397500	8173	N/A
19	7/26/2018	70.79	7425	5986	4353	404020	8540	N/A
20	7/26/2018	67.9	7354	5684	4620	397620	8009	N/A
21	7/27/2018	69.8	7537	5476	4871	412500	9435	N/A
22	7/27/2018	65.95	7503	5991	5072	409940	8241	N/A
23	7/28/2018	69.7	7337	4666	5256	413360	8286	N/A
24	7/28/2018	73	7224	5883	4888	407100	8240	N/A
25	7/28/2018	61.22	7068	5992	5413	404300	8280	N/A
26	7/29/2018	57	7317	5731	4886	405080	10446	N/A
27	7/30/2018	67.03	7011	6125	3510	405680	8206	N/A
28	7/30/2018	76.22	7290	5726	5155	404440	8114	N/A
29	7/30/2018	75.69	6984	6399	5214	405440	8143	N/A
30	7/31/2018	78.6	6911	5958	5099	402120	8096	N/A
31	7/31/2018	75.23	7348	5958	4798	403040	8158	N/A
32	8/2/2018	68.9	7092	5838	5082	406020	9663	N/A
33	8/2/2018	74.83	7307	5698	4004	410060	8309	N/A
34	8/2/2018	71.68	7172	5755	3732	396780	8058	N/A
35	8/3/2018	73.28	7659	5801	3816	398720	9826	N/A
36	8/3/2018	71.25	7471	5882	3970	396460	8100	N/A
37	8/4/2018	71.29	6981	5817	4701	403240	7845	N/A
38	8/4/2018	74.59	7358	5908	5010	405780	8193	N/A
39	8/5/2018	69.185	6955	558	4285	401740	10574	N/A
40	8/5/2018	76.55	7120	5670	3597	403880	8148	N/A
41	8/6/2018	68.09	7048	5482	3783	404660	8090	N/A
42	8/6/2018	72.91	7035	5957	3786	404760	8033	N/A
43	8/6/2018	65.08	7710	5990	3940	405380	9691	N/A
44	8/7/2018	72.14	6949	6122	3952	415120	9118	N/A
45	8/7/2018	74.48	6791	6654	3890	401820	7992	N/A
46	8/7/2018	71.96	6809	7075	3954	410500	8902	N/A
	AVG=	69	7,307	5,727	4,363	18,537,600	401,525	TOTAL

API 47-017-06820 Farm Name Antero Resources Corp Well Number Goldsmith Unit 1H				
EXHIBIT 3				
LITHOLOGY/ FORMATION	TOP DEPTH (TVD) From Surface	BOTTOM DEPTH (TVD) From Surface	TOP DEPTH (MD) From Surface	BOTTOM DEPTH (MD) From Surface
Sandstone	0	177	0	177
Sandstone tr coal	est. 177	217	est. 177	217
Sandy shale	est. 217	232	est. 217	232
Calcareous Shale	est. 232	319	est. 232	319
Sandstone	est. 319	373	est. 319	373
Calcareous Shale	est. 373	1,065	est. 373	1,065
Silty Sandstone	est. 1065	1,137	est. 1065	1,137
Silty shale	est. 1137	1,287	est. 1137	1,287
Sandy Shale	est. 1287	1,357	est. 1287	1,357
Shale	est. 1357	1,552	est. 1357	1,553
Big Lime	1,552	2,237	1,553	2,238
Fifty Foot Sandstone	2,237	2,469	2,238	2,470
Gordon	2,469	2,665	2,470	2,666
Fifth Sandstone	2,665	2,730	2,666	2,731
Bayard	2,730	3,515	2,731	3,518
Speechley	3,515	3,825	3,518	3,831
Balltown	3,825	4,314	3,831	4,324
Bradford	4,314	4,747	4,324	4,762
Benson	4,747	4,996	4,762	5,013
Alexander	4,996	5,971	5,013	6,001
Sycamore	5,971	6,151	6,001	6,217
Middlesex	6,151	6,280	6,217	6,410
Burkett	6,280	6,308	6,410	6,466
Tully	6,308	6,353	6,466	6,582
Marcellus	6,353	NA	6,582	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:	7/16/2018
Job End Date:	8/8/2018
State:	West Virginia
County:	Doddridge
API Number:	47-017-06820-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Goldsmith 1H
Latitude:	39.32166000
Longitude:	-80.80487000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,634
Total Base Water Volume (gal):	17,177,667
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	88.30261	Density = 8.340
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.22306	

MC B-8614	Halliburton	Biocide			Listed Below			
					Listed Below			
MC S-2510T	Halliburton	Scale Inhibitor			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	11.42512		
			Hydrochloric acid	7647-01-0	15.00000	0.02633		
			Guar gum	9000-30-0	100.00000	0.02036		
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01591		
			Acrylamide acrylate polymer	Proprietary	30.00000	0.01591		Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Inorganic salt	Proprietary	30.00000	0.01591		
			Ethylene Glycol	107-21-1	60.00000	0.00807		
			Glutaraldehyde	111-30-8	30.00000	0.00276		
			Neutralized Polyacrylic Emulsion	Proprietary	10.00000	0.00134		
			Sodium persulfate	7775-27-1	100.00000	0.00057		
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00046		
			Methanol	67-56-1	60.00000	0.00009		
			Ethanol	64-17-5	1.00000	0.00009		
			Fatty acids, tall oil	Proprietary	30.00000	0.00004		
			Ethoxylated alcohols	Proprietary	30.00000	0.00004		

			Modified thiourea polymer	Proprietary	30.00000	0.00004	
			Cleflins	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	

* 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)

8,276' to Bottom Hole

4,264' to Top Hole
BTM LATITUDE 39 - 22 - 30
TOP LATITUDE 39 - 20 - 00

02/08/2019

LOGITUDE 80 - 47 - 30
3,898' to Top Hole
10,591' to Bottom Hole

Antero Resources Well No. Goldsmith Unit 1H As-Drilled Plat
Antero Resources Corporation

TM/Par	Bk / Pg	Acres	Owner(s)
1	6/2	214 / 279	32.19
2	6/2.5	253 / 222	8.66
3	6/2.8	305 / 419	2.68
4	6/2.6	266 / 36	3.52
5	6/1.3	305 / 416	4.68
6	6/2.4	163 / 44	14.98
7	6/2.3	197 / 659	4.15
8	4/28	WB 28/314	357.75
9	3/15.1	235 / 236	0.56
10	3/18	228 / 723	6.84
11	3/18.2	232 / 135	6.00
12	3/23	WB 47/723	3.00
13	3/8.1	286 / 218	4.48
14	3/9	239 / 114	7.39
15	3/19.1	265 / 582	7.00
16	3/14	247 / 634	0.90

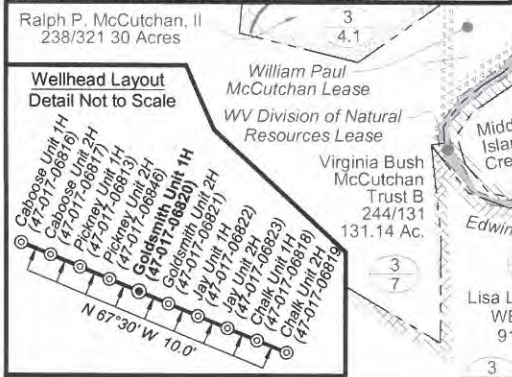
260/379 Goldsmith Unit 1H Bottom Hole
132.61 Ac. 345/294 75.11 Ac.

Top Hole Coordinates, As-drilled data and information was provided by Antero Resources Corporation. Allegheny Surveys Inc. (ASI) is not certifying the data and information provided. ASI is not responsible for any errors or inaccuracies with the data and information that has been provided.

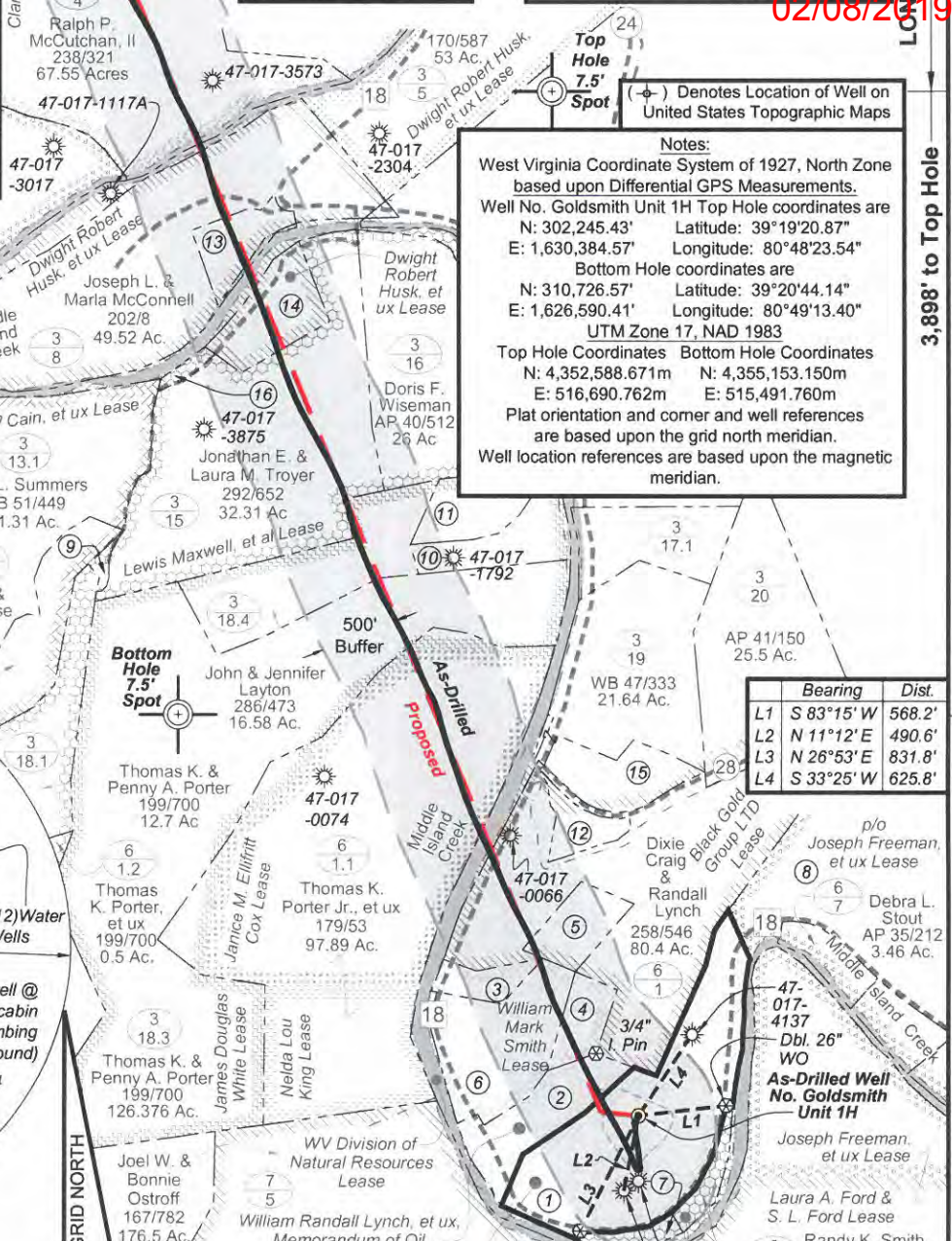
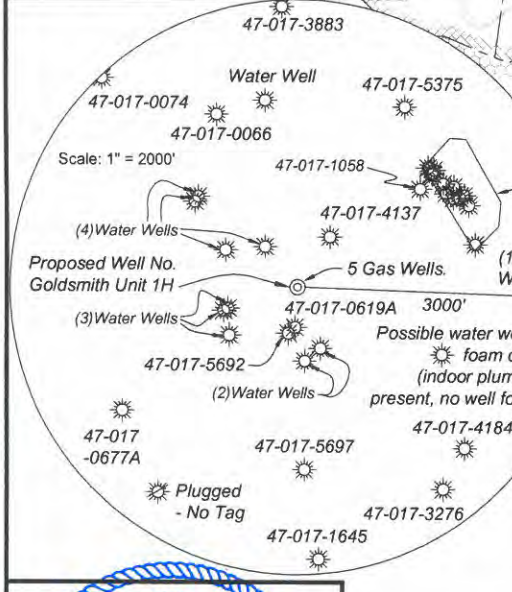
Legend

- Proposed gas well
- Found corner, as noted
- Existing Well, as noted
- Creek or Drain
- Existing Road
- Surface boundary (approx.)
- Interior surface tracts (approx.)

Notes:
West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements. Well No. Goldsmith Unit 1H Top Hole coordinates are N: 302,245.43' Latitude: 39°19'20.87" E: 1,630,384.57' Longitude: 80°48'23.54" Bottom Hole coordinates are N: 310,726.57' Latitude: 39°20'44.14" E: 1,626,590.41' Longitude: 80°49'13.40" UTM Zone 17, NAD 1983
Top Hole Coordinates Bottom Hole Coordinates
N: 4,352,588.671m N: 4,355,153.150m
E: 516,690.762m E: 515,491.760m
Plat orientation and corner and well references are based upon the grid north meridian. Well location references are based upon the magnetic meridian.



Note: It appears 23 water wells were found within 2000' of proposed well. No occupied dwellings or buildings 2,500 square feet or larger used to house or shelter dairy cattle or poultry husbandry are located within 625' of the center of the well pad.



Bearing	Dist.
L1	S 83°15' W 568.2'
L2	N 11°12' E 490.6'
L3	N 26°53' E 831.8'
L4	S 33°25' W 625.8'



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



FILE NO: 201-30-WU-14
DRAWING NO: Goldsmith 1H As-Drilled Plat
SCALE: 1" = 1200'
MINIMUM DEGREE OF ACCURACY: Submeter
PROVEN SOURCE OF ELEVATION: CORS, Marietta, OH

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS DIVISION

DATE: January 16 2019
Operator's Well No. Goldsmith Unit 1H
API WELL NO
47 - 017 - 06820
STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
(IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
LOCATION: ELEVATION: As-Built Grade - 843' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: West Union
DISTRICT: West Union WV Division of Natural Resources; COUNTY: Doddridge
SURFACE OWNER: William Randall Lynch & Dixie Craig; William Randall Lynch, et ux, Memorandum of Oil & Gas Lease; ACREAGE: 32.19 32.15; 8.66; 78.75; 20.49; 82.21; 150;
ROYALTY OWNER: Clarence W. Mutschelknaus, et ux; James Douglas White; Janice M. Ellifritt Cox LEASE NO: ACREAGE: 168; 61.361; 105
PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 6,421' TVD 15,789' 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