

APPROVED

pm

WR-35
Rev. 8/23/13

Page ___ of ___

NAME: *hileman*
DATE: *5/25/16*

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

API 47-017-06659 County Doddridge District Central
Quad Oxford 7.5' Pad Name Fritz Pad Field/Pool Name ----
Farm name Horton, Judy A. Well Number Hileman Unit 1H
Operator (as registered with the OOG) Antero Resources Corporation
Address 1615 Wynkoop St. 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 4342773m Easting 513810m
Landing Point of Curve Northing 4342517.41m Easting 513842.10
Bottom Hole Northing 4340110m Easting 515018m

Elevation (ft) 1053' 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 1/26/2015 Date drilling commenced 2/12/2015 Date drilling ceased 4/12/2015
Date completion activities began 11/7/2015 Date completion activities ceased 2/20/2016
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by Office of Oil and Gas

APR 22 2016

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 97' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1143', 1529' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 1429' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by:

AX 07/22/2016

WV Department of
Environmental Protection

API 47-017 - 06659 Farm name Horton, Judy A. Well number Hileman 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	30"	20"	40'	New	94# H-40	N/A	Y
Surface	17- 1/2"	13- 3/8"	358'	New	48# H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2525'	New	36# J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4" & 8-1/2"	5-1/2"	15966'	New	23# P-110	N/A	Y
Tubing		2-3/8"	6698'		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	100 sx	15.6	1.18	38	0'	8 Hrs.
Surface	Class A	428 sx	15.6	1.18	249	0'	8 Hrs.
Coal							
Intermediate 1	Class A	932 sx	15.6	1.18	791	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	993 sx (Lead) 1447 sx (Tail)	14.5 Lead 15.2 Tail	1.30 Lead 1.85 Tail	3194	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 15966' MD, 6447' TVD (BHL), 6599' (Deepest Point Drilled) Loggers TD (ft) 15966'
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 5744'

** This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Washington Unit 2H API #47-017-06371). Please reference the wireline logs submitted with Form WR-35 for Washington 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 Office of Oil and Gas

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 _____ WV Department of Environmental Protection

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

API 47- 017 - 06659 Farm name Horton, Judy A. Well number Hileman Unit 1H

PERFORATION RECORD

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

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

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 Proppant (lbs)	Amount of Water (bbbls)	Amount of Nitrogen/other (units)
*PLEASE SEE ATTACHED EXHIBIT 2								

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Please insert additional pages as applicable.

API 47- 017 - 06659 Farm name Horton, Judy A. Well number Hileman Unit 1H

PRODUCING FORMATION(S)	DEPTHS	
<u>Marcellus</u>	<u>6545'(TOP)</u> TVD	<u>6771'(TOP)</u> MD
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump
 SHUT-IN PRESSURE Surface 3000 psi Bottom Hole --- psi DURATION OF TEST --- hrs
 OPEN FLOW Gas 9758 mcfpd Oil 195 bpd NGL --- bpd Water 564 bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	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	
	<u>0</u>		<u>0</u>		

***PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

Drilling Contractor Frontier Drilling LLC
 Address 562 Spring Run Rd. City Pennsboro State WV Zip 26415

Logging Company Rush Wellsite Services
 Address 600 Alpha Drive City Canonsburg State PA Zip 15317

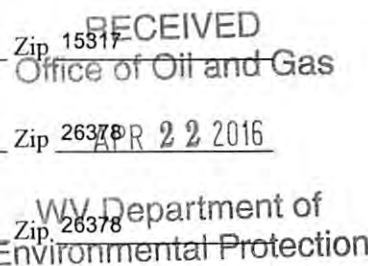
Cementing Company Nabors Completion & Production Services, Co.
 Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

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

Please insert additional pages as applicable.

Completed by Kara Quackenbush Telephone 303-357-7233
 Signature *Kara Quackenbush* Title Permit Representative Date 4/18/2016

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



07/22/2016

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	7-Nov-15	15,746	15,874	60	Marcellus
2	22-Nov-15	15,595	15,723	60	Marcellus
3	22-Nov-15	15,443	15,571	60	Marcellus
4	22-Nov-15	15,292	15,420	60	Marcellus
5	22-Nov-15	15,141	15,269	60	Marcellus
6	23-Nov-15	14,989	15,117	60	Marcellus
7	23-Nov-15	14,838	14,966	60	Marcellus
8	23-Nov-15	14,687	14,815	60	Marcellus
9	23-Nov-15	14,535	14,663	60	Marcellus
10	24-Nov-15	14,384	14,512	60	Marcellus
11	24-Nov-15	14,232	14,361	60	Marcellus
12	24-Nov-15	14,081	14,209	60	Marcellus
13	24-Nov-15	13,930	14,058	60	Marcellus
14	25-Nov-15	13,778	13,907	60	Marcellus
15	25-Nov-15	13,627	13,755	60	Marcellus
16	27-Nov-15	13,476	13,604	60	Marcellus
17	27-Nov-15	13,324	13,453	60	Marcellus
18	27-Nov-15	13,173	13,301	60	Marcellus
19	28-Nov-15	13,022	13,150	60	Marcellus
20	28-Nov-15	12,870	12,998	60	Marcellus
21	28-Nov-15	12,719	12,847	60	Marcellus
22	28-Nov-15	12,568	12,696	60	Marcellus
23	28-Nov-15	12,416	12,544	60	Marcellus
24	12-Jan-16	12,265	12,393	60	Marcellus
25	12-Jan-16	12,114	12,242	60	Marcellus
26	13-Jan-16	11,962	12,090	60	Marcellus
27	13-Jan-16	11,811	11,939	60	Marcellus
28	13-Jan-16	11,660	11,788	60	Marcellus
29	14-Jan-16	11,508	11,636	60	Marcellus
30	14-Jan-16	11,357	11,485	60	Marcellus
31	14-Jan-16	11,205	11,334	60	Marcellus
32	14-Jan-16	11,054	11,182	60	Marcellus
33	14-Jan-16	10,903	11,031	60	Marcellus
34	15-Jan-16	10,751	10,880	60	Marcellus
35	15-Jan-16	10,600	10,728	60	Marcellus
36	15-Jan-16	10,449	10,577	60	Marcellus
37	15-Jan-16	10,297	10,425	60	Marcellus
38	16-Jan-16	10,146	10,274	60	Marcellus
39	16-Jan-16	9,995	10,123	60	Marcellus
40	16-Jan-16	9,843	9,971	60	Marcellus
41	16-Jan-16	9,692	9,820	60	Marcellus
42	16-Jan-16	9,541	9,669	60	Marcellus
43	17-Jan-16	9,389	9,517	60	Marcellus
44	17-Jan-16	9,238	9,366	60	Marcellus
45	17-Jan-16	9,087	9,215	60	Marcellus
46	17-Jan-16	8,935	9,063	60	Marcellus
47	17-Jan-16	8,784	8,912	60	Marcellus
48	18-Jan-16	8,633	8,761	60	Marcellus
49	18-Jan-16	8,481	8,609	60	Marcellus
50	18-Jan-16	8,330	8,458	60	Marcellus
51	18-Jan-16	8,178	8,307	60	Marcellus
52	19-Jan-16	8,027	8,155	60	Marcellus
53	19-Jan-16	7,876	8,004	60	Marcellus
54	19-Jan-16	7,724	7,853	60	Marcellus
55	19-Jan-16	7,573	7,701	60	Marcellus
56	20-Jan-16	7,422	7,550	60	Marcellus
57	20-Jan-16	7,270	7,398	60	Marcellus
58	20-Jan-16	7,119	7,247	60	Marcellus
59	24-Jan-16	6,968	7,096	60	Marcellus
60	25-Jan-16	6,816	6,944	60	Marcellus

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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	21-Nov-15	67	7,147	0	3,852	192,160	6,369	N/A
2	22-Nov-15	65.6	7,125	5,984	4,324	234,725	6,161	N/A
3	22-Nov-15	64	7,145	6,110	4,450	234,300	6,365	N/A
4	22-Nov-15	64	7,283	6,917	3,367	232,380	6,165	N/A
5	22-Nov-15	65	7,289	7,057	3,819	202,460	6,553	N/A
6	23-Nov-15	65	7,374	6,632	4,734	170,160	5,951	N/A
7	23-Nov-15	65	7,293	5,902	3,584	234,600	6,138	N/A
8	23-Nov-15	66	7,273	6,743	3,150	236,740	6,114	N/A
9	23-Nov-15	67	7,559	6,399	5,091	165,670	6,281	N/A
10	24-Nov-15	73	7,421	6,442	4,472	210,520	6,565	N/A
11	24-Nov-15	63	7,110	5,803	4,775	188,100	6,470	N/A
12	24-Nov-15	72	7,618	5,772	4,127	118,700	6,407	N/A
13	24-Nov-15	74	7,295	6,087	3,482	235,840	6,284	N/A
14	25-Nov-15	72	7,632	6,604	2,968	235,970	6,225	N/A
15	25-Nov-15	73	7,544	6,033	4,176	212,350	5,802	N/A
16	27-Nov-15	71	7,315	5,707	3,340	234,350	5,996	N/A
17	27-Nov-15	71	7,278	6,012	2,807	237,140	6,084	N/A
18	27-Nov-15	73	7,404	5,902	3,909	186,960	6,503	N/A
19	28-Nov-15	69	7,232	6,101	2,815	234,660	6,022	N/A
20	28-Nov-15	69	7,012	6,638	2,965	234,600	5,924	N/A
21	28-Nov-15	69	7,036	6,258	2,972	233,900	5,901	N/A
22	28-Nov-15	70	6,807	6,838	3,098	235,150	5,936	N/A
23	28-Nov-15	68	7,243	7,052	6,970	233,890	6,149	N/A
24	12-Jan-16	72	7,109	6,007	4,283	221,310	5,873	N/A
25	12-Jan-16	72	7,342	6,781	3,669	202,230	6,711	N/A
26	13-Jan-16	62	7,769	6,474	4,041	201,630	6,590	N/A
27	13-Jan-16	43	8,682	6,572	4,309	3,800	5,869	N/A
28	13-Jan-16	72	7,426	6,447	4,775	184,840	6,317	N/A
29	14-Jan-16	70	7,341	6,299	4,677	197,036	6,484	N/A
30	14-Jan-16	65	7,359	6,718	4,514	210,728	6,665	N/A
31	14-Jan-16	72	7,433	6,129	5,381	200,018	5,913	N/A
32	14-Jan-16	70	6,925	5,769	4,565	230,970	5,840	N/A
33	14-Jan-16	70	7,029	6,478	4,320	230,610	5,811	N/A
34	15-Jan-16	72	6,721	5,834	5,198	229,690	5,793	N/A
35	15-Jan-16	72	6,672	6,099	5,038	229,780	5,783	N/A
36	15-Jan-16	72	6,637	5,909	4,789	229,410	5,768	N/A
37	15-Jan-16	71	6,826	6,645	4,784	230,920	5,762	N/A
38	16-Jan-16	71	6,769	6,387	4,396	230,640	5,745	N/A
39	16-Jan-16	72	6,659	5,911	5,130	232,270	5,744	N/A
40	16-Jan-16	72	6,592	5,468	4,901	232,030	5,737	N/A
41	16-Jan-16	72	6,676	6,367	4,533	232,120	5,728	N/A
42	16-Jan-16	73	6,506	5,317	4,967	231,540	5,707	N/A
43	17-Jan-16	71	6,570	6,122	4,262	231,430	5,707	N/A
44	17-Jan-16	72	6,483	5,370	5,393	227,760	5,697	N/A
45	17-Jan-16	72	6,609	5,928	4,801	231,860	5,687	N/A
46	17-Jan-16	72	6,314	5,378	4,737	230,820	5,673	N/A
47	17-Jan-16	71	6,642	6,040	4,086	231,600	5,687	N/A
48	18-Jan-16	73	6,563	5,391	4,518	231,690	5,648	N/A
49	18-Jan-16	71	6,740	6,017	5,403	233,759	6,159	N/A
50	18-Jan-16	71	6,600	6,586	5,105	233,080	5,672	N/A
51	18-Jan-16	71	6,590	5,799	5,010	233,500	5,617	N/A
52	19-Jan-16	71	6,813	5,731	4,861	233,400	5,630	N/A
53	19-Jan-16	72.0	6,670	5,654	4,948	232,150	5,623	N/A
54	19-Jan-16	72.0	6,563	6,005	5,449	232,950	5,598	N/A
55	19-Jan-16	73.0	6,480	5,887	5,068	233,350	5,583	N/A
56	20-Jan-16	71.0	6,617	5,646	4,600	232,950	5,591	N/A
57	20-Jan-16	72.0	6,618	5,800	5,828	233,461	5,568	N/A
58	20-Jan-16	72.0	6,356	5,432	5,118	232,780	5,558	N/A
59	24-Jan-16	57.0	7,162	7,032	5,156	117,350	6,185	N/A
60	25-Jan-16	70.0	6,262	5,742	3,877	235,630	5,616	N/A
AVG=		69.4	7,009	6,036	4,429	12,966,417	5,978	TOTAL

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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	97'	N/A	97'	N/A
Siltstone/Sandstone	0	109	0	109
Shale/ Siltstone	est. 109	169	est. 109	169
Siltstone/ Trace Coal	est. 169	329	est. 169	329
Siltstone/ Shale	est. 329	429	est. 329	429
Shale	est. 429	509	est. 429	509
Sandstone	est. 509	549	est. 509	549
Shale/ Siltstone	est. 549	629	est. 549	629
Limestone/ Shale	est. 629	689	est. 629	689
Shale/ Siltstone	est. 689	829	est. 689	829
Shale/ Limestone	est. 829	909	est. 829	909
Sandstone	est. 909	969	est. 909	969
Shale	est. 969	1089	est. 969	1089
Siltstone/ Trace Coal	est. 1089	1429	est. 1089	1429
Coal	est. 1429	1549	est. 1429	1549
Siltstone/ Trace Coal	est. 1549	1689	est. 1549	1689
Shale/ Siltstone	est. 1689	1909	est. 1689	1909
Sandstone	est. 1909	1970	est. 1909	1972
Big Lime	1970	2627	1972	2629
Fifty Foot Sandstone	2627	2698	2629	2700
Gordon	2698	2852	2700	2854
Fifth Sandstone	2852	3002	2854	3004
Bayard	3002	3874	3004	3876
Speechley	3874	4111	3876	4113
Baltown	4111	4538	4113	4540
Bradford	4538	4974	4540	4976
Benson	4974	5225	4976	5227
Alexander	5225	6189	5227	6212
Sycamore	6189	6361	6212	6412
Middlesex	6361	6490	6412	6622
Burkett	6490	6517	6622	6681
Tully	6517	6545	6681	6771
Marcellus	6545	NA	6771	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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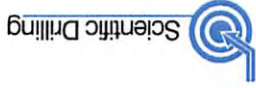
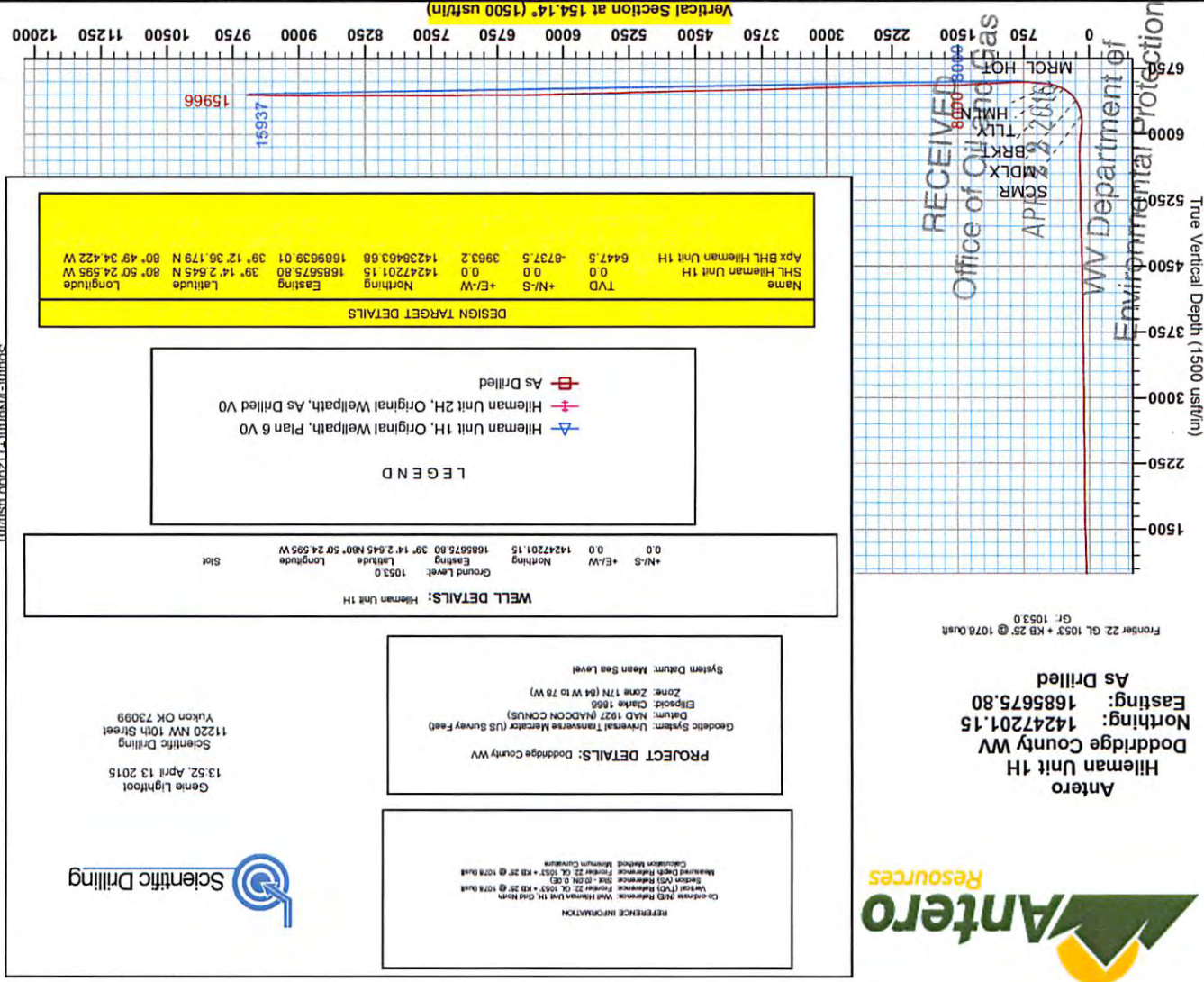


Hileman Unit 1H
Doddridge County WV
As Drilled
Northing: 14247201.15
Easting: 1685675.80

Frontier 22, GL 1053 + KB 25 @ 1078 Oust
 GL: 1053.0

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 SCMR
 MDLX
 BRKT
 HMLN
 TLLY
 MRCL HOT

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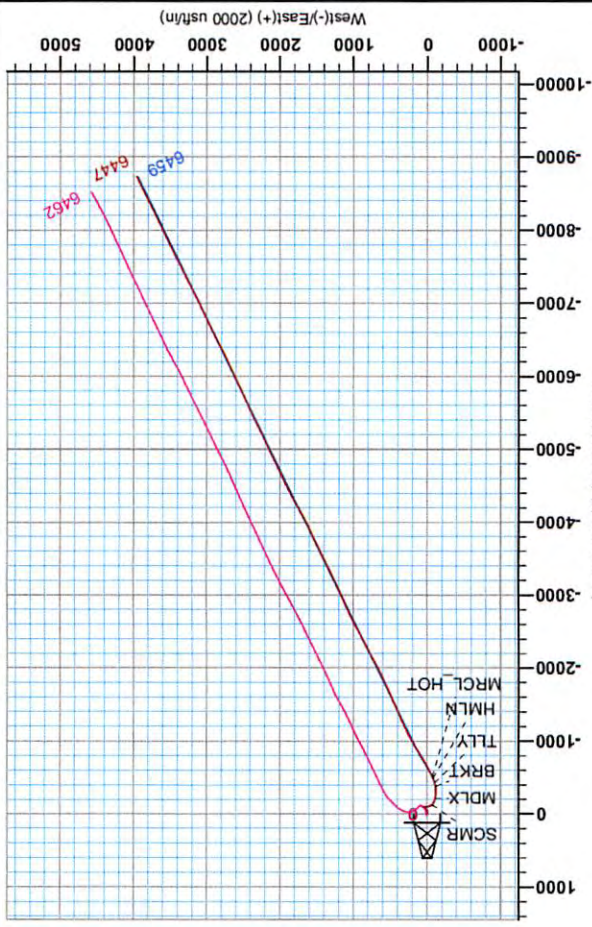
Gene Lightfoot
 13.52, April 13 2015

Scientific Drilling
 11220 NW 10th Street
 Yukon OK 73099



To convert True North to Grid, Subtract 0.10°

Admitts to Grid North
 True North: -0.10°
 Magnetic North: -8.54°
 Strength: 52140 3anT
 Dip Angle: 66.77°
 Date: 3/22/2015
 Model: BGGM2014





Antero

Doddridge County WV
Fritz Pad: Hayden/Washington/Sheep/Hileman
Hileman Unit 1H
Original Wellpath

Design: As Drilled

EOW Completion Report

13 April, 2015



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Company:	Antero	Local Co-ordinate Reference:	Well Hileman Unit 1H
Project:	Doddridge County WV	TVD Reference:	Frontier 22: GL 1053' + KB 25' @ 1078.0usft
Site:	Fritz Pad: Hayden/Washington/Sheep/Hileman	MD Reference:	Frontier 22: GL 1053' + KB 25' @ 1078.0usft
Well:	Hileman Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Project	Doddridge County WV, McClellan District		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site	Fritz Pad: Hayden/Washington/Sheep/Hileman				
Site Position:	Northing:	14,247,222.50 usft	Latitude:	39° 14' 2.856 N	
From: Map	Easting:	1,685,696.44 usft	Longitude:	80° 50' 24.332 W	
Position Uncertainty:	2.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.10 °

Well	Hileman Unit 1H, Marcellus				
Well Position	+N/-S	0.0 usft	Northing:	14,247,201.15 usft	
	+E/-W	0.0 usft	Easting:	1,685,675.80 usft	
Position Uncertainty	2.0 usft	Wellhead Elevation:	1,078.0 usft	Ground Level:	1,053.0 usft

Wellbore	Original Wellpath				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	3/23/2015	-8.44	66.77	52,140

Design	As Drilled				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	154.14	

Survey Program	Date 4/13/2015				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
112.0	5,612.0	Survey #6 Gyro to KOP (Original Wellpath)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4	
5,710.0	15,966.0	Survey #7 MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1	

Survey									
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)		
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
112.0	0.23	166.80	112.0	-0.2	0.1	0.2	0.21	0.21	
137.0	0.30	169.05	137.0	-0.3	0.1	0.3	0.28	0.28	
162.0	0.25	182.84	162.0	-0.5	0.1	0.4	0.33	0.33	
187.0	0.27	181.67	187.0	-0.6	0.1	0.5	0.08	0.08	
212.0	0.27	180.41	212.0	-0.7	0.1	0.6	0.02	0.02	
237.0	0.28	154.53	237.0	-0.8	0.1	0.8	0.49	0.49	
262.0	0.25	156.42	262.0	-0.9	0.2	0.9	0.12	0.12	
287.0	0.42	154.02	287.0	-1.0	0.2	1.0	0.68	0.68	
312.0	0.36	155.18	312.0	-1.2	0.3	1.2	0.24	0.24	
337.0	0.26	157.87	337.0	-1.3	0.3	1.3	0.40	0.40	



EOW Completion Report



Company:	Antero	Local Co-ordinate Reference:	Well Hileman Unit 1H
Project:	Doddridge County WV	TVD Reference:	Frontier 22: GL 1053' + KB 25' @ 1078.0usft
Site:	Fritz Pad: Hayden/Washington/Sheep/Hileman	MD Reference:	Frontier 22: GL 1053' + KB 25' @ 1078.0usft
Well:	Hileman Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	
362.0	0.35	152.28	362.0	-1.4	0.4	1.5	0.38	
387.0	0.38	149.27	387.0	-1.6	0.5	1.6	0.14	
412.0	0.40	146.41	412.0	-1.7	0.6	1.8	0.11	
437.0	0.36	153.14	437.0	-1.9	0.7	2.0	0.24	
462.0	0.42	152.71	462.0	-2.0	0.7	2.1	0.24	
487.0	0.63	161.36	487.0	-2.2	0.8	2.4	0.90	
512.0	1.17	180.00	512.0	-2.6	0.9	2.7	2.43	
537.0	2.15	184.54	537.0	-3.3	0.8	3.4	3.95	
562.0	2.82	188.83	562.0	-4.4	0.7	4.3	2.78	
587.0	3.65	192.10	586.9	-5.8	0.4	5.4	3.40	
612.0	4.01	194.50	611.9	-7.4	0.0	6.7	1.58	
637.0	4.59	194.70	636.8	-9.2	-0.4	8.1	2.32	
662.0	4.76	194.00	661.7	-11.2	-0.9	9.7	0.72	
687.0	4.96	192.75	686.6	-13.3	-1.4	11.3	0.91	
712.0	4.99	192.59	711.5	-15.4	-1.9	13.0	0.13	
737.0	5.07	192.51	736.4	-17.5	-2.4	14.7	0.32	
762.0	5.12	192.40	761.3	-19.7	-2.9	16.5	0.20	
787.0	5.12	192.79	786.2	-21.9	-3.3	18.2	0.14	
812.0	5.06	191.06	811.1	-24.0	-3.8	20.0	0.66	
837.0	4.90	188.80	836.0	-26.2	-4.2	21.7	1.01	
862.0	4.54	187.70	860.9	-28.2	-4.5	23.4	1.48	
887.0	4.22	186.82	885.9	-30.1	-4.7	25.0	1.31	
912.0	3.94	187.41	910.8	-31.9	-4.9	26.5	1.13	
937.0	3.74	185.43	935.8	-33.5	-5.1	27.9	0.96	
962.0	3.38	185.12	960.7	-35.1	-5.3	29.3	1.44	
987.0	3.18	185.22	985.7	-36.5	-5.4	30.5	0.80	
1,012.0	3.04	184.53	1,010.6	-37.8	-5.5	31.7	0.58	
1,037.0	2.79	183.73	1,035.6	-39.1	-5.6	32.8	1.01	
1,062.0	2.53	181.65	1,060.6	-40.3	-5.7	33.8	1.11	
1,087.0	2.36	180.54	1,085.5	-41.3	-5.7	34.7	0.71	
1,112.0	2.11	182.83	1,110.5	-42.3	-5.7	35.6	1.06	
1,137.0	2.01	179.07	1,135.5	-43.2	-5.7	36.4	0.67	
1,162.0	1.82	176.47	1,160.5	-44.0	-5.7	37.2	0.84	
1,187.0	1.62	176.63	1,185.5	-44.8	-5.6	37.9	0.80	
1,212.0	1.51	174.95	1,210.5	-45.5	-5.6	38.5	0.48	
1,237.0	1.37	176.16	1,235.5	-46.1	-5.5	39.1	0.57	
1,262.0	1.28	172.47	1,260.5	-46.7	-5.5	39.6	0.50	
1,287.0	1.23	171.88	1,285.5	-47.2	-5.4	40.1	0.21	
1,312.0	1.25	168.05	1,310.5	-47.8	-5.3	40.7	0.34	
1,337.0	1.17	164.92	1,335.4	-48.3	-5.2	41.2	0.41	
1,362.0	1.04	165.88	1,360.4	-48.7	-5.1	41.6	0.53	
1,387.0	1.02	164.37	1,385.4	-49.2	-5.0	42.1	0.13	
1,412.0	0.99	159.09	1,410.4	-49.6	-4.8	42.5	0.39	
1,437.0	0.88	155.55	1,435.4	-50.0	-4.7	42.9	0.50	

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Company:	Antero	Local Co-ordinate Reference:	Well Hileman Unit 1H
Project:	Doddridge County WV	TVD Reference:	Frontier 22: GL 1053' + KB 25' @ 1078.0usft
Site:	Fritz Pad: Hayden/Washington/Sheep/Hileman	MD Reference:	Frontier 22: GL 1053' + KB 25' @ 1078.0usft
Well:	Hileman Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	
1,462.0	0.86	152.48	1,460.4	-50.3	-4.5	43.3	0.20	
1,487.0	0.95	152.15	1,485.4	-50.7	-4.3	43.7	0.36	
1,512.0	0.92	151.19	1,510.4	-51.0	-4.1	44.1	0.14	
1,537.0	0.89	148.54	1,535.4	-51.4	-3.9	44.5	0.21	
1,562.0	0.93	150.14	1,560.4	-51.7	-3.7	44.9	0.19	
1,587.0	0.91	149.84	1,585.4	-52.0	-3.5	45.3	0.08	
1,612.0	0.86	149.51	1,610.4	-52.4	-3.3	45.7	0.20	
1,637.0	0.91	146.96	1,635.4	-52.7	-3.1	46.1	0.25	
1,662.0	0.97	143.70	1,660.4	-53.0	-2.9	46.5	0.32	
1,687.0	0.90	141.55	1,685.4	-53.4	-2.6	46.9	0.31	
1,712.0	0.86	143.54	1,710.4	-53.7	-2.4	47.2	0.20	
1,737.0	0.96	142.44	1,735.4	-54.0	-2.2	47.6	0.41	
1,762.0	0.94	141.21	1,760.4	-54.3	-1.9	48.0	0.11	
1,787.0	0.93	143.40	1,785.4	-54.6	-1.7	48.4	0.15	
1,812.0	1.03	141.22	1,810.4	-55.0	-1.4	48.9	0.43	
1,837.0	0.97	137.71	1,835.4	-55.3	-1.1	49.3	0.34	
1,862.0	0.84	137.45	1,860.4	-55.6	-0.9	49.7	0.52	
1,887.0	0.83	125.16	1,885.4	-55.8	-0.6	50.0	0.72	
1,912.0	0.78	123.18	1,910.4	-56.0	-0.3	50.3	0.23	
1,937.0	0.80	122.35	1,935.4	-56.2	0.0	50.6	0.09	
1,962.0	0.73	121.66	1,960.4	-56.4	0.3	50.9	0.28	
1,987.0	0.69	124.72	1,985.4	-56.6	0.5	51.1	0.22	
2,012.0	0.61	121.70	2,010.4	-56.7	0.8	51.4	0.35	
2,037.0	0.70	119.68	2,035.4	-56.9	1.0	51.6	0.37	
2,062.0	0.61	126.31	2,060.4	-57.0	1.3	51.9	0.47	
2,087.0	0.70	117.21	2,085.4	-57.2	1.5	52.1	0.55	
2,112.0	0.57	121.31	2,110.4	-57.3	1.8	52.3	0.55	
2,137.0	0.62	119.20	2,135.4	-57.4	2.0	52.5	0.22	
2,162.0	0.69	125.24	2,160.4	-57.6	2.2	52.8	0.39	
2,187.0	0.51	119.86	2,185.4	-57.7	2.4	53.0	0.75	
2,212.0	0.62	123.78	2,210.4	-57.9	2.6	53.2	0.47	
2,237.0	0.53	123.27	2,235.3	-58.0	2.9	53.4	0.36	
2,262.0	0.64	120.62	2,260.3	-58.1	3.1	53.7	0.45	
2,287.0	0.66	120.22	2,285.3	-58.3	3.3	53.9	0.08	
2,312.0	0.70	122.69	2,310.3	-58.4	3.6	54.1	0.20	
2,337.0	0.52	124.31	2,335.3	-58.6	3.8	54.4	0.72	
2,362.0	0.53	121.88	2,360.3	-58.7	4.0	54.6	0.10	
2,387.0	0.57	123.46	2,385.3	-58.8	4.2	54.8	0.17	
2,412.0	0.63	117.58	2,410.3	-59.0	4.4	55.0	0.34	
2,437.0	0.67	120.47	2,435.3	-59.1	4.7	55.2	0.21	
2,462.0	0.64	122.69	2,460.3	-59.3	4.9	55.5	0.16	
2,487.0	0.69	120.49	2,485.3	-59.4	5.1	55.7	0.22	
2,512.0	0.64	111.86	2,510.3	-59.5	5.4	55.9	0.45	
2,537.0	0.57	116.23	2,535.3	-59.6	5.6	56.1	0.34	
2,562.0	0.51	133.75	2,560.3	-59.8	5.8	56.3	0.70	

Company:	Antero	Local Co-ordinate Reference:	Well Hileman Unit 1H
Project:	Doddridge County WV	TVD Reference:	Frontier 22: GL 1053' + KB 25' @ 1078.0usft
Site:	Fritz Pad: Hayden/Washington/Sheep/Hileman	MD Reference:	Frontier 22: GL 1053' + KB 25' @ 1078.0usft
Well:	Hileman Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
2,587.0	0.58	125.30	2,585.3	-59.9	6.0	56.5	0.43
2,612.0	0.63	134.05	2,610.3	-60.1	6.2	56.8	0.42
2,637.0	0.69	130.76	2,635.3	-60.3	6.4	57.1	0.28
2,662.0	0.69	130.02	2,660.3	-60.5	6.7	57.3	0.04
2,687.0	0.73	129.96	2,685.3	-60.7	6.9	57.6	0.16
2,712.0	0.72	134.76	2,710.3	-60.9	7.1	57.9	0.25
2,737.0	0.74	129.56	2,735.3	-61.1	7.4	58.2	0.28
2,762.0	0.68	135.63	2,760.3	-61.3	7.6	58.5	0.38
2,787.0	0.67	128.71	2,785.3	-61.5	7.8	58.8	0.33
2,812.0	0.62	136.22	2,810.3	-61.7	8.0	59.0	0.39
2,837.0	0.62	128.22	2,835.3	-61.9	8.2	59.3	0.35
2,862.0	0.62	128.70	2,860.3	-62.0	8.4	59.5	0.02
2,887.0	0.62	129.42	2,885.3	-62.2	8.7	59.8	0.03
2,912.0	0.67	122.31	2,910.3	-62.4	8.9	60.0	0.38
2,937.0	0.65	126.63	2,935.3	-62.5	9.1	60.3	0.21
2,962.0	0.67	130.41	2,960.3	-62.7	9.3	60.5	0.19
2,987.0	0.71	136.40	2,985.3	-62.9	9.6	60.8	0.33
3,012.0	0.67	130.29	3,010.3	-63.1	9.8	61.1	0.33
3,037.0	0.66	126.04	3,035.3	-63.3	10.0	61.3	0.20
3,062.0	0.65	127.17	3,060.3	-63.5	10.2	61.6	0.07
3,087.0	0.70	127.22	3,085.3	-63.7	10.5	61.9	0.20
3,112.0	0.70	121.28	3,110.3	-63.8	10.7	62.1	0.29
3,137.0	0.73	122.95	3,135.3	-64.0	11.0	62.4	0.15
3,162.0	0.73	125.39	3,160.3	-64.2	11.2	62.7	0.12
3,187.0	0.76	121.14	3,185.3	-64.4	11.5	62.9	0.25
3,212.0	0.76	123.92	3,210.3	-64.5	11.8	63.2	0.15
3,237.0	0.78	121.88	3,235.3	-64.7	12.1	63.5	0.14
3,262.0	0.80	124.11	3,260.3	-64.9	12.4	63.8	0.15
3,287.0	0.81	127.55	3,285.3	-65.1	12.7	64.1	0.20
3,312.0	0.83	124.04	3,310.3	-65.3	12.9	64.4	0.22
3,337.0	0.91	129.78	3,335.3	-65.6	13.2	64.8	0.47
3,362.0	0.96	124.04	3,360.3	-65.8	13.6	65.1	0.42
3,387.0	0.97	125.09	3,385.3	-66.0	13.9	65.5	0.08
3,412.0	0.96	122.88	3,410.3	-66.3	14.3	65.9	0.15
3,437.0	0.93	125.65	3,435.3	-66.5	14.6	66.2	0.22
3,462.0	0.95	121.90	3,460.3	-66.7	15.0	66.6	0.26
3,487.0	0.92	123.89	3,485.3	-67.0	15.3	66.9	0.18
3,512.0	0.87	126.31	3,510.2	-67.2	15.6	67.3	0.25
3,537.0	0.89	121.72	3,535.2	-67.4	15.9	67.6	0.29
3,562.0	0.88	118.22	3,560.2	-67.6	16.3	67.9	0.22
3,587.0	0.91	120.02	3,585.2	-67.8	16.6	68.2	0.16
3,612.0	0.85	119.62	3,610.2	-68.0	16.9	68.5	0.24
3,637.0	0.82	116.11	3,635.2	-68.1	17.3	68.8	0.24
3,662.0	0.77	118.16	3,660.2	-68.3	17.6	69.1	0.23

Company:	Antero	Local Co-ordinate Reference:	Well Hileman Unit 1H
Project:	Doddridge County WV	TVD Reference:	Frontier 22: GL 1053' + KB 25' @ 1078.0usft
Site:	Fritz Pad: Hayden/Washington/Sheep/Hileman	MD Reference:	Frontier 22: GL 1053' + KB 25' @ 1078.0usft
Well:	Hileman Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	
3,687.0	0.80	115.36	3,685.2	-68.4	17.9	69.4	0.19	
3,712.0	0.74	116.71	3,710.2	-68.6	18.2	69.7	0.25	
3,737.0	0.73	130.55	3,735.2	-68.8	18.4	69.9	0.71	
3,762.0	0.81	132.31	3,760.2	-69.0	18.7	70.2	0.33	
3,787.0	0.86	130.53	3,785.2	-69.2	19.0	70.6	0.23	
3,812.0	0.97	123.72	3,810.2	-69.5	19.3	70.9	0.62	
3,837.0	0.94	122.50	3,835.2	-69.7	19.6	71.3	0.14	
3,862.0	0.91	120.16	3,860.2	-69.9	20.0	71.6	0.19	
3,887.0	0.91	117.51	3,885.2	-70.1	20.3	72.0	0.17	
3,912.0	0.78	118.50	3,910.2	-70.3	20.7	72.2	0.52	
3,937.0	0.62	117.69	3,935.2	-70.4	20.9	72.5	0.64	
3,962.0	0.55	114.42	3,960.2	-70.5	21.2	72.7	0.31	
3,987.0	0.53	131.11	3,985.2	-70.7	21.3	72.9	0.63	
4,012.0	0.57	128.70	4,010.2	-70.8	21.5	73.1	0.18	
4,037.0	0.55	113.61	4,035.2	-70.9	21.7	73.3	0.59	
4,062.0	0.73	103.92	4,060.2	-71.0	22.0	73.5	0.84	
4,087.0	0.67	124.63	4,085.2	-71.1	22.3	73.7	1.03	
4,112.0	0.73	129.20	4,110.2	-71.3	22.5	74.0	0.33	
4,137.0	0.78	134.30	4,135.2	-71.5	22.8	74.3	0.33	
4,162.0	0.80	130.95	4,160.2	-71.8	23.0	74.6	0.20	
4,187.0	0.92	130.34	4,185.2	-72.0	23.3	75.0	0.48	
4,212.0	1.00	130.22	4,210.2	-72.3	23.6	75.4	0.32	
4,237.0	0.95	130.19	4,235.2	-72.6	24.0	75.8	0.20	
4,262.0	1.08	128.09	4,260.2	-72.9	24.3	76.2	0.54	
4,287.0	1.18	124.41	4,285.2	-73.1	24.7	76.6	0.49	
4,312.0	1.24	131.23	4,310.2	-73.5	25.1	77.1	0.62	
4,337.0	1.31	133.49	4,335.2	-73.8	25.5	77.6	0.34	
4,362.0	1.30	130.67	4,360.2	-74.2	25.9	78.1	0.26	
4,387.0	1.29	132.52	4,385.1	-74.6	26.4	78.6	0.17	
4,412.0	1.32	133.01	4,410.1	-75.0	26.8	79.2	0.13	
4,437.0	1.38	131.58	4,435.1	-75.4	27.2	79.7	0.28	
4,462.0	1.35	134.58	4,460.1	-75.8	27.7	80.3	0.31	
4,487.0	1.31	135.70	4,485.1	-76.2	28.1	80.8	0.19	
4,512.0	1.31	138.86	4,510.1	-76.6	28.5	81.4	0.29	
4,537.0	1.34	138.49	4,535.1	-77.1	28.8	81.9	0.12	
4,562.0	1.34	136.60	4,560.1	-77.5	29.2	82.5	0.18	
4,587.0	1.46	140.72	4,585.1	-77.9	29.6	83.1	0.63	
4,612.0	1.53	136.50	4,610.1	-78.4	30.1	83.7	0.52	
4,637.0	1.58	136.72	4,635.1	-78.9	30.5	84.3	0.20	
4,662.0	1.57	137.73	4,660.1	-79.4	31.0	85.0	0.12	
4,687.0	1.60	139.60	4,685.1	-79.9	31.5	85.7	0.24	
4,712.0	1.55	140.51	4,710.0	-80.5	31.9	86.3	0.22	
4,737.0	1.65	135.59	4,735.0	-81.0	32.4	87.0	0.68	
4,762.0	1.68	137.55	4,760.0	-81.5	32.9	87.7	0.26	

Company:	Antero	Local Co-ordinate Reference:	Well Hileman Unit 1H
Project:	Doddridge County WV	TVD Reference:	Frontier 22: GL 1053' + KB 25' @ 1078.0usft
Site:	Fritz Pad: Hayden/Washington/Sheep/Hileman	MD Reference:	Frontier 22: GL 1053' + KB 25' @ 1078.0usft
Well:	Hileman Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Survey									
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)		
4,787.0	1.68	139.47	4,785.0	-82.1	33.3	88.4	0.23		
4,812.0	1.69	140.94	4,810.0	-82.6	33.8	89.1	0.18		
4,837.0	1.61	143.29	4,835.0	-83.2	34.3	89.8	0.42		
4,862.0	1.57	138.53	4,860.0	-83.7	34.7	90.5	0.55		
4,887.0	1.49	139.94	4,885.0	-84.2	35.1	91.1	0.35		
4,912.0	1.49	141.95	4,910.0	-84.7	35.5	91.8	0.21		
4,937.0	1.44	140.98	4,935.0	-85.2	35.9	92.4	0.22		
4,962.0	1.44	138.59	4,959.9	-85.7	36.3	93.0	0.24		
4,987.0	1.36	136.72	4,984.9	-86.2	36.8	93.6	0.37		
5,012.0	1.33	136.93	5,009.9	-86.6	37.2	94.1	0.12		
5,037.0	1.41	128.83	5,034.9	-87.0	37.6	94.7	0.84		
5,062.0	1.37	123.36	5,059.9	-87.4	38.1	95.2	0.55		
5,087.0	1.37	123.49	5,084.9	-87.7	38.6	95.7	0.01		
5,112.0	1.39	118.98	5,109.9	-88.0	39.1	96.2	0.44		
5,137.0	1.36	119.78	5,134.9	-88.3	39.6	96.7	0.14		
5,162.0	1.34	120.38	5,159.9	-88.6	40.1	97.2	0.10		
5,187.0	1.42	120.46	5,184.9	-88.9	40.6	97.7	0.32		
5,212.0	1.44	119.35	5,209.9	-89.2	41.2	98.2	0.14		
5,237.0	1.31	124.07	5,234.9	-89.5	41.7	98.8	0.69		
5,262.0	1.22	120.65	5,259.9	-89.8	42.2	99.2	0.47		
5,287.0	1.22	121.06	5,284.9	-90.1	42.6	99.7	0.03		
5,312.0	1.15	118.73	5,309.9	-90.4	43.1	100.1	0.34		
5,337.0	1.12	115.81	5,334.8	-90.6	43.5	100.5	0.26		
5,362.0	1.19	119.76	5,359.8	-90.8	44.0	100.9	0.42		
5,387.0	1.28	112.68	5,384.8	-91.1	44.4	101.3	0.71		
5,412.0	1.31	109.17	5,409.8	-91.3	45.0	101.7	0.34		
5,437.0	1.33	110.21	5,434.8	-91.5	45.5	102.1	0.12		
5,462.0	1.32	111.72	5,459.8	-91.7	46.0	102.6	0.15		
5,487.0	1.36	107.99	5,484.8	-91.9	46.6	103.0	0.38		
5,512.0	1.39	112.18	5,509.8	-92.1	47.2	103.4	0.42		
5,537.0	1.44	115.68	5,534.8	-92.3	47.7	103.9	0.40		
5,562.0	1.46	116.70	5,559.8	-92.6	48.3	104.4	0.13		
5,587.0	1.36	117.16	5,584.8	-92.9	48.8	104.9	0.40		
5,612.0	1.37	116.58	5,609.8	-93.1	49.4	105.3	0.07		
5,710.0	1.45	121.31	5,707.7	-94.3	51.5	107.3	0.14		
5,774.0	1.17	155.07	5,771.7	-95.3	52.4	108.7	1.26		
5,806.0	2.44	252.11	5,803.7	-95.8	51.9	108.9	8.85		
5,838.0	5.89	260.50	5,835.6	-96.3	49.7	108.3	10.92		
5,870.0	8.57	262.23	5,867.4	-96.9	45.7	107.1	8.40		
5,903.0	11.68	264.57	5,899.9	-97.6	39.9	105.2	9.50		
5,935.0	14.62	263.85	5,931.0	-98.3	32.7	102.7	9.20		
5,967.0	15.83	263.48	5,961.9	-99.2	24.3	99.9	3.79		
5,999.0	17.37	266.15	5,992.6	-100.0	15.2	96.7	5.37		
6,031.0	20.05	271.26	6,022.9	-100.2	5.0	92.4	9.81		

Company:	Antero	Local Co-ordinate Reference:	Well Hileman Unit 1H
Project:	Doddridge County WV	TVD Reference:	Frontier 22: GL 1053' + KB 25' @ 1078.0usft
Site:	Fritz Pad: Hayden/Washington/Sheep/Hileman	MD Reference:	Frontier 22: GL 1053' + KB 25' @ 1078.0usft
Well:	Hileman Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
6,063.0	21.48	268.03	6,052.8	-100.3	-6.4	87.5	5.72
6,095.0	20.91	257.11	6,082.6	-101.8	-17.8	83.8	12.45
6,127.0	20.58	246.43	6,112.6	-105.3	-28.5	82.3	11.85
6,158.0	21.65	240.36	6,141.5	-110.3	-38.5	82.5	7.85
6,190.0	23.67	235.06	6,171.0	-116.9	-48.9	83.9	8.97
6,221.0	25.68	228.42	6,199.2	-124.9	-59.0	86.7	11.04
6,237.0	26.33	226.89	6,213.6	-129.7	-64.2	88.7	5.85
SCMR							
6,253.0	27.00	225.43	6,227.9	-134.6	-69.4	90.9	5.85
6,285.0	28.13	217.94	6,256.2	-145.7	-79.2	96.6	11.38
6,317.0	28.71	209.56	6,284.4	-158.3	-87.6	104.3	12.59
6,349.0	29.55	202.75	6,312.4	-172.3	-94.5	113.8	10.68
6,381.0	32.03	196.61	6,339.9	-187.7	-100.0	125.3	12.50
6,413.0	35.23	192.99	6,366.5	-204.9	-104.5	138.8	11.80
6,437.0	38.06	190.73	6,385.8	-218.9	-107.4	150.1	13.06
MDLX							
6,444.0	38.89	190.12	6,391.2	-223.2	-108.2	153.6	13.06
6,477.0	43.07	187.28	6,416.1	-244.5	-111.4	171.4	13.86
6,509.0	47.27	184.76	6,438.7	-267.1	-113.8	190.7	14.26
6,541.0	51.57	182.86	6,459.5	-291.3	-115.4	211.8	14.17
6,572.0	56.71	181.49	6,477.7	-316.4	-116.3	234.0	16.96
6,604.0	60.33	178.41	6,494.4	-343.7	-116.3	258.6	13.97
6,636.0	61.51	173.67	6,509.9	-371.6	-114.4	284.5	13.46
6,647.0	61.74	171.82	6,515.2	-381.2	-113.1	293.7	14.97
BRKT							
6,667.0	62.23	168.47	6,524.6	-398.6	-110.1	310.7	14.97
6,699.0	64.81	164.70	6,538.8	-426.4	-103.5	338.6	13.27
6,706.0	65.49	164.09	6,541.8	-432.6	-101.7	344.9	12.58
TLLY							
6,730.0	67.85	162.03	6,551.3	-453.6	-95.3	366.6	12.58
6,762.0	73.76	159.26	6,561.8	-482.1	-85.3	396.7	20.20
6,773.0	75.54	158.65	6,564.7	-492.0	-81.5	407.2	17.06
HMLN							
6,794.0	78.95	157.52	6,569.3	-511.0	-73.8	427.7	17.06
6,796.0	79.09	157.34	6,569.7	-512.8	-73.1	429.6	11.27
MRCL_HOT							
6,857.0	83.50	152.00	6,579.0	-567.3	-47.3	489.9	11.27
6,882.0	83.75	150.94	6,581.7	-589.1	-35.4	514.7	4.33
6,978.0	84.58	151.43	6,591.5	-672.8	10.6	610.1	1.00
7,074.0	87.59	149.45	6,598.0	-756.1	57.8	705.6	3.75
7,171.0	91.61	149.55	6,598.7	-839.7	107.1	802.3	4.15
7,266.0	91.41	148.20	6,596.2	-921.0	156.2	896.8	1.44
7,362.0	94.47	150.57	6,591.3	-1,003.5	205.0	992.4	4.03
7,459.0	94.03	154.27	6,584.1	-1,089.2	249.7	1,089.0	3.83
7,555.0	93.56	153.93	6,577.8	-1,175.3	291.6	1,184.8	0.60

Company:	Antero	Local Co-ordinate Reference:	Well Hileman Unit 1H
Project:	Doddridge County WV	TVD Reference:	Frontier 22: GL 1053' + KB 25' @ 1078.0usft
Site:	Fritz Pad: Hayden/Washington/Sheep/Hileman	MD Reference:	Frontier 22: GL 1053' + KB 25' @ 1078.0usft
Well:	Hileman Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
7,651.0	92.62	155.32	6,572.6	-1,262.0	332.7	1,280.7	1.75
7,747.0	92.18	156.44	6,568.6	-1,349.5	371.9	1,376.6	1.25
7,843.0	91.95	156.26	6,565.1	-1,437.4	410.3	1,472.4	0.30
7,940.0	90.64	155.17	6,562.9	-1,525.8	450.2	1,569.4	1.76
8,036.0	90.34	155.75	6,562.1	-1,613.1	490.1	1,665.3	0.68
8,132.0	89.83	155.36	6,561.9	-1,700.5	529.8	1,761.3	0.67
8,228.0	91.65	158.03	6,560.7	-1,788.6	567.8	1,857.2	3.37
8,324.0	91.91	154.84	6,557.7	-1,876.6	606.2	1,953.0	3.33
8,420.0	89.97	152.88	6,556.1	-1,962.7	648.4	2,049.0	2.87
8,516.0	90.00	152.22	6,556.2	-2,047.9	692.7	2,145.0	0.69
8,612.0	89.90	151.83	6,556.3	-2,132.7	737.7	2,240.9	0.42
8,708.0	92.15	153.94	6,554.5	-2,218.1	781.5	2,336.9	3.21
8,804.0	91.75	152.80	6,551.3	-2,303.9	824.5	2,432.8	1.26
8,899.0	91.55	152.65	6,548.5	-2,388.3	868.0	2,527.7	0.26
8,996.0	91.61	152.14	6,545.9	-2,474.2	912.9	2,624.7	0.53
9,092.0	91.38	150.84	6,543.4	-2,558.6	958.7	2,720.5	1.37
9,188.0	91.34	153.65	6,541.1	-2,643.5	1,003.4	2,816.4	2.93
9,283.0	91.11	154.61	6,539.0	-2,728.9	1,044.9	2,911.4	1.04
9,379.0	91.85	156.16	6,536.6	-2,816.2	1,084.8	3,007.3	1.79
9,475.0	92.05	156.72	6,533.3	-2,904.1	1,123.2	3,103.2	0.62
9,571.0	92.05	155.76	6,529.9	-2,991.9	1,161.8	3,199.1	1.00
9,666.0	92.05	156.28	6,526.5	-3,078.7	1,200.4	3,294.0	0.55
9,762.0	92.32	156.30	6,522.8	-3,166.5	1,239.0	3,389.8	0.28
9,857.0	92.69	154.28	6,518.7	-3,252.7	1,278.7	3,484.7	2.16
9,953.0	91.08	153.42	6,515.5	-3,338.8	1,320.9	3,580.7	1.90
10,048.0	91.41	153.30	6,513.4	-3,423.7	1,363.5	3,675.6	0.37
10,143.0	91.65	153.17	6,510.9	-3,508.5	1,406.3	3,770.6	0.29
10,239.0	91.34	153.05	6,508.4	-3,594.1	1,449.7	3,866.5	0.35
10,335.0	91.07	152.99	6,506.4	-3,679.7	1,493.2	3,962.5	0.29
10,431.0	91.54	155.37	6,504.2	-3,766.0	1,535.0	4,058.5	2.53
10,528.0	91.27	155.34	6,501.8	-3,854.2	1,575.5	4,155.4	0.28
10,623.0	90.91	155.45	6,500.0	-3,940.5	1,615.0	4,250.4	0.40
10,717.0	91.35	154.30	6,498.1	-4,025.6	1,654.9	4,344.3	1.31
10,812.0	89.40	149.58	6,497.5	-4,109.4	1,699.6	4,439.2	5.38
10,907.0	92.25	150.04	6,496.2	-4,191.5	1,747.4	4,534.0	3.04
11,003.0	92.08	151.55	6,492.5	-4,275.3	1,794.2	4,629.7	1.58
11,099.0	91.75	153.11	6,489.3	-4,360.2	1,838.7	4,725.6	1.66
11,196.0	91.57	154.42	6,486.5	-4,447.2	1,881.6	4,822.6	1.36
11,291.0	91.92	154.71	6,483.6	-4,533.0	1,922.4	4,917.5	0.48
11,387.0	91.18	154.55	6,481.0	-4,619.7	1,963.5	5,013.5	0.79
11,483.0	90.98	153.07	6,479.2	-4,705.8	2,005.8	5,109.5	1.56
11,579.0	91.68	154.83	6,477.0	-4,792.0	2,048.0	5,205.4	1.97
11,674.0	92.45	155.37	6,473.6	-4,878.1	2,088.0	5,300.4	0.99
11,770.0	92.42	155.01	6,469.5	-4,965.2	2,128.2	5,396.2	0.38



EOW Completion Report



Company:	Antero	Local Co-ordinate Reference:	Well Hileman Unit 1H
Project:	Doddridge County WV	TVD Reference:	Frontier 22: GL 1053' + KB 25' @ 1078.0usft
Site:	Fritz Pad: Hayden/Washington/Sheep/Hileman	MD Reference:	Frontier 22: GL 1053' + KB 25' @ 1078.0usft
Well:	Hileman Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Survey							
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
11,866.0	90.23	154.05	6,467.3	-5,051.8	2,169.5	5,492.2	2.49
11,963.0	90.20	154.31	6,466.9	-5,139.1	2,211.7	5,589.2	0.27
12,059.0	91.38	153.64	6,465.6	-5,225.4	2,253.8	5,685.2	1.41
12,155.0	91.54	153.55	6,463.1	-5,311.3	2,296.5	5,781.2	0.19
12,252.0	91.44	153.31	6,460.6	-5,398.1	2,339.9	5,878.1	0.27
12,348.0	92.72	154.98	6,457.1	-5,484.4	2,381.7	5,974.1	2.19
12,445.0	91.11	156.93	6,453.9	-5,572.9	2,421.2	6,070.9	2.61
12,540.0	90.64	156.10	6,452.4	-5,660.1	2,459.1	6,165.9	1.00
12,636.0	91.51	155.47	6,450.6	-5,747.6	2,498.4	6,261.8	1.12
12,732.0	91.21	155.66	6,448.3	-5,835.0	2,538.1	6,357.7	0.37
12,827.0	90.00	155.71	6,447.3	-5,921.5	2,577.3	6,452.7	1.27
12,922.0	89.70	155.42	6,447.6	-6,008.0	2,616.6	6,547.7	0.44
13,018.0	89.90	153.23	6,447.9	-6,094.5	2,658.2	6,643.7	2.29
13,115.0	89.70	153.10	6,448.3	-6,181.1	2,701.9	6,740.6	0.25
13,210.0	90.97	153.59	6,447.7	-6,266.0	2,744.6	6,835.6	1.43
13,305.0	90.37	154.21	6,446.6	-6,351.3	2,786.3	6,930.6	0.91
13,401.0	90.10	152.63	6,446.2	-6,437.1	2,829.3	7,026.6	1.67
13,497.0	90.23	150.70	6,445.9	-6,521.6	2,874.9	7,122.5	2.01
13,594.0	91.64	154.44	6,444.3	-6,607.7	2,919.5	7,219.4	4.12
13,690.0	91.04	154.20	6,442.1	-6,694.2	2,961.1	7,315.4	0.67
13,786.0	89.97	154.45	6,441.3	-6,780.7	3,002.7	7,411.4	1.14
13,882.0	89.97	154.79	6,441.3	-6,867.5	3,043.9	7,507.4	0.35
13,978.0	90.13	153.86	6,441.2	-6,954.0	3,085.5	7,603.4	0.98
14,074.0	90.10	154.40	6,441.0	-7,040.4	3,127.3	7,699.4	0.56
14,170.0	89.93	153.13	6,441.0	-7,126.5	3,169.8	7,795.4	1.33
14,267.0	90.20	152.91	6,440.9	-7,212.9	3,213.8	7,892.4	0.36
14,362.0	90.60	152.03	6,440.2	-7,297.1	3,257.7	7,987.3	1.02
14,458.0	89.26	153.45	6,440.4	-7,382.5	3,301.7	8,083.3	2.03
14,553.0	90.34	154.18	6,440.7	-7,467.7	3,343.6	8,178.3	1.37
14,650.0	90.74	152.42	6,439.8	-7,554.4	3,387.2	8,275.3	1.86
14,746.0	89.89	154.66	6,439.2	-7,640.3	3,429.9	8,371.3	2.50
14,842.0	90.13	154.46	6,439.2	-7,727.0	3,471.2	8,467.3	0.33
14,939.0	90.07	154.31	6,439.1	-7,814.5	3,513.1	8,564.3	0.17
15,035.0	90.23	154.15	6,438.8	-7,900.9	3,554.8	8,660.3	0.24
15,131.0	90.00	154.54	6,438.6	-7,987.5	3,596.4	8,756.3	0.47
15,227.0	90.00	154.39	6,438.6	-8,074.1	3,637.8	8,852.3	0.16
15,323.0	90.57	153.76	6,438.1	-8,160.4	3,679.8	8,948.3	0.88
15,418.0	88.22	153.99	6,439.1	-8,245.7	3,721.6	9,043.3	2.49
15,514.0	89.33	153.87	6,441.2	-8,331.9	3,763.8	9,139.2	1.16
15,610.0	89.36	153.59	6,442.3	-8,418.0	3,806.2	9,235.2	0.29
15,706.0	88.86	154.15	6,443.8	-8,504.2	3,848.5	9,331.2	0.78
15,802.0	88.96	153.77	6,445.6	-8,590.4	3,890.7	9,427.2	0.41
15,898.0	89.40	153.75	6,447.0	-8,676.5	3,933.1	9,523.2	0.46
15,906.0	89.60	153.71	6,447.0	-8,683.7	3,936.6	9,531.2	2.55
15,966.0	89.60	153.71	6,447.5	-8,737.5	3,963.2	9,591.2	0.00



EOW Completion Report



Company:	Antero	Local Co-ordinate Reference:	Well Hileman Unit 1H
Project:	Doddridge County WV	TVD Reference:	Frontier 22: GL 1053' + KB 25' @ 1078.0usft
Site:	Fritz Pad: Hayden/Washington/Sheep/Hileman	MD Reference:	Frontier 22: GL 1053' + KB 25' @ 1078.0usft
Well:	Hileman Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
-----------	---------	-------------------	------------	------------	------------	---------------	------------------

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
6,237.0	6,213.6	-129.7	-64.2	SCMR
6,437.0	6,385.8	-218.9	-107.4	MDLX
6,647.0	6,515.2	-381.2	-113.1	BRKT
6,706.0	6,541.8	-432.6	-101.7	TLLY
6,773.0	6,564.7	-492.0	-81.5	HMLN
6,796.0	6,569.7	-512.8	-73.1	MRCL_HOT

Checked By: _____ Approved By: _____ Date: _____

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	11/21/2015
Job End Date:	1/25/2016
State:	West Virginia
County:	Doddridge
API Number:	47-017-06659-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Hileman 1H
Longitude:	-80.84015800
Latitude:	39.23406400
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	6,598
Total Base Water Volume (gal):	15,844,284
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	Base Fluid					
			Water	7732-18-5	100.00000	90.68923	
Sand	U.S. Well Services, LLC	Proppant					
			Crystalline Silica, quartz	14808-60-7	100.00000	8.89891	
LGC-15	U.S. Well Services	Gelling Agents					
			Guar Gum	9000-30-0	50.00000	0.08978	
			Petroleum Distillates	64742-47-8	60.00000	0.08502	
			Suspending agent (solid)	14808-60-7	3.00000	0.01373	
			Surfactant	68439-51-0	3.00000	0.00539	
HCL Acid (12.6%-18.0%)	U.S. Well Services, LLC	Bulk Acid					
			Water	7732-18-5	87.50000	0.08909	
			Hydrogen Chloride	7647-01-0	18.00000	0.02128	
WFRA-405	U.S. Well Services	Friction Reducer					
			Water	7732-18-5	60.00000	0.04020	
			2-Propenoic acid, polymer with 2-propenamides	9003-06-9	30.00000	0.02010	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.01618	
			Ethoxylated alcohol blend	68002-97-1	4.00000	0.00268	

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SI-1100	U.S. Well Services	Scale Inhibitor				
			Water	7732-18-5	80.00000	0.01051
			Ethylene Glycol	107-21-1	25.00000	0.00371
			Copolymer of Maleic and Acrylic acid	52255-49-9	10.00000	0.00155
			Potassium salt of diethylene triamine penta (methylene phosphonic acid)	15827-60-8	7.50000	0.00133
			Phosphino carboxylic acid polymer	71050-62-9	5.00000	0.00085
			Hexamethylene triamine penta (methylene phosphonic acid)	34690-00-1	5.00000	0.00085
			Hexamethylene diamine penta (methylene phosphonic acid)	23605-74-5	2.00000	0.00034
K-BAC 1020	U.S. Well Services	Anti-Bacterial Agent				
			2,2-dibromo-3-nitripropionamide	10222-01-2	20.00000	0.00424
			Deionized Water	7732-18-5	28.00000	0.00242
AP One	U.S. Well Services	Gel Breakers				
			Ammonium Persulfate	7727-54-0	100.00000	0.00214
AI-302	U.S. Well Services	Acid Corrosion Inhibitors				
			Water	7732-18-5	95.00000	0.00039
			2-Propyn-1-olcompound with methyloxirane	38172-91-7	15.00000	0.00006

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.

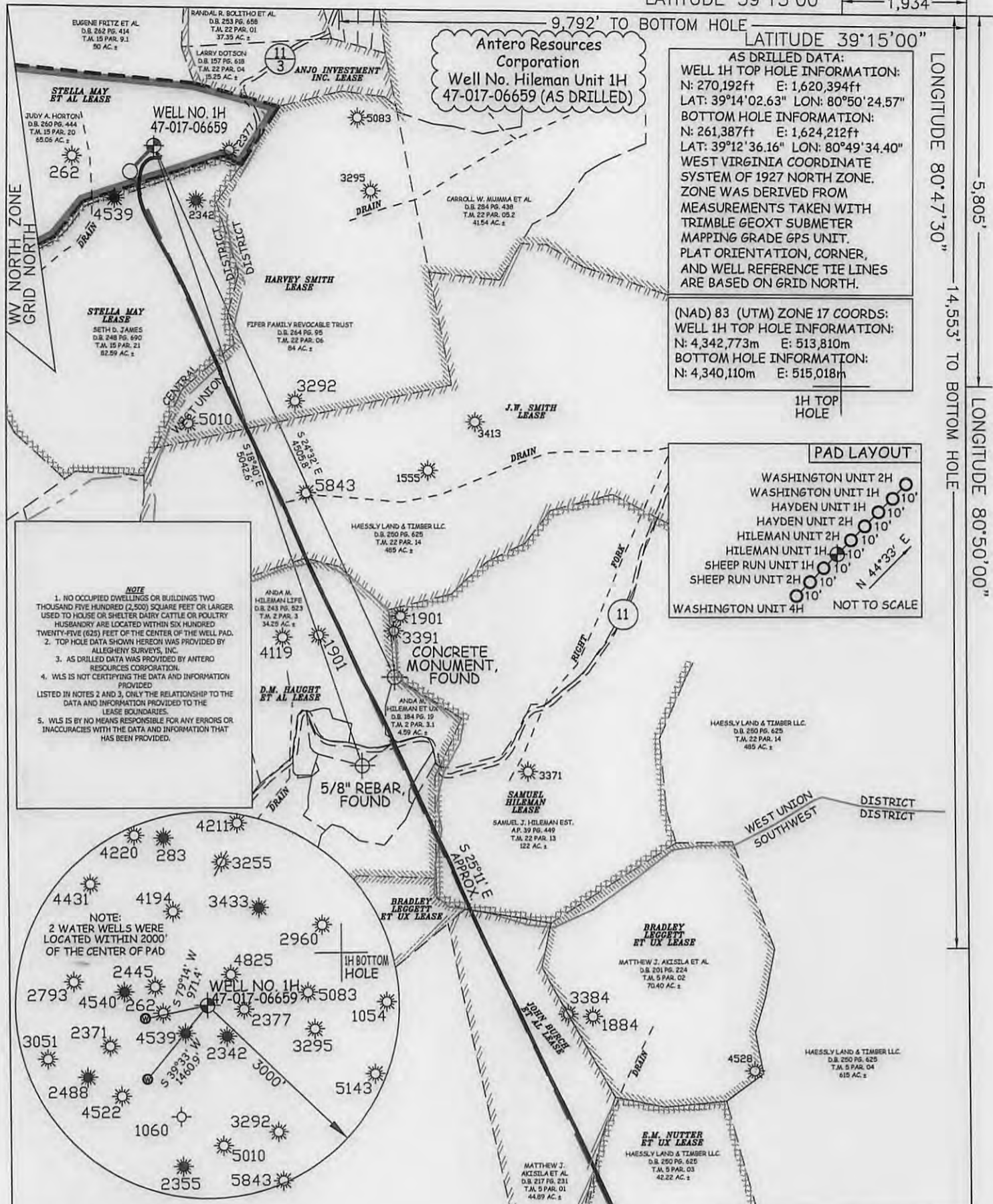
* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** 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.

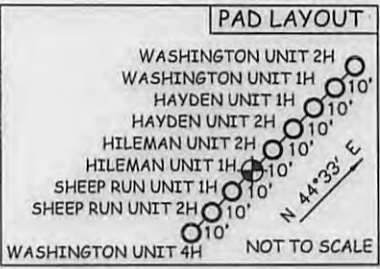
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

LATITUDE 39°15'00" 1,934'



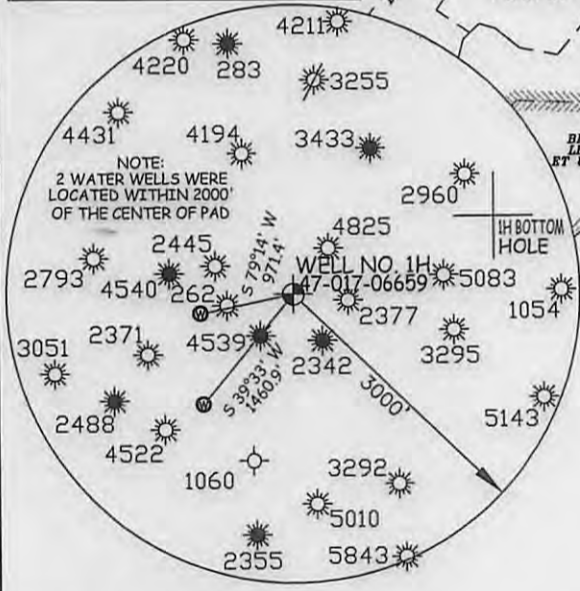
AS DRILLED DATA:
WELL 1H TOP HOLE INFORMATION:
 N: 270,192ft E: 1,620,394ft
 LAT: 39°14'02.63" LON: 80°50'24.57"
BOTTOM HOLE INFORMATION:
 N: 261,387ft E: 1,624,212ft
 LAT: 39°12'36.16" LON: 80°49'34.40"
 WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:
WELL 1H TOP HOLE INFORMATION:
 N: 4,342,773m E: 513,810m
BOTTOM HOLE INFORMATION:
 N: 4,340,110m E: 515,018m



NOTE

- NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POLTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.
- TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALLEGHENY SURVEYS, INC.
- AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
- WLS IS NOT CERTIFYING THE DATA AND INFORMATION PROVIDED LISTED IN NOTES 2 AND 3, ONLY THE RELATIONSHIP TO THE DATA AND INFORMATION PROVIDED TO THE LEASE BOUNDARIES.
- WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.



JOB # 14-087WA
 DRAWING # HILEMAN1HAD
 SCALE 1" = 1000'
 MINIMUM DEGREE OF ACCURACY SUBMETER
 PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
 WILLOW LAND SURVEYING PLLC
 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

LEGEND

- Surface Owner Boundary Lines +/-
- Interior Surface Tracts +/-
- Existing Fence
- Found monument, as noted
- Proposed Well Path
- As Drilled Well Path

DATE 07/16/15
 OPERATOR'S WELL # HILEMAN UNIT #1H
 API WELL # 47-017-06659
 STATE COUNTY PERMIT

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS
 WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF "GAS") PRODUCTION STORAGE DEEP SHALLOW
 LOCATION: ELEVATION 1,066' ORIGINAL - 1,053' AS DRILLED WATERSHED NORTH FORK HUGHES RIVER
 QUADRANGLE OXFORD 7.5' DISTRICT CENTRAL
 SURFACE OWNER JUDY A. HORTON
 OIL & GAS ROYALTY OWNER STELLA MAY ET AL; STELLA MAY;
 HARVEY SMITH; J.W. SMITH; D.M. HAUGHT ET AL; SAMUEL HILEMAN; JOHN BURCH ET AL; E.M. NUTTER ET UX
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
 PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) (X) AS DRILLED
 TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,447' TVD 15,966' MD
 WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT CT CORPORATION SYSTEM
 ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD
 DENVER, CO 80202 CHARLESTON, WV 25313

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 COUNTY NAME PERMIT

LATITUDE 39°15'00"

1,934'

LATITUDE 39°15'00"

LONGITUDE 80°47'30"

5,805'

14,553' TO BOTTOM HOLE

LONGITUDE 80°50'00"

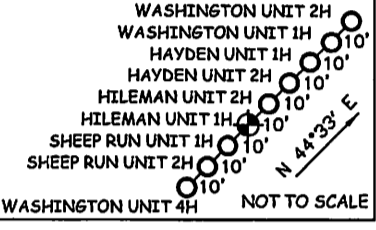
Antero Resources Corporation
Well No. Hileman Unit 1H
47-017-06659 (AS DRILLED)

AS DRILLED DATA:
WELL 1H TOP HOLE INFORMATION:
N: 270,192ft E: 1,620,394ft
LAT: 39°14'02.63" LON: 80°50'24.57"
BOTTOM HOLE INFORMATION:
N: 261,387ft E: 1,624,212ft
LAT: 39°12'36.16" LON: 80°49'34.40"
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE.
ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

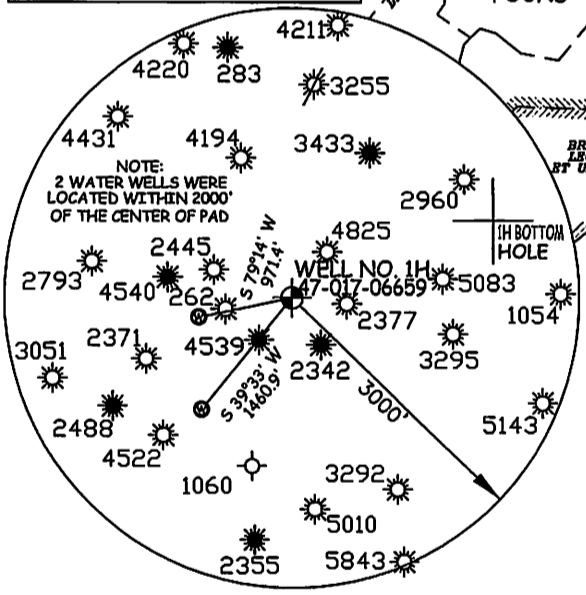
(NAD) 83 (UTM) ZONE 17 COORDS:
WELL 1H TOP HOLE INFORMATION:
N: 4,342,773m E: 513,810m
BOTTOM HOLE INFORMATION:
N: 4,340,110m E: 515,018m

1H TOP HOLE

PAD LAYOUT



- NOTES**
1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.
 2. TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALLEGHENY SURVEYS, INC.
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JOB # 14-087WA
DRAWING # HILEMAN1HAD
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WILLOW LAND SURVEYING PLLC
220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

LEGEND
--- Surface Owner Boundary Lines +/-
--- Interior Surface Tracts +/-
X Existing Fence
⊕ Found monument, as noted
○ Proposed Well Path
⊙ As Drilled Well Path

DATE 07/16/15
OPERATOR'S WELL # HILEMAN UNIT 1H
API WELL # 47-017-06659
STATE WV COUNTY PUTNAM PERMIT 000222916

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS
WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
(IF "GAS") PRODUCTION STORAGE DEEP SHALLOW X
LOCATION: ELEVATION 1,066' ORIGINAL - 1,053' AS DRILLED WATERSHED NORTH FORK HUGHES RIVER
QUADRANGLE OXFORD 7.5' DISTRICT CENTRAL COUNTY PUTNAM

SURFACE OWNER JUDY A. HORTON ACREAGE 65.06 ACRES +/-
OIL & GAS ROYALTY OWNER STELLA MAY ET AL; STELLA MAY; HARVEY SMITH; J.W. SMITH; D.M. HAUGHT ET AL; SAMUEL HILEMAN; JOHN BURCH ET AL; E.M. NUTTER ET UX LEASE ACREAGE 125.5 ACRES +/-
PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) (X) AS DRILLED PLUG & ABANDON CLEAN OUT & REPLUG
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,447' TVD 15,966' MD
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD
FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

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Office of Oil and Gas
ADD 29 2016
000222916

CONTRACT NO. 000222916