

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

API 47 - 017 - 06860 County Doddridge District West Union
Quad West Union 7.5' Pad Name Alexander Pad Field/Pool Name -----
Farm name Antero Resources Corporation Well Number Scorpio 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 4354070m Easting 519337m
Landing Point of Curve Northing 4354083m Easting 519020m
Bottom Hole Northing 4356580m Easting 518026m

Elevation (ft) 1181' 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 9/20/2017 Date drilling commenced 1/18/2018 Date drilling ceased 5/22/2018
Date completion activities began 9/26/2018 Date completion activities ceased 1/8/2019
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 - 06860 Farm name Antero Resources Corporation Well number Scorpio 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"	105'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	573.1'	New	54#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2571.7'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	16383'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	7079'		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	530 sx	15.6	1.21	641	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	850 sx (Lead) 1395sx (Tail)	14(Lead), 15.2 (Tail)	1.45 (Lead), 1.94(Tail)	3939	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 16403' MD, 6843' TVD (BHL), 6873' (Deepest Point Drilled) Loggers TD (ft) 16403' MD

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

Plug back procedure N/A

Kick off depth (ft) 6346'

** This is a subsequent Well. Antero only runs wireline logs on one well on a multi-well pad (Scorpio Unit 2H API#47-017-06861). Please reference the wireline logs submitted with Form WR-35 for Scorpio Unit 2H. 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

WR-35
Rev. 8/23/13

API 47- 017 - 06860 Farm name Antero Resources Corporation Well number Scorpio Unit 1H

PRODUCING FORMATION(S)	DEPTHS		
Marcellus	6806' (TOP)	TVD	7163' (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 10457 mcfpd Oil 83 bpd NGL --- bpd Water 423 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 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 Huntington State PA Zip 15642

Cementing Company Halliburton
Address 121 Champion Way City Canonsburg State PA Zip 15317

Stimulating Company Halliburton
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 4/30/2019

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

API 47-017-06860 Farm Name Matthew W. Alexander & Linda Marie Muhly Well Number Scorpio Unit 1H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	9/26/2018	16179.7	16279.6	60	Marcellus
2	9/27/2018	15980.32	16148.47	60	Marcellus
3	9/27/2018	15780.94	15949.09	60	Marcellus
4	9/28/2018	15581.56	15749.71	60	Marcellus
5	9/28/2018	15382.18	15550.33	60	Marcellus
6	9/29/2018	15182.8	15350.95	60	Marcellus
7	9/29/2018	14983.42	15151.57	60	Marcellus
8	9/30/2018	14784.04	14952.19	60	Marcellus
9	9/30/2018	14584.66	14752.81	60	Marcellus
10	10/1/2018	14385.28	14553.43	60	Marcellus
11	10/1/2018	14185.9	14354.05	60	Marcellus
12	10/2/2018	13986.52	14154.67	60	Marcellus
13	10/2/2018	13787.14	13955.29	60	Marcellus
14	10/3/2018	13587.76	13755.91	60	Marcellus
15	10/3/2018	13388.38	13556.53	60	Marcellus
16	10/4/2018	13189	13357.15	60	Marcellus
17	10/4/2018	12989.62	13157.77	60	Marcellus
18	10/5/2018	12790.24	12958.39	60	Marcellus
19	10/5/2018	12590.86	12759.01	60	Marcellus
20	10/6/2018	12391.48	12559.63	60	Marcellus
21	10/6/2018	12192.1	12360.25	60	Marcellus
22	10/6/2018	11992.72	12160.87	60	Marcellus
23	10/7/2018	11793.34	11961.49	60	Marcellus
24	10/7/2018	11593.96	11762.11	60	Marcellus
25	10/8/2018	11394.58	11562.73	60	Marcellus
26	10/8/2018	11195.2	11363.35	60	Marcellus
27	10/10/2018	10995.82	11163.97	60	Marcellus
28	10/10/2018	10796.44	10964.59	60	Marcellus
29	10/10/2018	10597.06	10765.21	60	Marcellus
30	10/10/2018	10397.68	10565.83	60	Marcellus
31	10/11/2018	10198.3	10366.45	60	Marcellus
32	10/11/2018	9998.92	10167.07	60	Marcellus
33	10/11/2018	9799.54	9967.69	60	Marcellus
34	10/12/2018	9600.16	9768.31	60	Marcellus
35	10/12/2018	9400.78	9568.93	60	Marcellus
36	10/13/2018	9201.4	9369.55	60	Marcellus
37	10/13/2018	9002.02	9170.17	60	Marcellus
38	10/13/2018	8802.64	8970.79	60	Marcellus
39	10/14/2018	8603.26	8771.41	60	Marcellus
40	10/14/2018	8403.88	8572.03	60	Marcellus
41	10/15/2018	8204.5	8372.65	60	Marcellus
42	10/15/2018	8005.12	8173.27	60	Marcellus
43	10/16/2018	7805.74	7973.89	60	Marcellus
44	10/16/2018	7606.36	7774.51	60	Marcellus
45	10/17/2018	7406.98	7575.13	60	Marcellus
46	10/17/2018	7207.6	7375.75	60	Marcellus

API 47-017-06860 Farm Name Matthew W. Alexander & Linda Marie Muhly Well Number Scorpio 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	9/26/2018	73.9	8040	5952	4735	276880	6636.357	N/A
2	9/27/2018	75.8	7806	5782	4663	400100	8157.286	N/A
3	9/27/2018	71.7	7495	5454	3756	419590	8434.286	N/A
4	9/28/2018	66.1	7989	5846	4334	420220	10937.38	N/A
5	9/28/2018	68.8	7243	5739	3965	418890	8732.786	N/A
6	9/29/2018	77.46	7869	5955	5040	420430	8639.357	N/A
7	9/29/2018	71.73	7482	5960	3765	400880	8160.976	N/A
8	9/30/2018	68.6	7918	6473	5276	400500	12691.81	N/A
9	9/30/2018	76.04	7770	5559	4573	413960	8588.238	N/A
10	10/1/2018	80	8089	6118	4198	400300	8384.19	N/A
11	10/1/2018	78.93	8169	6054	4335	399200	8218.143	N/A
12	10/2/2018	79.76	7984	6492	4190	400980	8855.333	N/A
13	10/2/2018	71.62	7770	5499	4108	405300	10332.14	N/A
14	10/3/2018	74.55	7601	6568	4610	404380	7783.048	N/A
15	10/3/2018	75.47	7541	5473	4485	398820	7889.857	N/A
16	10/4/2018	77.79	7456	6052	5012	396520	8074.929	N/A
17	10/4/2018	79.32	7364	5473	4278	397800	7953.762	N/A
18	10/5/2018	78.4	7262	6041	3649	402880	8053.786	N/A
19	10/5/2018	79.47	7479	5536	4101	400080	8021.833	N/A
20	10/6/2018	77.09	7351	5500	4228	399400	7962.333	N/A
21	10/6/2018	77.86	7281	6547	3916	403540	7958.929	N/A
22	10/6/2018	76.9	7409	5132	4390	361560	7061.929	N/A
23	10/7/2018	78.36	7187	5194	5032	426360	8534.69	N/A
24	10/7/2018	62	7609	5988	4979	399220	11387.52	N/A
25	10/8/2018	79.06	7717	5607	4027	399780	8765.714	N/A
26	10/8/2018	74.41	7030	6126	3540	400100	9699.452	N/A
27	10/10/2018	69.5	6610	6185	4065	399720	8042.762	N/A
28	10/10/2018	67.66	6986	6331	3921	397580	8135.571	N/A
29	10/10/2018	72.15	6964	5093	4188	401800	9560.214	N/A
30	10/10/2018	76.13	6862	6061	3677	402760	7948.929	N/A
31	10/11/2018	74.45	6707	6172	3757	401220	7956.905	N/A
32	10/11/2018	75.07	7638	5299	4419	401200	9850.333	N/A
33	10/11/2018	79.24	7364	5945	3667	401700	9101.619	N/A
34	10/12/2018	75.92	7626	6386	4335	397760	8101.5	N/A
35	10/12/2018	77.9	7097	5418	5032	400420	8905.905	N/A
36	10/13/2018	69.34	7063	6079	3621	397100	9291.738	N/A
37	10/13/2018	78.9	6797	5580	4620	394380	7990.5	N/A
38	10/13/2018	76	6823	5996	3698	403120	7891.595	N/A
39	10/14/2018	77.26	7539	5809	5200	403020	8103.19	N/A
40	10/14/2018	79.77	7100	5795	4033	402260	8008.476	N/A
41	10/15/2018	77.06	7160	6028	3776	401980	8080.143	N/A
42	10/15/2018	73.09	6799	6233	3713	400360	7980.262	N/A
43	10/16/2018	77.3	7248	6118	4125	399100	9091.738	N/A
44	10/16/2018	73.99	6751	6339	4039	397520	8010.952	N/A
45	10/17/2018	77.13	6474	6474	3943	402780	7945.976	N/A
46	10/17/2018	80.11	5547	5547	3745	401700	7892.357	N/A
	AVG=	75	7,328	5,891	4,234	18,375,150	393,807	TOTAL

API 47-017-06860 Farm Name Matthew W. Alexander & Linda Marie Muhly Well Number Scorpio 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
Shaly Sandstone	0	155	0	155
Sandy Shale	155	215	155	215
Shaly Sandstone	215	255	215	255
Sandstone	255	395	255	395
Shaly Sandstone	395	505	395	505
Sandstone	505	575	505	575
Carbonaceous shale	575	615	575	615
Sandstone	615	765	615	765
Shaly sandstone tr coal	765	1,025	765	1,025
Shaly Siltstone	1,025	1,305	1,025	1,305
Sandstone	1,305	1,455	1,305	1,455
Sandy siltstone	1,455	1,855	1,455	1,855
Sandstone	1,855	1,965	1,855	1,983
Big Lime	1,965	2,626	1,983	2,656
Fifty Foot Sandstone	2,626	2,838	2,656	2,871
Gordon	2,838	3,042	2,871	3,078
Fifth Sandstone	3,042	3,100	3,078	3,137
Bayard	3,100	3,886	3,137	3,936
Speechley	3,886	4,193	3,936	4,248
Balltown	4,193	4,703	4,248	4,768
Bradford	4,703	5,161	4,768	5,234
Benson	5,161	5,431	5,234	5,510
Alexander	5,431	6,425	5,510	6,539
Sycamore	6,425	6,596	6,539	6,756
Middlesex	6,596	6,729	6,756	6,973
Burkett	6,729	6,759	6,973	7,035
Tully	6,759	6,806	7,035	7,163
Marcellus	6,806	NA	7,163	NA

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	9/26/2018
Job End Date:	10/17/2018
State:	West Virginia
County:	Doddridge
API Number:	47-017-06860-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Scorpio 1H
Latitude:	39.33575556
Longitude:	-80.77782100
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,873
Total Base Water Volume (gal):	17,044,613
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	88.30879	Density = 8.330
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.21402	

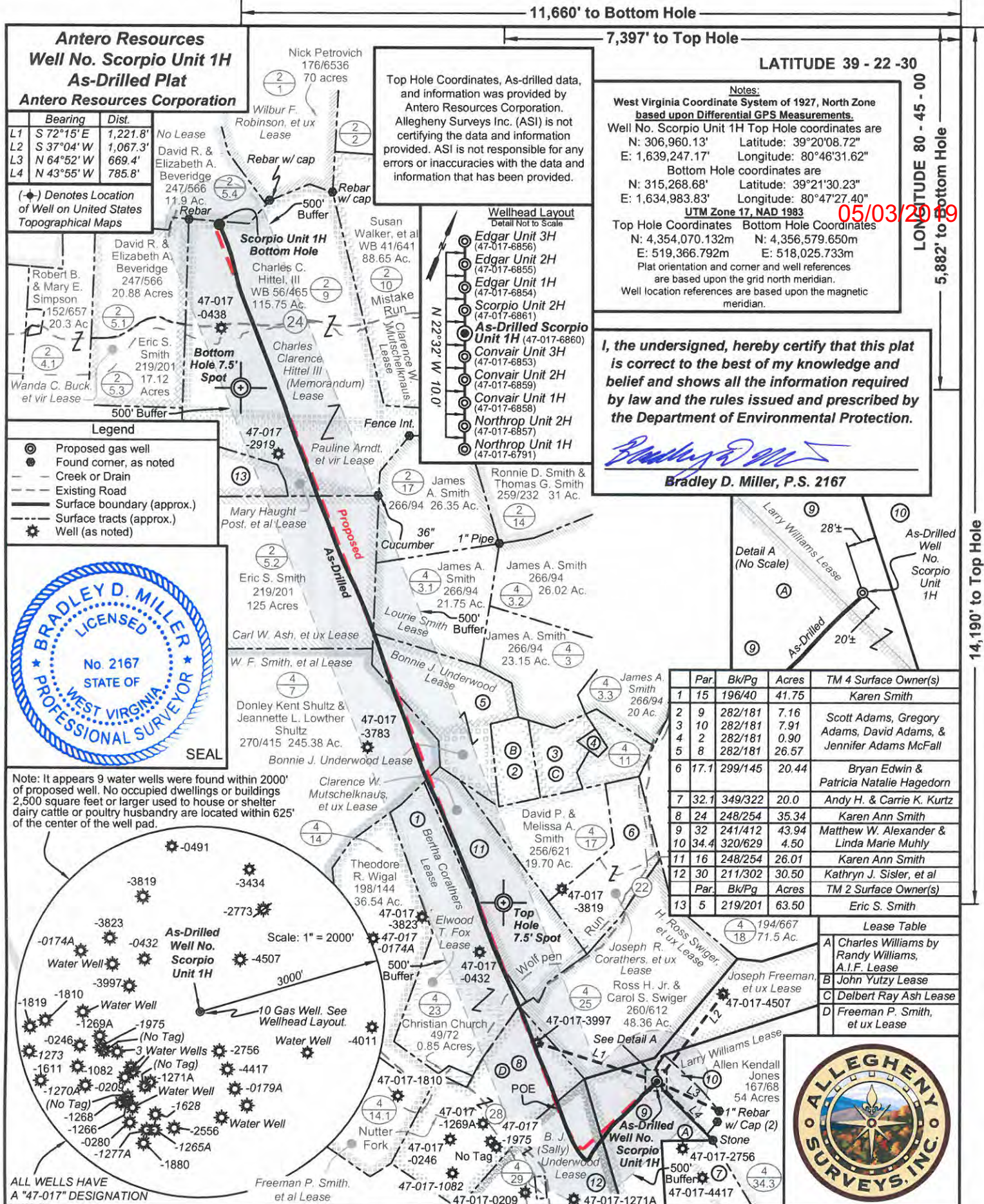
			Propargyl alcohol	107-19-7	5.00000	0.00001
			Ethoxylated alcohols	Proprietary	5.00000	0.00001
			Acrylic acid	79-10-7	0.01000	0.00000
			Sodium sulfate	7757-82-6	0.10000	0.00000

* 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)



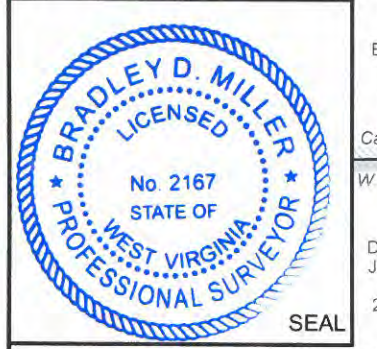
Antero Resources
Well No. Scorpio Unit 1H
As-Drilled Plat
Antero Resources Corporation

Bearing	Dist.	Notes
L1 S 72°15' E	1,221.8'	No Lease
L2 S 37°04' W	1,067.3'	David R. & Elizabeth A. Beveridge 247/566 11.9 Ac. Rebar
L3 N 64°52' W	669.4'	
L4 N 43°55' W	785.8'	

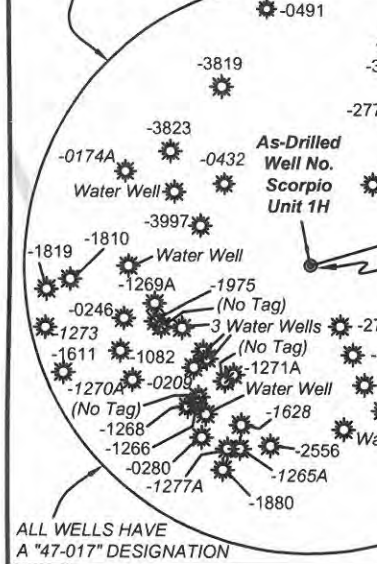
(*) Denotes Location of Well on United States Topographical Maps

Legend

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



Note: It appears 9 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.



FILE NO: 41-30-WU-14
 DRAWING NO: Scorpio 1H Well Plat
 SCALE: 1" = 1200'
 MINIMUM DEGREE OF ACCURACY: Submeter
 PROVEN SOURCE OF ELEVATION: WV DOT, Harrisville, WV

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

DATE: October 8 20 18
 Operator's Well No. Scorpio Unit 1H
 API WELL NO
 47 - 017 - 06860
 STATE COUNTY PERMIT

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

LOCATION: ELEVATION: As-Drilled Grade-1181' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: West Union
 DISTRICT: West Union COUNTY: Doddridge 63; 115; 19.5
 SURFACE OWNER: Matthew W. Alexander & Linda Marie Muhly Loure Smith; Bertha Corathers; B.J. (Sally) Underwood
 & Linda Marie Muhly Clarence W. Mutschelknaus, et ux; Larry Williams ACREAGE: 43.94 368; 125; 31
 ROYALTY OWNER: Charles Clarence Hittel III (Memorandum); Charles Williams by Randy Williams, A.I.F. LEASE NO: 84.25; 25; 28
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled 6.843' TVD
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 16,403' MD

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

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.

LATITUDE 39 - 22 - 30
LONGITUDE 80 - 45 - 00

Notes:
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
 Well No. Scorpio Unit 1H Top Hole coordinates are
 N: 306,960.13' Latitude: 39°20'08.72"
 E: 1,639,247.17' Longitude: 80°46'31.62"
 Bottom Hole coordinates are
 N: 315,268.68' Latitude: 39°21'30.23"
 E: 1,634,983.83' Longitude: 80°47'27.40"
 UTM Zone 17, NAD 1983
 Top Hole Coordinates Bottom Hole Coordinates
 N: 4,354,070.132m N: 4,356,579.650m
 E: 519,366.792m E: 518,025.733m
 Plat orientation and corner and well references are based upon the grid north meridian.
 Well location references are based upon the magnetic meridian.

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

Par	Bk/Pg	Acres	TM 4 Surface Owner(s)
1	15	196/40	41.75 Karen Smith
2	9	282/181	7.16 Scott Adams, Gregory Adams, David Adams, & Jennifer Adams McFall
3	10	282/181	7.91
4	2	282/181	0.90
5	8	282/181	26.57
6	17.1	299/145	20.44 Bryan Edwin & Patricia Natalie Hagedorn
7	32.1	349/322	20.0 Andy H. & Carrie K. Kurtz
8	24	248/254	35.34 Karen Ann Smith
9	32	241/412	43.94 Matthew W. Alexander & Linda Marie Muhly
10	34.4	320/629	4.50
11	16	248/254	26.01 Karen Ann Smith
12	30	211/302	30.50 Kathryn J. Sisler, et al
Par	Bk/Pg	Acres	TM 2 Surface Owner(s)
13	5	219/201	63.50 Eric S. Smith

Lease Table	Lease
A	Charles Williams by Randy Williams, A.I.F. Lease
B	John Yutzy Lease
C	Delbert Ray Ash Lease
D	Freeman P. Smith, et ux Lease



14,190' to Top Hole

5,882' to Bottom Hole

05/03/2019