WR-35
Rev (9-11)

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

DATE: 9/30/2013
API #: 47-033-05693

Farm name: Washbourne, Richard B. Operator Well No.: Mirth Unit 1H

LOCATION: Elevation: 1292' Quadrangle: Big Isaac

District: Union County: Harrison
Latitude: 4,934' Feet South of 39 Deg. 12 Min. 30 Sec.
Longitude 8,799' Feet West of 80 Deg. 30 Min. 00 Sec.

Company: Antero Resources Corporation

Address: 1625 17th Street	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
Denver, CO 80202	20" 94#	40'	40'	38 Cu. Ft. Class A
Agent: CT Corporation System	13 3/8" 48#	544'	544'	857 Cu. Ft. Class A
Inspector: Sam Ward	9 5/8" 36#	2,627'	2,627'	1070 Cu. Ft. Class A
Date Permit Issued: 12/13/2012	5 1/2" 20#	15,433'	15,433'	3797 Cu. Ft. Class H
Date Well Work Commenced: 3/16/2013				
Date Well Work Completed: 8/28/2013	2 3/8" 4.7#	7,447'		
Verbal Plugging: N/A				
Date Permission granted on: N/A				
Rotary ☑ Cable ☐ Rig ☐				
Total Vertical Depth (ft): 7243' TVD (Deepest Point Drilled)				
Total Measured Depth (ft): 15,433' MD, 7200' TVD (BHL)				
Fresh Water Depth (ft.): 145'				
Salt Water Depth (ft.): 809'				
Is coal being mined in area (N/Y)? No				
Coal Depths (ft.): None Available				
Void(s) encountered (N/Y) Depth(s) None				

OPEN FLOW DATA (If more than two producing formations please include additional data on separate sheet)
Producing formation Marcellus Pay zone depth (ft) 7,180' (TOP)
Gas: Initial open flow ---- MCF/d Oil: Initial open flow ---- Bbl/d
Final open flow 4451 MCF/d Final open flow ---- Bbl/d
Time of open flow between initial and final tests ---- Hours
Static rock Pressure 3600 psig (surface pressure) after ---- Hours

Second producing formation _____ Pay zone depth (ft) _____
Gas: Initial open flow _____ MCF/d Oil: Initial open flow _____ Bbl/d
Final open flow _____ MCF/d Final open flow _____ Bbl/d
Time of open flow between initial and final tests _____ Hours
Static rock Pressure _____ psig (surface pressure) after _____ Hours

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I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information I believe that the information is true, accurate, and complete.

Kaitlin Buck
Signature

12/23/2013
Date

04/04/2014

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Were core samples taken? Yes_____ No X Were cuttings caught during drilling? Yes_____ No X

Were Electrical, Mechanical or Geophysical logs recorded on this well? If yes, please list Yes- Radial Cement Bond, Dual Laterolog Gamma Ray, Dual Laterolog Gamma Ray, Photo Density/ Compensated Nuetron

NOTE: IN THE AREA BELOW PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF THE TOPS AND BOTTOMS OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE FROM SURFACE TO TOTAL DEPTH.

Perforated Intervals, Fracturing, or Stimulating:

Perofrations: 7,472' -15,377' (1,872 Holes)

Frac'd w/ 16,601 gals 15% HCL Acid, 229,716 bbls Slick Water carrying 1,098,635# 100 mesh, 4,878,420# 40/70 sand and 3,009,020# 20/40 sand.

Plug Back Details Including Plug Type and Depth(s): N/A

Formations Encountered:	Top Depth	/	Bottom Depth
Surface:			
Big Lime	1,909'		1,999'
Big Injun	2,000'		2,261'
Gantz Sand	2,262'		2,371'
Fifty Foot Sandstone	2,372'		2,467'
Gordon	2,468'		2,770'
Fifth Sandstone	2,771'		2,815'
Bayard	2,816'		3,469'
Speechley	3,470'		3,716'
Baltown	3,717'		4,234'
Bradford	4,235'		4,782'
Benson	4,783'		4,990'
Alexander	4,991'		5,135'
Elk	5,136'		5,808'
Rhinestreet	5,809'		6,532'
Sycamore	6,533'		6,814'
Middlesex	6,815'		6,975'
Burkett	6,976'		7,002'
Tully	7,003'		7,111'
Hamilton	7,112'		7,179'
Marcellus	7,180'		7,243' TD

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	8/20/2013
Job End Date:	8/28/2013
State:	West Virginia
County:	Harrison
API Number:	47-033-05693-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Mirth Unit 1H
Longitude:	-80.51705800
Latitude:	39.18402200
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	7,244
Total Base Water Volume (gal):	9,648,072
Total Base Non Water Volume:	460,215

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	89.32887	
Sand	U.S. Well Services, LLC	Proppant					
			Crystalline Silica, quartz	14808-60-7	100.00000	10.42296	
HCL Acid (12.6%-18.0%)	U.S. Well Services, LLC	Bulk Acid					
			Water	7732-18-5	87.50000	0.06717	
			Hydrogen Chloride	7641-01-1	18.00000	0.01605	
WFRA-405	U.S. Well Services, LLC	Friction Reducer					
			Water	7732-18-5	40.00000	0.02537	
			Anionic Polyacrylamide	Proprietary	40.00000	0.02537	
			Petroleum Distillates	64742-47-8	40.00000	0.02042	
			Ethoxylated alcohol blend	Proprietary	5.00000	0.00317	
			Crystalline Salt	12125-02-9	5.00000	0.00317	
LGC-15	U.S. Well Services, LLC	Gelling Agents					
			Guar Gum	9000-30-0	50.00000	0.03147	
			Petroleum Distillates	64742-47-8	60.00000	0.02980	
			Suspending agent (solid)	14808-60-7	3.00000	0.00481	

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			Surfactant	68439-51-0	3.00000	0.00189	
SI-1000	U.S. Well Services, LLC	Scale Inhibitor					
			Anionic Copolymer	Proprietary		0.00416	
			Ethylene Glycol	107-21-1	20.00000	0.00376	
			Water	7732-18-5	30.00000	0.00314	
K-BAC 1020	U.S. Well Services, LLC	Anti-Bacterial Agent					
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00446	
			Deionized Water	7732-18-5	28.00000	0.00255	
AP One	U.S. Well Services, LLC	Gel Breakers					
			Ammonium Persulfate	7727-54-0	100.00000	0.00100	
AI-300	U.S. Well Services, LLC	Acid Corrosion Inhibitor					
			Ethylene Glycol	107-21-1	40.00000	0.00017	
			N,N-Dimethylformamide	68-12-2	20.00000	0.00005	
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	15.00000	0.00005	
			Cinnamaldehyde	104-55-2	15.00000	0.00005	
			2-Butoxyethanol	111-76-2	15.00000	0.00004	
			Poly(oxy-1,2-ethanediyl), alpha-(4-nolylphenyl)-omega-hydroxy, branched	127087-87-0	5.00000	0.00002	
			1-Octanol	111-87-5	3.00000	0.00001	
			Isopropyl Alcohol	67-63-0	2.50000	0.00001	
			1-Decanol	112-30-1	5.00000	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)