

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

API 47 - 017 - 06138 County Doddridge District Greenbrier
Quad Big Isaac Pad Name Reed Pad Field/Pool Name _____
Farm name Reed, Linn A. et al Well Number Furbey Unit 2H
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 4,339,100.259m Easting 540,370.440m
Landing Point of Curve Northing 4,338,928.26m Easting 540,489.06m
Bottom Hole Northing 4,337,103.248m Easting 541,077.875m

Elevation (ft) 1,360' 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 12/06/2012 Date drilling commenced 07/15/2013 Date drilling ceased 01/19/2014
Date completion activities began 03/22/2014 Date completion activities ceased 08/06/2014
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 67' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1287', 2229' Void(s) encountered (Y/N) depths None
Coal depth(s) ft 259', 1238' Cavern(s) encountered (Y/N) depths None
Is coal being mined in area (Y/N) No

RECEIVED
Office of Oil and Gas
MAY 26 2015
Reviewed by:
AL. 5/27/15
W.S. 6/05/15 06/05/2015

API 47-017 - 06138 Farm name Reed, Linn A. et al Well number Furbey Unit 2H

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	106.5#; J-55	N/A	Yes
Surface	17 1/2"	13 3/8"	641'	New	48#; H-40	N/A	Yes
Coal							
Intermediate 1	12 1/4"	9 5/8"	2,678'	New	36#; J-55	N/A	Yes
Intermediate 2							
Intermediate 3							
Production	8 3/4" & 8 1/2"	5 1/2"	14,165'	New	20#; P-110	N/A	Yes
Tubing		2 3/8"	7,449'		4.7#; N-80	N/A	
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	105 sx	15.6	1.18	38	0'	8 Hrs.
Surface	Class A	769 sx	15.6	1.80	445	0'	8 Hrs.
Coal							
Intermediate 1	Class H	586 sx	15.2	1.86	839	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	1,133 sx (Lead) 1,059 sx (Tail)	14.5 (Lead) 15.2 (Tail)	1.3 (Lead) 1.86 (Tail)	2,746	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 14,165' MD, 7,313' TVD (BHL); 7,372' TVD (Deepest Point Drilled) Loggers TD (ft) 14,165'
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6,878'

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 _____

RECEIVED
Office of Oil and Gas

MAY 26 2015

WV Department of
Environmental Protection

API 47- 017 - 06138 Farm name Reed, Linn A. et al Well number Furbey Unit 2H

PRODUCING FORMATION(S)	DEPTHS	
Marcellus	7,296' (Top) TVD	7,490' (Top) MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump
 SHUT-IN PRESSURE Surface 3,600 psi Bottom Hole _____ psi DURATION OF TEST _____ hrs
 OPEN FLOW Gas 8,580 mcfpd Oil _____ bpd NGL _____ bpd Water 183 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)
	0		0		

*** PLEASE SEE ATTACHED EXHIBIT 3**

RECEIVED
Office of Oil and Gas
MAY 26 2015
WV Department of
Environmental Protection

Please insert additional pages as applicable.

Drilling Contractor Frontier Drilling LLC
 Address 562 Spring Run Road City Pennsboro State WV Zip 26415
 Logging Company Rush Wellsite Services
 Address 600 Alpha Drive City Canonsburg State PA Zip 15317
 Cementing Company Nabors Completion & Production Services, Co.
 Address 1650 Hackers Creek City Jane Lew State WV Zip 26378
 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 Megan Darling Telephone 303-357-7230
 Signature Megan C. Darling Title Permitting Agent Date 05/22/2015

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

06/05/2015

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	22-Mar-14	13,881	14,073	60	Marcellus
2	30-Jun-14	13,677	13,849	60	Marcellus
3	1-Jul-14	13,474	13,645	60	Marcellus
4	1-Jul-14	13,270	13,442	60	Marcellus
5	1-Jul-14	13,067	13,238	60	Marcellus
6	2-Jul-14	12,863	13,035	60	Marcellus
7	2-Jul-14	12,659	12,831	60	Marcellus
8	3-Jul-14	12,456	12,627	60	Marcellus
9	3-Jul-14	12,252	12,424	60	Marcellus
10	3-Jul-14	12,049	12,220	60	Marcellus
11	3-Jul-14	11,845	12,017	60	Marcellus
12	4-Jul-14	11,642	11,813	60	Marcellus
13	4-Jul-14	11,438	11,610	60	Marcellus
14	4-Jul-14	11,234	11,406	60	Marcellus
15	4-Jul-14	11,031	11,202	60	Marcellus
16	5-Jul-14	10,827	10,999	60	Marcellus
17	5-Jul-14	10,624	10,795	60	Marcellus
18	5-Jul-14	10,420	10,592	60	Marcellus
19	6-Jul-14	10,216	10,388	60	Marcellus
20	6-Jul-14	10,013	10,185	60	Marcellus
21	6-Jul-14	9,728	9,875	60	Marcellus
22	6-Jul-14	9,554	9,701	60	Marcellus
23	7-Jul-14	9,379	9,527	60	Marcellus
24	7-Jul-14	9,205	9,352	60	Marcellus
25	7-Jul-14	9,031	9,178	60	Marcellus
26	8-Jul-14	8,857	9,004	60	Marcellus
27	8-Jul-14	8,682	8,830	60	Marcellus
28	8-Jul-14	8,508	8,655	60	Marcellus
29	8-Jul-14	8,334	8,481	60	Marcellus
30	9-Jul-14	8,160	8,307	60	Marcellus
31	9-Jul-14	7,985	8,133	60	Marcellus
32	9-Jul-14	7,811	7,958	60	Marcellus

RECEIVED
Office of Oil and Gas

MAY 28 2015

WV Department of Environmental Protection 06/05/2015

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	30-Jun-14	60.9	8,014	6,952	5,375	154,350	7,326	N/A
2	30-Jun-14	79.0	7,737	6,455	5,182	263,510	6,688	N/A
3	1-Jul-14	77.4	7,457	6,237	4,824	260,750	7,083	N/A
4	1-Jul-14	79.0	7,339	6,466	4,649	263,040	6,646	N/A
5	1-Jul-14	77.0	7,239	5,933	5,028	264,320	6,628	N/A
6	2-Jul-14	77.0	7,307	6,448	4,556	263,960	6,617	N/A
7	2-Jul-14	77.0	7,531	6,065	5,500	261,505	6,586	N/A
8	3-Jul-14	78.0	7,511	6,140	5,955	264,120	6,582	N/A
9	3-Jul-14	77.0	7,493	6,280	5,318	258,580	7,157	N/A
10	3-Jul-14	76.0	7,165	5,804	4,542	263,390	6,558	N/A
11	3-Jul-14	81.0	7,365	6,366	5,211	264,017	6,575	N/A
12	4-Jul-14	76.0	7,715	6,580	5,275	190,790	6,553	N/A
13	4-Jul-14	78.0	7,736	6,119	4,413	205,290	7,112	N/A
14	4-Jul-14	77.0	7,244	6,241	4,531	264,880	6,502	N/A
15	4-Jul-14	81.0	6,956	6,166	4,603	264,580	6,486	N/A
16	5-Jul-14	78.0	7,213	5,958	4,928	264,050	6,498	N/A
17	5-Jul-14	75.0	7,077	6,083	4,463	263,680	6,478	N/A
18	5-Jul-14	78.0	7,184	6,423	4,663	263,680	6,445	N/A
19	6-Jul-14	81.0	6,955	6,173	4,699	264,240	6,443	N/A
20	6-Jul-14	77.0	6,924	5,980	5,536	265,970	6,468	N/A
21	6-Jul-14	77.0	7,222	6,040	4,921	263,260	6,403	N/A
22	6-Jul-14	79.0	6,984	6,105	4,689	264,700	6,382	N/A
23	7-Jul-14	77.0	7,071	5,815	4,803	263,095	6,383	N/A
24	7-Jul-14	75.0	7,131	5,772	5,461	263,390	6,361	N/A
25	7-Jul-14	79.5	7,277	5,851	4,549	264,700	6,354	N/A
26	8-Jul-14	80.7	7,199	6,487	4,771	263,245	6,334	N/A
27	8-Jul-14	78.0	7,176	5,907	4,338	263,610	6,352	N/A
28	8-Jul-14	79.0	7,207	6,155	5,193	242,930	6,888	N/A
29	8-Jul-14	79.0	7,152	6,412	5,772	200,170	6,241	N/A
30	9-Jul-14	77.0	6,790	6,301	4,656	263,990	6,379	N/A
31	9-Jul-14	79.0	6,912	6,094	4,356	265,060	6,319	N/A
32	9-Jul-14	78.0	7,297	7,013	3,934	224,410	6,407	N/A
AVG =		77.5	7,268	6,213	4,897	8,071,262	210,234	TOTAL

RECEIVED
Office of Oil and Gas

MAY 26 2015

WV Department of
Environmental Protection
06/05/2015

EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD) From Surface	BOTTOM DEPTH (TVD) From Surface	TOP DEPTH (MD) From Surface	BOTTOM DEPTH (MD) From Surface
Fresh Water	67'	N/A	67'	N/A
Siltstone/Shale	0	272	0	259
Coal	Est. 272	293	Est. 259	280
Shale/Siltstone	Est. 293	353	Est. 280	340
Coal	Est. 353	374	Est. 340	361
Sand/Siltstone	Est. 374	850	Est. 361	837
Coal	Est. 850	880	Est. 837	867
Sand/Siltstone/Shale	Est. 880	1,180	Est. 867	1,167
Coal	Est. 1180	1,210	Est. 1167	1,197
Sand/Siltstone	Est. 1210	1,251	Est. 1197	1,238
Coal	Est. 1251	1,304	Est. 1238	1,291
Sand/Siltstone	Est. 1304	1,416	Est. 1291	1,403
Sandstone	Est. 1416	1,449	Est. 1403	1,436
Sand/Siltstone w/Trace Coals	Est. 1449	1,530	Est. 1436	1,517
Sand/Siltstone	Est. 1530	1,577	Est. 1517	1,564
Sandstone	Est. 1577	1,625	Est. 1564	1,612
Sand/Siltstone w/Trace Coals	Est. 1625	1,780	Est. 1612	1,767
Sand/Siltstone/Shale	Est. 1780	2,047	Est. 1767	2,050
Big Lime	2,047	2,161	2,050	2,164
Big Injun	2,161	2,350	2,164	2,353
Gantz Sand	2,350	2,467	2,353	2,470
Fifty Foot Sandstone	2,467	2,645	2,470	2,649
Gordon	2,645	2,974	2,649	2,978
Fifth Sandstone	2,974	3,018	2,978	3,022
Bayard	3,018	3,391	3,022	3,394
Warren	3,391	3,663	3,394	3,667
Speechley	3,663	3,905	3,667	3,909
Baltown	3,905	4,439	3,909	4,443
Bradford	4,439	4,985	4,443	4,989
Benson	4,985	5,191	4,989	5,195
Alexander	5,191	5,346	5,195	5,351
Elk	5,346	6,213	5,351	6,217
Rhinestreet	6,213	6,712	6,217	6,717
Sycamore	6,712	6,948	6,717	6,955
Middlesex	6,948	7,102	6,955	7,129
Burkett	7,102	7,129	7,129	7,164
Tully	7,129	7,296	7,164	7,490
Marcellus	7,296	NA	7,490	NA
Onondaga	7,348	NA	7,768	NA

*Please note Antero determines shallow formation tops based on mud and/or wireline 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.

**Antero drilled a small portion of this well less than 98 feet into the Onondaga formation from approximately 9895' to 9993' in the lateral but this section was not perforated or completed.

RECEIVED
Office of Oil and Gas

MAY 26 2015

WV Department of
Environmental Protection
06/05/2015

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	6/30/2014
Job End Date:	7/9/2014
State:	West Virginia
County:	Doddridge
API Number:	47-017-06138-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Furbey Unit 2H
Longitude:	-80.53246400
Latitude:	39.20022500
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	7,372
Total Base Water Volume (gal):	8,829,828
Total Base Non Water Volume:	402,225

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	Base Fluid					
			Water	7732-18-5	100.00000	89.84922	
Sand	J.S. Well Services, LLC	Proppant					
			Crystalline Silica, quartz	14808-60-7	100.00000	9.84776	
HCL Acid (12.6%-18.0%)	J.S. Well Services, LLC	Bulk Acid					
			Water	7732-18-5	87.50000	0.08784	
			Hydrogen Chloride	7641-01-1	18.00000	0.02098	
LGC-15	J.S. Well Services, LLC	Gelling Agents					
			Guar Gum	9000-30-0	50.00000	0.04141	
			Petroleum Distillates	64742-47-8	60.00000	0.03922	
			Suspending agent (solid)	14808-60-7	3.00000	0.00633	
			Surfactant	68439-51-0	3.00000	0.00248	
WFRA-405	J.S. Well Services, LLC	Friction Reducer					
			Anionic Polyacrylamide	Proprietary		0.02590	
			Water	7732-18-5	40.00000	0.02590	
			Petroleum Distillates	64742-47-8	22.00000	0.02085	
			Ethoxylated alcohol blend	Proprietary	5.00000	0.00324	

RECEIVED
Office of Oil and Gas

MAY 26 2015



WV Department of Environmental Protection

K-BAC 1020	J.S. Well Services, LLC	Anti-Bacterial Agent	Crystalline Salt	12125-02-9	5.00000	0.00324
			2,2-dibromo-3-nitropropionamide	10222-01-2	20.00000	0.00794
			Deionized Water	7732-18-5	28.00000	0.00453
SI-1000	J.S. Well Services, LLC	Scale Inhibitor				
			Anionic Copolymer	Proprietary		0.00419
			Ethylene Glycol	107-21-1	20.00000	0.00379
			Water	7732-18-5	30.00000	0.00316
AP One	J.S. Well Services, LLC	Gel Breakers				
			Ammonium Persulfate	7727-54-0	100.00000	0.00149
AI-300	J.S. Well Services, LLC	Acid Corrosion Inhibitors				
			Ethylene Glycol	107-21-1	31.00000	0.00023
			N,N-Dimethylformamide	68-12-2	15.00000	0.00007
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	13.00000	0.00006
			Cinnamaldehyde	104-55-2	5.00000	0.00006
			2-Butoxyethanol	111-76-2	7.00000	0.00006
			Ethoxylated Nonylphenol	68412-54-4	5.00000	0.00002
			Water	7732-18-5	20.00000	0.00002
			Isopropyl Alcohol	67-63-0	3.00000	0.00001
			Triethyl Phosphate	78-40-0	3.00000	0.00001

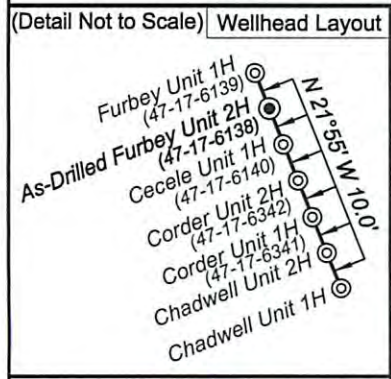
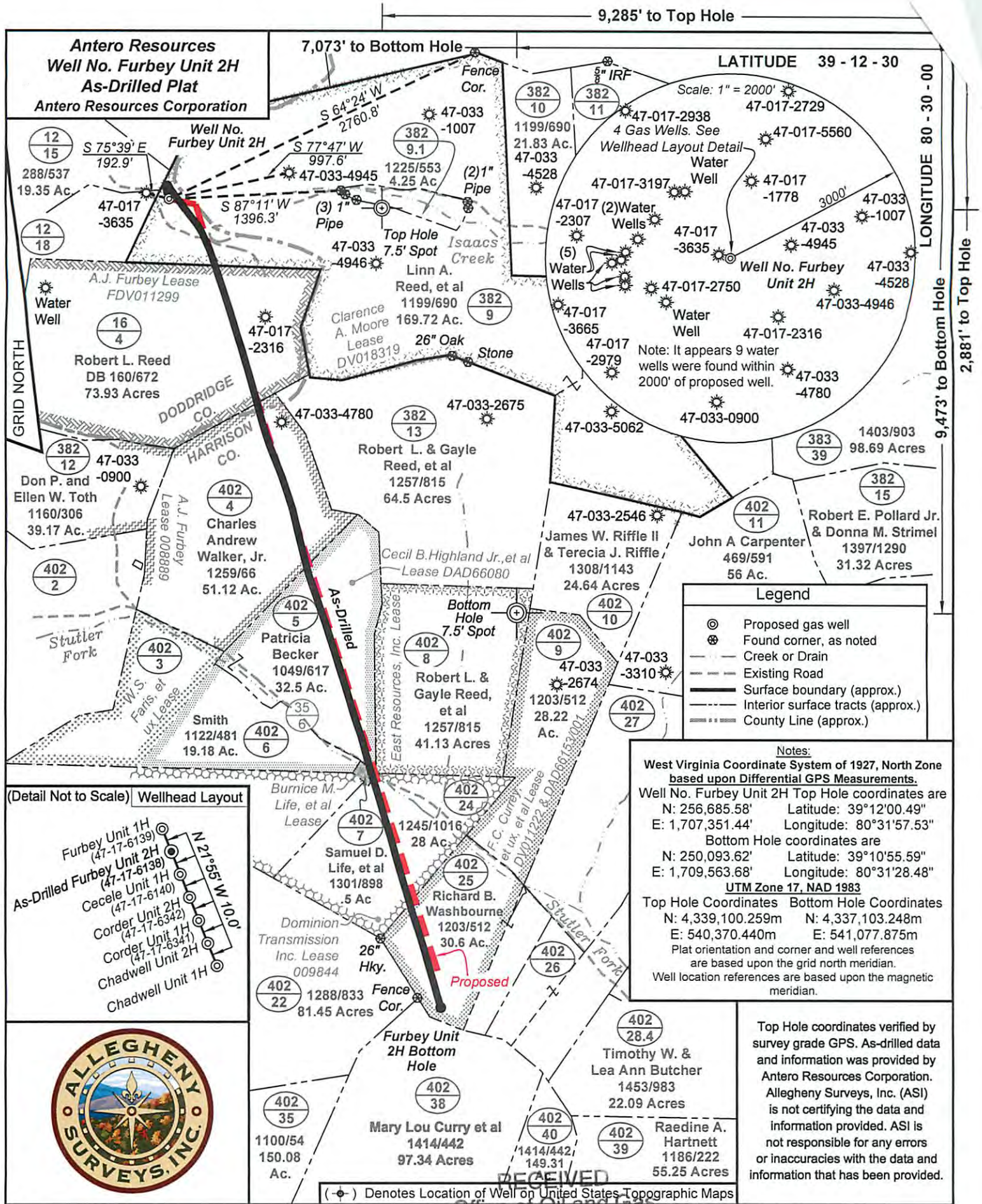
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

* 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)

RECEIVED
Office of Oil and Gas
MAY 26 2015
WV Department of
Environmental Protection



Notes:
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
 Well No. Furbey Unit 2H Top Hole coordinates are
 N: 256,685.58' Latitude: 39°12'00.49"
 E: 1,707,351.44' Longitude: 80°31'57.53"
 Bottom Hole coordinates are
 N: 250,093.62' Latitude: 39°10'55.59"
 E: 1,709,563.68' Longitude: 80°31'28.48"
UTM Zone 17, NAD 1983
 Top Hole Coordinates Bottom Hole Coordinates
 N: 4,339,100.259m N: 4,337,103.248m
 E: 540,370.440m E: 541,077.875m
 Plat orientation and corner and well references are based upon the grid north meridian.
 Well location references are based upon the magnetic meridian.

Top Hole coordinates verified by survey grade GPS. 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.

FILE NO: 187-36-U-12
 DRAWING NO: 187-12 Drilled Furbey 2H
 SCALE: 1" = 1000'
 MINIMUM DEGREE OF ACCURACY:
 Submeter
 PROVEN SOURCE OF ELEVATION:
 WVDOT, Bridgeport, WV

Office of Oil and Gas
STATE OF WEST VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS DIVISION
 Environmental Protection

DATE: March 31 2015
 OPERATOR'S WELL NO. Furbey Unit 2H
 API WELL NO
47 - 017 - 06138
 STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
 LOCATION: ELEVATION: Existing Grade - 1360' Original Grade - 1365' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: Big Isaac
 DISTRICT: Greenbrier COUNTY: Doddridge
 SURFACE OWNER: Linn A. Reed, et al Burnice M. Life, et al DV011222 & DAD66153/001; ACREAGE: 169.72 0.449;
 Dominion Transmission Inc.; F.C. Currey, et ux, et al 008889; DAD66080; 009844; 53; 36;
 ROYALTY OWNER: Clarence A. Moore; A.J. Furbey; A.J. Furbey; Cecil B. Highland Jr., et al LEASE NO: DV018319; FDV011299 ACREAGE: 184; 65; 100; 123; 60
 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 DEPTH: 7,313' TVD
14,165' 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

06/05/2015