

Reviewed

WR-35  
Rev. 8/23/13

*Jul C [Signature]*  
7/9/18

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

API 47-017-6775 County Doddridge District West Union  
Quad West Union 7.5' Pad Name Yvonne Pad Field/Pool Name -----  
Farm name Yvonne Foster Well Number Manzarek 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 4355516.651m Easting 519875.194m  
Landing Point of Curve Northing 4355598.38m Easting 519616.47m  
Bottom Hole Northing 4357335.074m Easting 518952.646m

Elevation (ft) 1229' 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

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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

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Date permit issued 9/9/2016 Date drilling commenced 9/11/2016 Date drilling ceased 11/13/2016  
Date completion activities began 10/11/2017 Date completion activities ceased 2/23/2018  
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 225' Open mine(s) (Y/N) depths No  
Salt water depth(s) ft 1400' 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:

07/20/2018

API 47-017 - 6775

Farm name Yvonne Foster

Well number Manzarek 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"	65'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	609'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2607'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	14020'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	7103'		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	102 sx	15.6	1.18	120	0'	8 Hrs.
Surface	Class A	708 sx	15.6	1.19	843	0'	8 Hrs.
Coal							
Intermediate 1	Class A	1026 sx	15.6	1.18	1211	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	900 sx (Lead) 1325 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.44 (Lead), 1.67 (Tail)	3774	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 14020' MD, 6898' TVD (BHL), 6932' (Deepest Point Drilled)

Loggers TD (ft) 14020' MD

Deepest formation penetrated Marcellus

Plug back to (ft) N/A

Plug back procedure N/A

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Kick off depth (ft) 6358'

Check all wireline logs run

- caliper     density     deviated/directional     temperature     sonic  
 neutron     resistivity     gamma ray

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

07/20/2018

API 47-017 - 6775 Farm name Yvonne Foster Well number Manzarek Unit 1H

### PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
<b>*PLEASE SEE ATTACHED EXHIBIT 1</b>					

Please insert additional pages as applicable.

### STIMULATION INFORMATION PER STAGE

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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 Fluid (gals)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
<b>*PLEASE SEE ATTACHED EXHIBIT 2</b>								

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Please insert additional pages as applicable.

API 47- 017 - 6775 Farm name Yvonne Foster Well number Manzarek Unit 1H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
Marcellus	6864' (TOP) TVD	7128' (TOP) MD
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 3550 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 12882.35 mcfpd Oil 84.91 bpd NGL --- bpd Water 14.92 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	DEPTH IN FT	DEPTH IN FT	DEPTH IN FT	
	NAME TVD	TVD	MD	MD	

**\*PLEASE SEE ATTACHED EXHIBIT 3**

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Please insert additional pages as applicable.

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

Logging Company Kodiak Services Int'l  
Address 2219 Sawdust Road, Unit 1604-1605 City The Woodlands State TX Zip 77380

Cementing Company BJ Services  
Address 1036 East Main Street City Bridgeport State WV Zip 26330

Stimulating Company US Well Services  
Address 533 Industrial Park Drive City Jane Lew State WV Zip 26378

Please insert additional pages as applicable.

Completed by Karin Cox Telephone 303-357-6820  
Signature *Karin Cox* Title Permitting Agent Date 7/3/2018

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

07/20/2018

API 47-017-06775 Farm Name Yvonne Foster et al Well Number Manzarek Unit 1H

**EXHIBIT 1**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	10/11/2017	13750	13919	48	Marcellus
2	12/14/2017	13551	13719	48	Marcellus
3	12/15/2017	13352	13520	48	Marcellus
4	12/15/2017	13152	13321	48	Marcellus
5	12/16/2017	12953	13121	48	Marcellus
6	12/16/2017	12754	12922	48	Marcellus
7	12/16/2017	12555	12723	48	Marcellus
8	12/17/2017	12355	12523	48	Marcellus
9	12/17/2017	12156	12324	48	Marcellus
10	12/17/2017	11957	12125	48	Marcellus
11	12/18/2017	11757	11925	48	Marcellus
12	12/18/2017	11558	11726	48	Marcellus
13	12/18/2017	11359	11527	48	Marcellus
14	12/19/2017	11159	11327	48	Marcellus
15	12/19/2017	10960	11128	48	Marcellus
16	12/19/2017	10761	10929	48	Marcellus
17	12/20/2017	10561	10729	48	Marcellus
18	12/20/2017	10362	10530	48	Marcellus
19	12/21/2017	10163	10331	48	Marcellus
20	12/21/2017	9963	10132	48	Marcellus
21	12/21/2017	9764	9932	48	Marcellus
22	12/22/2017	9565	9733	48	Marcellus
23	12/22/2017	9365	9534	48	Marcellus
24	12/22/2017	9166	9334	48	Marcellus
25	12/22/2017	8967	9135	48	Marcellus
26	12/23/2017	8768	8936	48	Marcellus
27	12/23/2017	8568	8736	48	Marcellus
28	12/24/2017	8369	8537	48	Marcellus
29	12/26/2017	8170	8338	48	Marcellus
30	12/27/2017	7970	8138	48	Marcellus
31	12/28/2017	7771	7939	48	Marcellus
32	12/28/2017	7572	7740	48	Marcellus
33	12/29/2017	7372	7540	48	Marcellus
34	12/29/2017	7173	7341	48	Marcellus

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API 47-017-06775 Farm Name Yvonne Foster Well Number Manzarek 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	10/11/2017	60.9531	7595.165	5477	5320	414,780	8883.214	N/A
2	12/14/2017	64.7894	7157.635	5245	5061	414,425	8601.238	N/A
3	12/15/2017	63.9228	7463.501	5577	5884	413,505	10923.07	N/A
4	12/15/2017	68.5788	7293.81	5238	4916	413,520	8844	N/A
5	12/16/2017	72.9008	7130.918	5184	5695	414,550	8573	N/A
6	12/16/2017	72.4901	7313.206	5573	5521	415,650	8659.476	N/A
7	12/16/2017	73.3076	7318.227	5155	3529	414,260	8576	N/A
8	12/17/2017	73.1067	7217.075	5085	3911	414,190	8757	N/A
9	12/17/2017	76.7379	7278.656	5137	4454	415,520	8526.857	N/A
10	12/17/2017	73.3527	7323.671	5349	3830	414,690	8733.952	N/A
11	12/18/2017	73.673	7062.962	5142	4568	413,820	8894	N/A
12	12/18/2017	74.8419	7201.634	5212	5199	414,830	8491.143	N/A
13	12/18/2017	71	7320	5506	3690	414,950	8493.667	N/A
14	12/19/2017	74.8	7026	5203	4772	415,350	8678.667	N/A
15	12/19/2017	74.3724	7365.687	5798	3890	414,060	8537.143	N/A
16	12/19/2017	74.7345	7032.53	5466	4104	415,275	8774.952	N/A
17	12/20/2017	73.9673	7242.285	5491	4030	414,850	8438.81	N/A
18	12/20/2017	74.3738	7187.39	5687	3991	415,750	8616.81	N/A
19	12/21/2017	74.2184	7181.396	5351	3909	415,800	8601.357	N/A
20	12/21/2017	72.8432	6968.232	5937	4215	414,310	8409.143	N/A
21	12/21/2017	73.3898	6703.551	5350	3720	414,075	8777.476	N/A
22	12/22/2017	75.6729	6957.464	5244	5211	413,600	8687.81	N/A
23	12/22/2017	74.4274	6777.266	5405	4773	414,650	8331.69	N/A
24	12/22/2017	70.9055	6781.114	5297	4783	414,130	8358.143	N/A
25	12/22/2017	74.8849	7086.394	5525	3439	415,375	9601.19	N/A
26	12/23/2017	74.4765	6783.748	5258	5532	414,245	8395.476	N/A
27	12/23/2017	68.8404	6505.066	5306	4682	413,025	9123.524	N/A
28	12/24/2017	75.1217	7145.561	5656	5368	412,890	9567.905	N/A
29	12/26/2017	71.5023	6721.978	5560	4485	413,075	8487.762	N/A
30	12/27/2017	69.295	6403.394	5218	5076	413,550	9138.429	N/A
31	12/28/2017	71.1438	7296.461	5971	4130	413,400	8410	N/A
32	12/28/2017	73.915	6837.061	5497	3983	413,725	8388.286	N/A
33	12/29/2017	73.9161	7028.739	5501	3891	413,450	8389.238	N/A
34	12/29/2017	74.6733	6727.026	5895	3595	413,000	8473	N/A
	AVG=	72.4	7,072	5,426	4,501	14,085,925	297,143	TOTAL

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## 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	225'	N/A	225'	N/A
Siltstone/Sandstone	0	147	0	87
Silty shale	est. 147	205	est. 87	227
Sandstone/Siltstone/Shale	est. 205	327	est. 227	347
Silty shale	est. 327	447	est. 347	565
Siltstone	est. 447	547	est. 565	607
Silty shale	est. 547	607	est. 607	1,127
Shale	est. 607	687	est. 1127	1,387
Silty sandstone	est. 687	727	est. 1387	1,507
Silty shale	est. 727	767	est. 1507	1,727
Sandstone tr coal	est. 767	787	est. 1727	1,767
Sandy shale	est. 787	907	est. 1767	1,807
Silty shale	est. 907	1,147	est. 1807	1,847
Silty sandstone	est. 1147	2,147	est. 1847	2,148
Big Lime	2,147	2,826	2,148	2,827
Fifty Foot Sandstone	2,826	2,910	2,827	2,911
Gordon	2,910	3,197	2,911	3,200
Fifth Sandstone	3,197	3,224	3,200	3,227
Bayard	3,224	4,014	3,227	4,036
Speechley	4,014	4,256	4,036	4,285
Balltown	4,256	4,774	4,285	4,820
Bradford	4,774	5,191	4,820	5,248
Benson	5,191	5,458	5,248	5,521
Alexander	5,458	6,493	5,521	6,602
Sycamore	6,493	6,659	6,602	6,793
Middlesex	6,659	6,788	6,793	6,977
Burkett	6,788	6,815	6,977	7,023
Tully	6,815	6,864	7,023	7,128
Marcellus	6,864	NA	7,128	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.

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# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	12/13/2017
Job End Date:	12/29/2017
State:	West Virginia
County:	Doddridge
API Number:	47-017-06775-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Manzarek 1H
Latitude:	39.34878056
Longitude:	-80.76950833
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,932
Total Base Water Volume (gal):	12,748,868
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	88.07249	
Sand	U.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	11.66777	
HCL Acid (12.6%-17.5%)	U.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.40000	0.12365	
			Hydrogen Chloride	7647-01-0	17.50000	0.02875	
LGC-15	U.S. Well Services, LLC	Gelling Agents	Guar Gum	9000-30-0	50.00000	0.03221	
			Petroleum Distillates	64742-47-8	60.00000	0.03050	
			Suspending agent (solid)	14808-60-7	3.00000	0.00493	
			Surfactant	68439-51-0	3.00000	0.00193	
WFRA-405	U.S. Well Services, LLC	Friction Reducer	2-Propenoic acid, polymer with 2-propenamide	9003-06-9	30.00000	0.01588	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.01278	



Bioclear 2000	U.S. Well Services, LLC	Anti-Bacterial Agent					
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00429	
			Deionized Water	7732-18-5	28.00000	0.00245	
SI-1200s	U.S. Well Services, LLC	Scale Inhibitor					
			Proprietary Scale Inhibitor	Proprietary	10.00000	0.00129	
AP One	U.S. Well Services, LLC	Gel Breakers					
			Ammonium Persulfate	7727-54-0	100.00000	0.00098	
AI-303	U.S. Well Services, LLC	Acid Corrosion Inhibitors					
			Ethylene glycol	107-21-1	40.00000	0.00005	
			Formic acid	64-18-6	20.00000	0.00002	
			Cinnamaldehyde	104-55-2	20.00000	0.00002	
			Butyl cellosolve	111-76-2	20.00000	0.00002	
			Polyether	60828-78-6	10.00000	0.00001	
			Acetophenone,thiourea,formaldehyde polymer	68527-49-1	5.00000	0.00000	

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

\* Total Water Volume sources may include fresh water, produced water, and/or recycled water

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

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

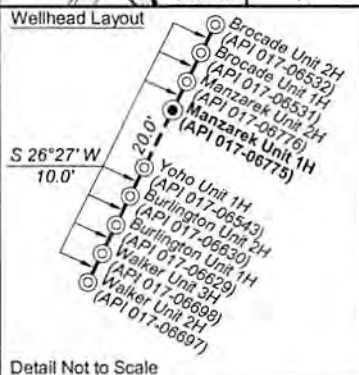
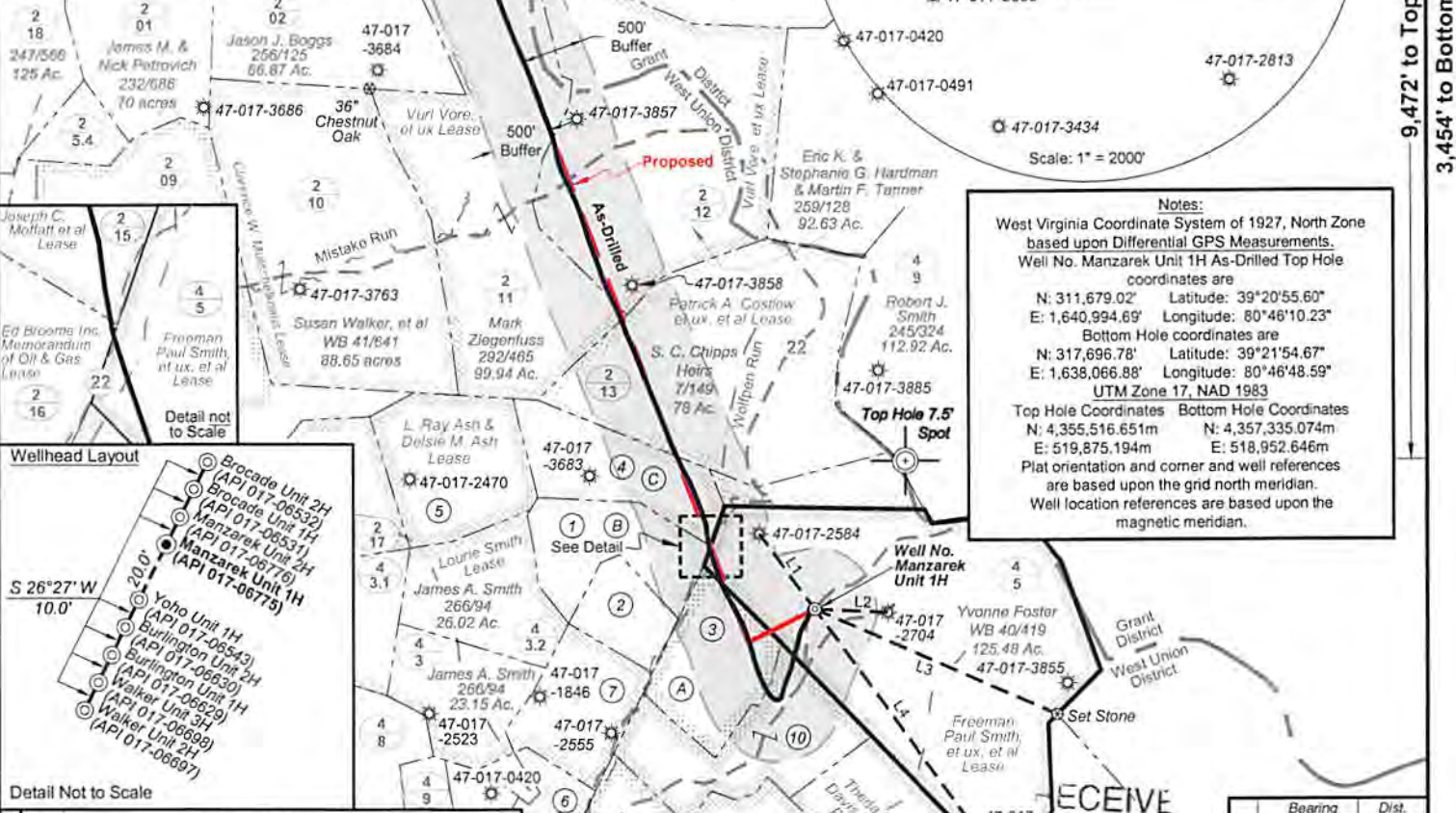
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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**Antero Resources**  
**Well No. Manzarek Unit 1H As-Drilled**  
**Antero Resources Corporation**

Top Hole Coordinates and 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.



**Notes:**  
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.  
 Well No. Manzarek Unit 1H As-Drilled Top Hole coordinates are  
 N: 311,679.02' Latitude: 39°20'55.60"  
 E: 1,640,994.89' Longitude: 80°46'10.23"  
 Bottom Hole coordinates are  
 N: 317,696.78' Latitude: 39°21'54.67"  
 E: 1,638,066.88' Longitude: 80°46'48.59"  
 UTM Zone 17, NAD 1983  
 Top Hole Coordinates Bottom Hole Coordinates  
 N: 4,355,516.651m N: 4,357,335.074m  
 E: 519,875.194m E: 518,952.646m  
 Plat orientation and corner and well references are based upon the grid north meridian.  
 Well location references are based upon the magnetic meridian.

ID	Mineral Owners	
A	Ed Broome Inc, Memorandum of Oil & Gas Lease	
B	Ed Broome Inc, Memorandum of Oil & Gas Lease	
C	Joseph C. Moffatt, et al Lease	

ID	TM/Par	Owner	Bk / Pg	Acres
1	2/16	David & Lucy Mae Sparling	219/213	20.95
2	4/4.2	David & Lucy Mae Sparling	219/213	10.69
3	4/4	David & Lucy Mae Sparling	219/213	20.75
4	2/15	Ronnie D. Smith, et al	253/696	23.07
5	2/14	Ronnie D. Smith & Thomas G. Smith	259/232	31.00
6	4/11	Gary Lynn McMillan	195/237	7.19
7	4/3.3	James A. Smith	266/94	20.00
8	4/19	Naomi Beagle, et al	AP 19/594	33.25
9	4/20	Stella E. Spencer, et al	103/53	31.50
10	4/4.1	David & Lucy Mae Sparling	219/213	31.50

**Legend**

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

Bearing	Dist.
L1 S 36°40' W	759.7'
L2 N 87°30' W	590.8'
L3 N 66°35' W	2,144.2'
L4 N 36°10' W	2,750.3'

(⊙) Denotes Location of Well on United States Topographic Maps



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: 264-30(54)-M(G)-14  
 DRAWING NO: Manzarek 1H As-Drilled Well Plat  
 SCALE: 1" = 1500'  
 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: May 24 20 18  
 OPERATOR'S WELL NO. Manzarek Unit 1H  
 API WELL NO  
 47 - 017 - 06775  
 STATE COUNTY PERMIT

WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
 (IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW  
 LOCATION: ELEVATION: 1229' As-Drilled WATERSHED: Headwaters Middle Island Creek QUADRANGLE: West Union  
 DISTRICT: West Union Theda Dolores Price Davis, Heir of Esta Faye Price, OGL; COUNTY: Doddridge 07/20/2018  
 SURFACE OWNER: Yvonne Foster Patrick A. Costlow, et ux, et al; D&D Spencer Enterprises Co; ACREAGE: 125.48 30; 63.087;  
 ROYALTY OWNER: Freeman Paul Smith, et ux, et al; Joseph C. Moffatt, et al; Vurl Vore, et ux; LEASE NO: 22173 ACREAGE: 20.75; 125; 283;  
 PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled 6,898' TVD  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 14,020' 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



**Antero Resources**  
**Well No. Manzarek Unit 1H As-Drilled**  
**Antero Resources Corporation**

Top Hole Coordinates and 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.

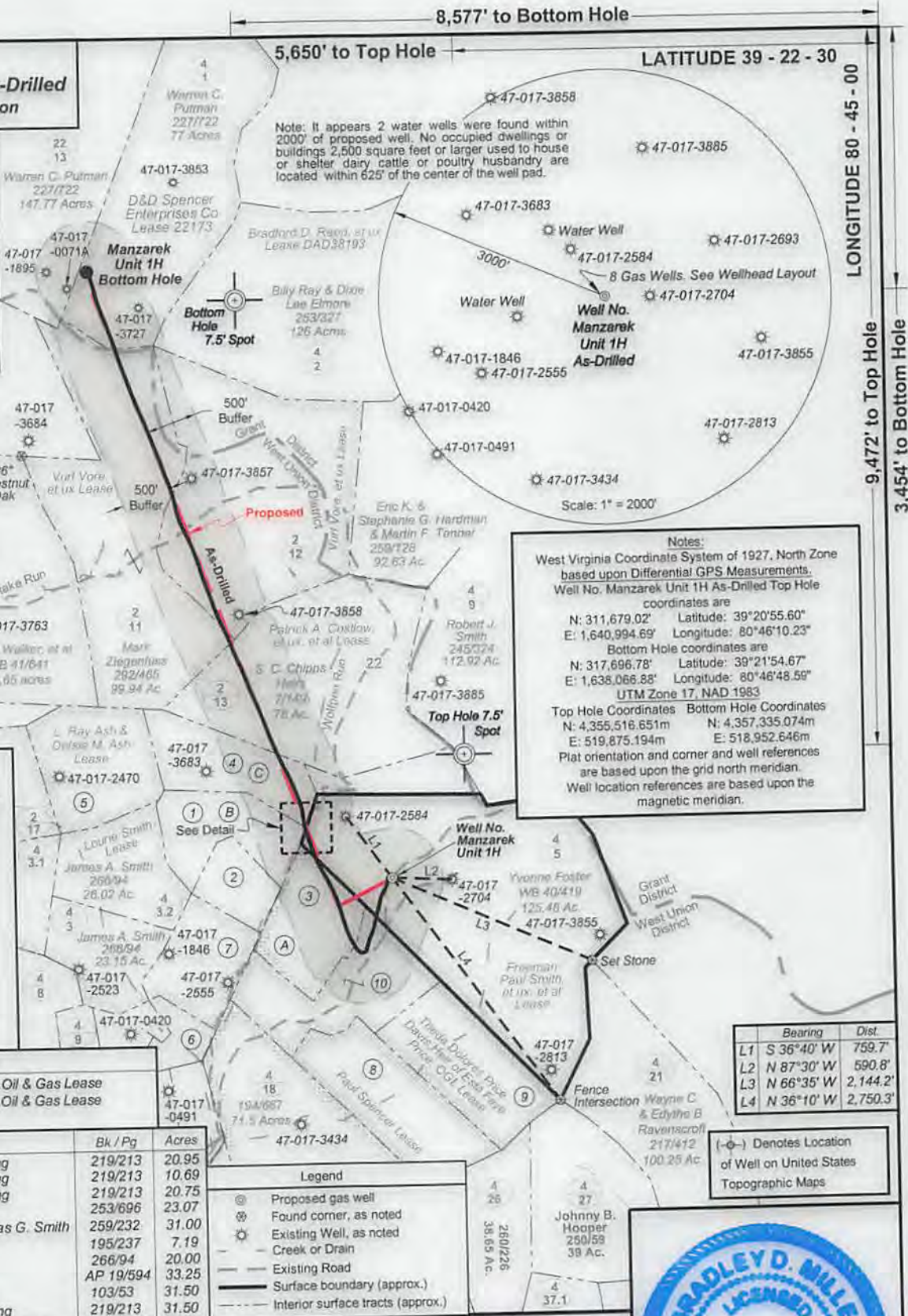
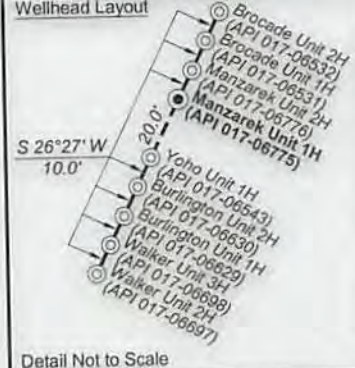
8,577' to Bottom Hole

5,650' to Top Hole

LATITUDE 39 - 22 - 30

LONGITUDE 80 - 45 - 00

9,472' to Top Hole  
 3,454' to Bottom Hole



**Notes:**  
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.  
 Well No. Manzarek Unit 1H As-Drilled Top Hole coordinates are  
 N: 311,679.02' Latitude: 39°20'55.60"  
 E: 1,640,994.69' Longitude: 80°46'10.23"  
 Bottom Hole coordinates are  
 N: 317,696.78' Latitude: 39°21'54.67"  
 E: 1,638,066.88' Longitude: 80°46'48.59"  
 UTM Zone 17, NAD 1983  
 Top Hole Coordinates Bottom Hole Coordinates  
 N: 4,355,516.651m N: 4,357,335.074m  
 E: 519,875.194m E: 518,952.646m  
 Plat orientation and corner and well references are based upon the grid north meridian.  
 Well location references are based upon the magnetic meridian.

Bearing	Dist.
L1 S 36°40' W	759.7'
L2 N 87°30' W	590.8'
L3 N 66°35' W	2,144.2'
L4 N 36°10' W	2,750.3'

ID	Mineral Owners
A	Ed Broome Inc, Memorandum of Oil & Gas Lease
B	Ed Broome Inc, Memorandum of Oil & Gas Lease
C	Joseph C. Moffatt, et al Lease

ID	TM/Par	Owner	Bk / Pg	Acres
1	2/16	David & Lucy Mae Sparling	219/213	20.95
2	4/4.2	David & Lucy Mae Sparling	219/213	10.69
3	4/4	David & Lucy Mae Sparling	219/213	20.75
4	2/15	Ronnie D. Smith, et al	253/696	23.07
5	2/14	Ronnie D. Smith & Thomas G. Smith	259/232	31.00
6	4/11	Gary Lynn McMillan	195/237	7.19
7	4/3.3	James A. Smith	266/94	20.00
8	4/19	Naomi Beagle, et al	AP 19/594	33.25
9	4/20	Stella E. Spencer, et al	103/53	31.50
10	4/4.1	David & Lucy Mae Sparling	219/213	31.50

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

(---) Denotes Location of Well on United States Topographic Maps



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: 264-30(54)-M(G)-14  
 DRAWING NO: Manzarek 1H As-Drilled Well Plat  
 SCALE: 1" = 1500'  
 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: May 24 20 18  
 OPERATOR'S WELL NO. Manzarek Unit 1H  
 API WELL NO  
 47 - 017 - 06775  
 STATE COUNTY PERMIT

WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
 (IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW  
 LOCATION: ELEVATION: 1229' As-Drilled WATERSHED: Headwaters Middle Island Creek QUADRANGLE: West Union  
 DISTRICT: West Union Theda Dolores Price Davis, Heir of Esta Faye Price, OGL; COUNTY: Doddridge 07/20/2018  
 SURFACE OWNER: Yvonne Foster Patrick A. Costlow, et ux, et al; D&D Spencer Enterprises Co; ACREAGE: 125.48 30, 63, 08, 78, 973, 73, 23;  
 ROYALTY OWNER: Freeman Paul Smith, et ux, et al; Joseph C. Moffatt, et al; Vurl Vore, et ux; LEASE NO: 22173 ACREAGE: 20.75; 125; 283;  
 PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled 6,898' TVD  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 14,020' MD

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