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WR-35
Rev. 8/23/13

WV GEOLOGICAL SURVEY
MORGANTOWN, WV

Page ___ of ___

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

API 47-017-06419 County Doddridge District New Milton
Quad New Milton Pad Name Snake Run Pad Field/Pool Name _____
Farm name Dufflemeyer, Michael B., et al & Hyre, Justine Paula, et al Well Number Dufflemeyer 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 4,339,587.528m Easting 530,176.227m
Landing Point of Curve Northing 4,339,341.95m Easting 529,997.90m
Bottom Hole Northing 4,337,614.320m Easting 530,557.880m

Elevation (ft) 1,081' 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 12/30/2013 Date drilling commenced 07/04/2014 Date drilling ceased 10/01/2014
Date completion activities began 10/24/2014 Date completion activities ceased 12/27/2014
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 107', 132' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 968', 1864' Void(s) encountered (Y/N) depths None
Coal depth(s) ft None Identified Cavern(s) encountered (Y/N) depths None
Is coal being mined in area (Y/N) No

Reviewed by: _____

JUL 6 2015

WV GEOLOGICAL SURVEY
MORGANTOWN, WV

WR-35
Rev. 8/23/13

Page ___ of ___

API 47-017 - 06419 Farm name Dufflemeyer, Michael B., et al & Hyre, Justine Paula, et al Well number Dufflemeyer 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	94#; J-55	N/A	Yes
Surface	17 1/2"	13 3/8"	374'	New	48#; H-40	N/A	Yes
Coal							
Intermediate 1	12 1/4"	9 5/8"	2,502'	New	36#; J-55	N/A	Yes
Intermediate 2							
Intermediate 3							
Production	8 3/4" & 8 1/2"	5 1/2"	13,931'	New	20#; P-110	N/A	Yes
Tubing		2 3/8"	7,284'		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	196 sx	15.6	1.18	38	0'	8 Hrs.
Surface	Class A	200 sx	15.6	1.18	260	0'	8 Hrs.
Coal							
Intermediate 1	Class A	978 sx	15.6	1.18	784	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	1,015 sx (Lead); 1,095 sx (Tail)	13.5 (Lead); 15.2 (Tail)	1.0 (Lead); 2.0 (Tail)	2,734	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 13,931' MD, 7,089' TVD (BHL); 7,095' TVD (Deepest Point Drilled) Loggers TD (ft) 13,874'
Deepest formation penetrated Marcellus Plug back to (ft) N/A
Plug back procedure N/A

Kick off depth (ft) 6,702'

**This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Asena Unit 2H, API #47-017-06429). Please reference the wireline logs submitted with Form WR-35 for the Asena 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 _____

API 47-017-06419 Farm Name Dufflemeyer, Michael B., et al Well Number Dufflemeyer Unit 2H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	24-Oct-14	13,670	13,840	60	Marcellus
2	27-Nov-14	13,470	13,639	60	Marcellus
3	27-Nov-14	13,269	13,438	60	Marcellus
4	27-Nov-14	13,069	13,238	60	Marcellus
5	28-Nov-14	12,868	13,037	60	Marcellus
6	28-Nov-14	12,667	12,836	60	Marcellus
7	28-Nov-14	12,467	12,636	60	Marcellus
8	29-Nov-14	12,266	12,435	60	Marcellus
9	29-Nov-14	12,065	12,234	60	Marcellus
10	29-Nov-14	11,865	12,034	60	Marcellus
11	30-Nov-14	11,664	11,833	60	Marcellus
12	30-Nov-14	11,463	11,633	60	Marcellus
13	30-Nov-14	11,263	11,432	60	Marcellus
14	30-Nov-14	11,062	11,231	60	Marcellus
15	1-Dec-14	10,861	11,031	60	Marcellus
16	1-Dec-14	10,661	10,830	60	Marcellus
17	1-Dec-14	10,460	10,629	60	Marcellus
18	1-Dec-14	10,259	10,429	60	Marcellus
19	2-Dec-14	10,059	10,228	60	Marcellus
20	2-Dec-14	9,858	10,027	60	Marcellus
21	2-Dec-14	9,657	9,827	60	Marcellus
22	2-Dec-14	9,457	9,626	60	Marcellus
23	3-Dec-14	9,256	9,425	60	Marcellus
24	3-Dec-14	9,055	9,225	60	Marcellus
25	3-Dec-14	8,855	9,024	60	Marcellus
26	3-Dec-14	8,654	8,823	60	Marcellus
27	4-Dec-14	8,454	8,623	60	Marcellus
28	4-Dec-14	8,253	8,422	60	Marcellus
29	4-Dec-14	8,052	8,221	60	Marcellus
30	4-Dec-14	7,852	8,021	60	Marcellus
31	4-Dec-14	7,651	7,820	60	Marcellus
32	5-Dec-14	7,450	7,619	60	Marcellus

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 MORGANTOWN, WV

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	26-Nov-14	63.9	7,293	N/A	5,215	230,260	6,510	N/A
2	27-Nov-14	61.6	7,490	6,516	5,489	125,805	6,219	N/A
3	27-Nov-14	59.7	7,358	6,238	5,403	181,960	5,897	N/A
4	27-Nov-14	61.7	7,280	6,221	5,976	192,100	5,927	N/A
5	28-Nov-14	64.5	7,465	6,199	5,307	242,040	6,605	N/A
6	28-Nov-14	64.3	7,398	6,348	5,643	172,400	6,508	N/A
7	28-Nov-14	62.1	7,203	6,216	5,378	235,260	6,486	N/A
8	29-Nov-14	63.6	7,227	6,676	5,485	183,930	6,634	N/A
9	29-Nov-14	54.3	7,714	6,098	5,458	88,500	6,453	N/A
10	29-Nov-14	61.6	7,278	5,983	5,787	237,280	6,445	N/A
11	30-Nov-14	61.9	7,283	5,923	5,874	239,080	6,365	N/A
12	30-Nov-14	63.2	7,255	5,743	5,552	157,080	6,741	N/A
13	30-Nov-14	56.6	7,697	6,341	4,734	113,240	6,290	N/A
14	30-Nov-14	58.9	7,126	5,930	5,249	228,360	6,388	N/A
15	1-Dec-14	62.6	7,239	6,428	5,475	199,282	6,060	N/A
16	1-Dec-14	64.5	7,436	6,220	4,839	157,100	6,686	N/A
17	1-Dec-14	65.9	7,146	5,876	4,918	220,400	6,429	N/A
18	1-Dec-14	64.0	7,365	6,536	5,019	160,630	6,229	N/A
19	2-Dec-14	68.9	7,043	6,115	5,854	219,050	6,302	N/A
20	2-Dec-14	66.7	7,013	6,601	5,529	242,370	6,497	N/A
21	2-Dec-14	66.0	6,880	5,922	5,187	234,240	6,542	N/A
22	2-Dec-14	65.4	7,055	6,221	4,697	177,920	6,353	N/A
23	3-Dec-14	66.8	6,740	5,981	5,705	239,060	6,351	N/A
24	3-Dec-14	66.8	6,800	5,906	5,653	238,500	6,283	N/A
25	3-Dec-14	67.6	6,648	5,755	5,915	238,940	6,260	N/A
26	3-Dec-14	65.0	6,697	6,192	5,163	236,900	5,944	N/A
27	4-Dec-14	67.0	6,582	5,819	5,381	234,760	6,118	N/A
28	4-Dec-14	67.5	6,631	5,752	5,579	237,800	6,303	N/A
29	4-Dec-14	67.7	6,572	5,933	5,796	231,000	6,334	N/A
30	4-Dec-14	67.6	6,677	6,301	5,477	247,480	6,099	N/A
31	4-Dec-14	54.7	7,899	6,603	4,954	100,900	5,290	N/A
32	5-Dec-14	66.8	7,043	6,527	5,651	236,550	6,152	N/A
	AVG=	63.7	7,142	6,165	5,417	6,480,177	201,700	TOTAL

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 WV GEOLOGICAL SURVEY
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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	107'	N/A	107'	N/A
Fresh Water	132'	N/A	132'	N/A
Shale	0	367	0	367
Siltstone/ Sandstone	est. 367	467	est. 367	467
Shale	est. 467	607	est. 467	607
Siltstone/ Sandstone	est. 607	687	est. 607	687
Shale	est. 687	727	est. 687	727
Siltstone/ Shale	est. 727	1,387	est. 727	1,387
Sandstone/ Siltstone	est. 1387	1,427	est. 1387	1,427
Shale/ Limestone	est. 1427	1,467	est. 1427	1,467
Sanstone	est. 1467	1,527	est. 1467	1,527
Siltstone/ Sandstone	est. 1527	1,947	est. 1527	1,947
Shale	est. 1947	1,967	est. 1947	1,967
Siltstone	est. 1967	2,105	est. 1967	2,105
Big Lime	2,105	2,236	2,105	2,236
Big Injun	2,236	2,444	2,236	2,444
Gantz Sand	2,444	2,620	2,444	2,620
Fifty Foot Sandstone	2,620	2,819	2,620	2,819
Gordon	2,819	3,161	2,819	3,161
Fifth Sandstone	3,161	3,246	3,161	3,246
Bayard	3,246	3,502	3,246	3,502
Warren	3,502	3,776	3,502	3,776
Speechley	3,776	3,964	3,776	3,964
Baltown	3,964	4,602	3,964	4,602
Bradford	4,602	5,087	4,602	5,090
Benson	5,087	5,383	5,090	5,405
Alexander	5,383	5,599	5,405	5,637
Elk	5,599	6,106	5,637	6,196
Rhinestreet	6,106	6,587	6,196	6,719
Sycamore	6,587	6,745	6,719	6,895
Middlesex	6,745	6,890	6,895	7,085
Burkett	6,890	6,926	7,085	7,141
Tully	6,926	7,030	7,141	7,405
Marcellus	7,030	NA	7,405	NA

*Please note Antero determines shallow 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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 MORGANTOWN, WV

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	11/26/2014
Job End Date:	12/5/2014
State:	West Virginia
County:	Doddridge
API Number:	47-017-06419-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Dufflemeyer Unit 2H
Longitude:	-80.65050000
Latitude:	39.20503100
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	7,096
Total Base Water Volume (gal):	8,472,702
Total Base Non Water Volume:	339,962



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	91.20565	
Sand	U.S. Well Services, LLC	Proppant					
LGC-15	U.S. Well Services, LLC	Gelling Agents	Crystalline Silica, quartz	14808-60-7	100.00000	8.35535	
			Guar Gum	9000-30-0	50.00000	0.08875	
			Petroleum Distillates	64742-47-8	60.00000	0.08405	
			Suspending agent (solid)	14808-60-7	3.00000	0.01357	
			Surfactant	68439-51-0	3.00000	0.00533	
HCL Acid (12.6%-18.0%)	U.S. Well Services, LLC	Bulk Acid					
			Water	7732-18-5	87.50000	0.09174	
			Hydrogen Chloride	7647-01-1	18.00000	0.02191	
WFRA-405	U.S. Well Services, LLC	Friction Reducer					
			Water	7732-18-5	40.00000	0.03158	
			Anionic Polyacrylamide	Proprietary	40.00000	0.03158	
			Petroleum Distillates	64742-47-8	40.00000	0.02542	
			Ethoxylated alcohol blend	Proprietary	5.00000	0.00395	

SI-1100	U.S. Well Services	Scale Inhibitor	Crystalline Salt	12125-02-9	5.00000	0.00395
		Di Water		7732-18-5	80.00000	0.01123
		Ethylene Glycol		107-21-1	40.00000	0.00634
		Potassium salt of diethylene triamine penta (methylene phosphonic acid)		15827-60-8	10.00000	0.00190
		2-Phosphonobutane 1,2,4 tricarboxylic salt		37971-36-1	10.00000	0.00181
		hexamethylenediamine tetra (methylene phosphonic acid)		38820-59-6	10.00000	0.00175
		Copolymer of Maleic and Acrylic acid		26677-99-6	10.00000	0.00166
		bis (hexamethylene) trimine penta (methylene phosphonic acid) - phosphate acid		40623-75-4	10.00000	0.00161
X-BAC 1020	U.S. Well Services, LLC	Anti-Bacterial Agent	Acrylic polymer	52255-49-9	5.00000	0.00070
			2,2-dibromo-3-nitropropionamide	10222-01-2	20.00000	0.00499
			Deionized Water	7732-18-5	28.00000	0.00285
AP One	U.S. Well Services, LLC	Gel Breakers				
			Ammonium Persulfate	7727-54-0	100.00000	0.00195
AI-301	U.S. Well Services, LLC	Acid Corrosion Inhibitors				
			Diethylene Glycol	111-46-6	30.00000	0.00014
			Methanamine	100-97-0	20.00000	0.00011
			Hydrogen Chloride	7647-01-0	10.00000	0.00005
			Polyethylene polyamine	38603-67-8	10.00000	0.00004
			Coco amine	81791-14-8	5.00000	0.00002

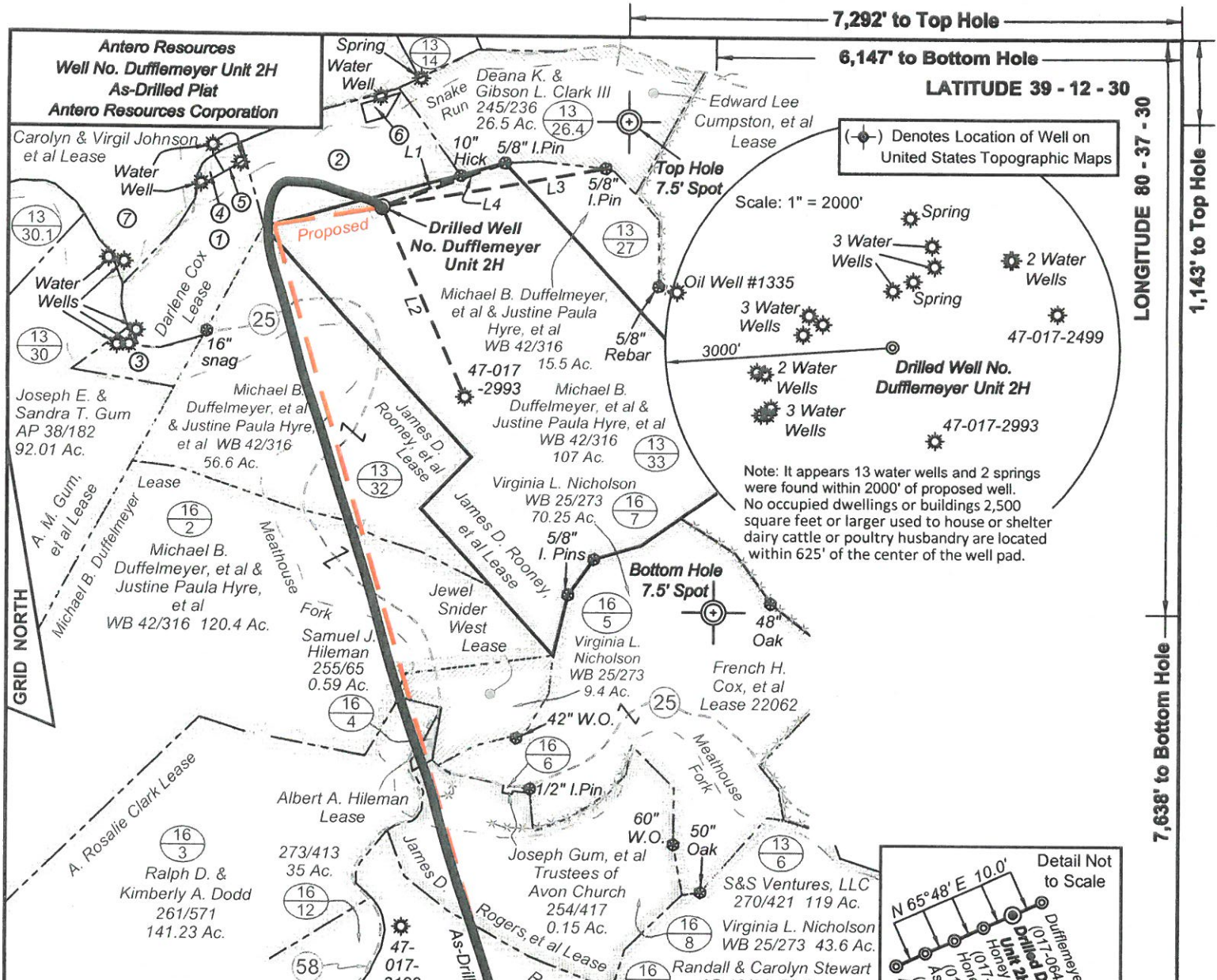
Ingredients shown above are subject to 29 CFR 1910.1200(j) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

* 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(j) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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Par.	Tax Map 13 Owner	Bk/Pg	Acres
1	26 Pamela & Darrel Swisher	246/469	15.42
2	26.3 Deana & Gibson L. Clark III	245/236	18.98
3	31 Joseph E. & Sandra Gum	AP38/182	4.25
4	25 Pamela & Darrel Swisher	246/469	0.50
5	26.2 Pamela E. Moore	209/293	0.75
6	26.1 Deana & Gibson L. Clark III	204/87	1.50
7	24 Jim Charles & Thelma Pasco	WB43/508	47.9

Notes:
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
 Well No. Dufflemeyer Unit 2H Top Hole coordinates
 N: 258,842.64' Latitude: 39°12'17.79"
 E: 1,673,925.79' Longitude: 80°39'02.44"
 Bottom Hole coordinates
 N: 252,346.54' Latitude: 39°11'13.73"
 E: 1,675,070.21' Longitude: 80°38'46.85"
 UTM Zone 17, NAD 1983
 Top Hole Coordinates Bottom Hole Coordinates
 N: 4,339,587.528m N: 4,337,614.320m
 E: 530,176.227m E: 530,557.880m
 Plat orientation and corner and well references are based upon the grid north meridian.
 Well location references are based upon the magnetic meridian.

Line	Bearing	Dist.
L1	S 67°26' W	560.2'
L2	N 23°44' W	1368.0'
L3	S 79°40' W	1497.6'
L4	S 69°37' W	862.7'



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: 67-30-NM-13
 DRAWING NO: Dufflemeyer 2H Well Plat As-Drill
 SCALE: 1" = 1000'
 MINIMUM DEGREE OF ACCURACY: Submeter
 PROVEN SOURCE OF ELEVATION: WVDOT, Bridgeport, WV

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

DATE: March 30 2015
 OPERATOR'S WELL NO. Dufflemeyer Unit 2H
 API WELL NO
 47 - 017 - 06419
 STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
 LOCATION: ELEVATION: Original Grade - 1112' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: New Milton
 DISTRICT: New Milton COUNTY: Doddridge 141.46
 SURFACE OWNER: Michael B. Dufflemeyer, et al; James D. Rogers, et al; Albert A. Hileman ACREAGE: 107 195; 107.25
 ROYALTY OWNER: Joyce A. Shaw Nazelrod, et al; James D. Rooney, et al (2); A. Roslie Clark LEASE NO: ACREAGE: 56.6; 0.555; 10; 120.4
 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: 7,089' TVD 13,931' MD

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System
 ADDRESS: 1815 Wynkoop Street ADDRESS: 5400 D Big Tyler Road
 Denver, CO 80202 Charleston, WV 25313