

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

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Office of Oil and Gas

FEB 8 2018

WV Department of
Environmental Protection

API 47-033-05711 County Harrison District Union
Quad Big Isaac 7.5' Pad Name Corder East Pad Field/Pool Name -----
Farm name Gerald & Louella Corder Well Number Hildred Unit 1H
Operator (as registered with the OOG) Antero Resources Corporation
Address 1615 Wynkoop Street City Denver State CO Zip 80202

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4341559.802m Easting 538534.100m
Landing Point of Curve Northing 4341598.405m Easting 538315.813m
Bottom Hole Northing 4343016.329m Easting 536546.297m

Elevation (ft) 1405' 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 01/29/2013 Date drilling commenced 02/21/2014 Date drilling ceased 07/03/2014
Date completion activities began 08/13/2014 Date completion activities ceased 09/28/2017
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 87', 347' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 507', 984' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 327', 887', 1667' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed

SDW
4/11/2018

Reviewed by: _____

API 47-033 - 05711 Farm name Gerald & Louella Corder Well number Hildred Unit 1H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	40'	New	106.5#, J-55	N/A	Y
Surface	17-1/2"	13-3/8"	355'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2562'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	15332'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	7502'		5.95#, P-110		
Packer type and depth set		N/A					

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	196 sx	15.6	1.18	231	0'	8 Hrs.
Surface	Class A	420 sx	15.6	1.18	496	0'	8 Hrs.
Coal							
Intermediate 1	Class A	932 sx	15.6	1.18	1100	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	1070 sx (Lead), 1248 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.44 (Lead), 1.8 (Tail)	3787	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 15328' MD, 7490' TVD (BHL) & 7519' TVD (Deepest Point Drilled) Loggers TD (ft) 15278' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6666'

** This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Cleta Unit 2H API# 47-033-05651). Please reference the wireline logs submitted with Form WR-35 for the Cleta 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 N/A

API 47- 033 - 05711 Farm name Gerald & Louella Corder Well number Hildred Unit 1H

PRODUCING FORMATION(S)	DEPTHS	
Marcellus	7343' (TOP) TVD	7464' (TOP) MD
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 3600 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 13531 mcfpd Oil 3 bpd NGL --- bpd Water 342 bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP		BOTTOM		DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	

***PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

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

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

Cementing Company Allied Oil & Gas Services, LLC
Address 1036 East Main Street City Bridgeport State WV Zip 26330

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

Please insert additional pages as applicable.

Completed by Samantha Kléas Telephone 303-357-6759
Signature  Title Permitting Agent Date 02/07/2018

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

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	8/13/2014	15073	15241	48	Marcellus
2	8/21/2017	14874	15042	48	Marcellus
3	8/21/2017	14675	14843	48	Marcellus
4	8/22/2017	14476	14644	48	Marcellus
5	8/22/2017	14277	14445	48	Marcellus
6	8/23/2017	14078	14246	48	Marcellus
7	8/23/2017	13879	14047	48	Marcellus
8	8/24/2017	13680	13848	48	Marcellus
9	8/24/2017	13481	13649	48	Marcellus
10	8/25/2017	13282	13450	48	Marcellus
11	8/26/2017	13083	13251	48	Marcellus
12	8/26/2017	12884	13052	48	Marcellus
13	8/27/2017	12685	12853	48	Marcellus
14	8/28/2017	12486	12654	48	Marcellus
15	8/28/2017	12287	12455	48	Marcellus
16	8/29/2017	12088	12255	48	Marcellus
17	8/29/2017	11889	12056	48	Marcellus
18	8/30/2017	11689	11857	48	Marcellus
19	8/31/2017	11490	11658	48	Marcellus
20	8/31/2017	11291	11459	48	Marcellus
21	9/1/2017	11092	11260	48	Marcellus
22	9/1/2017	10893	11061	48	Marcellus
23	9/2/2017	10694	10862	48	Marcellus
24	9/3/2017	10495	10663	48	Marcellus
25	9/3/2017	10296	10464	48	Marcellus
26	9/4/2017	10097	10265	48	Marcellus
27	9/5/2017	9898	10066	48	Marcellus
28	9/5/2017	9699	9867	48	Marcellus
29	9/5/2017	9500	9668	48	Marcellus
30	9/6/2017	9301	9469	48	Marcellus
31	9/6/2017	9102	9270	48	Marcellus
32	9/7/2017	8903	9071	48	Marcellus
33	9/7/2017	8704	8872	48	Marcellus
34	9/8/2017	8505	8672	48	Marcellus
35	9/8/2017	8306	8473	48	Marcellus
36	9/9/2017	8106	8274	48	Marcellus
37	9/9/2017	7907	8075	48	Marcellus
38	9/9/2017	7708	7876	48	Marcellus
39	9/10/2017	7509	7677	48	Marcellus

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	8/21/2017	69.5	7323	5490	4694	210800	8488.0	N/A
2	8/21/2017	76.9	8049	5867	4820	213000	10054.0	N/A
3	8/21/2017	68.1	7860	6223	5445	212800	8487.0	N/A
4	8/22/2017	71.0	7559	5670	4691	212000	8523.0	N/A
5	8/22/2017	68.7	7807	5900	5094	213800	8630.0	N/A
6	8/23/2017	68.6	7958	6109	5235	214200	8730.0	N/A
7	8/23/2017	72.9	8337	6256	5223	213400	10733.0	N/A
8	8/24/2017	75.7	7845	6398	5842	211800	8416.0	N/A
9	8/24/2017	78.0	7704	5934	5196	212400	8418.0	N/A
10	8/25/2017	75.7	8065	6378	5316	211750	9043.0	N/A
11	8/26/2017	70.6	7518	5645	5112	212000	8363.0	N/A
12	8/26/2017	70.7	7714	5831	4710	211200	8455.0	N/A
13	8/27/2017	79.7	7642	5709	4925	212300	8658.0	N/A
14	8/28/2017	72.0	7451	5674	5159	209200	10069.0	N/A
15	8/28/2017	66.4	7583	5719	4614	211420	9405.9	N/A
16	8/29/2017	80.7	7692	5653	4845	212900	8432.0	N/A
17	8/29/2017	72.4	7665	5758	4868	213020	8674.4	N/A
18	8/30/2017	72.1	7905	6033	5083	212940	8459.0	N/A
19	8/31/2017	76.9	7502	6609	4720	212000	8313.6	N/A
20	8/31/2017	75.5	7481	5744	4978	211800	8339.0	N/A
21	9/1/2017	73.2	7394	5489	4874	212400	8318.6	N/A
22	9/1/2017	74.5	7774	6004	4904	212380	8499.0	N/A
23	9/2/2017	74.4	7688	5865	5377	211860	8552.8	N/A
24	9/3/2017	75.5	7818	5909	5227	211240	8330.0	N/A
25	9/3/2017	71.1	7839	6189	5182	212450	8366.6	N/A
26	9/4/2017	73.4	7904	5754	4306	211750	9148.8	N/A
27	9/5/2017	70.8	7740	5834	4685	213400	8130.9	N/A
28	9/5/2017	75.4	7914	5578	5412	211550	8460.0	N/A
29	9/5/2017	71.6	7882	5794	5260	213100	8274.6	N/A
30	9/6/2017	73.9	7567	5707	4974	213100	9390.0	N/A
31	9/6/2017	74.7	7140	5863	5428	213400	8073.3	N/A
32	9/7/2017	72.2	7695	5756	4819	212500	9039.5	N/A
33	9/7/2017	72.3	7354	6424	5076	211700	8246.9	N/A
34	9/8/2017	72.6	7193	5837	5448	212000	8399.0	N/A
35	9/8/2017	75.2	7302	5781	5688	213500	8026.1	N/A
36	9/9/2017	74.5	7244	5952	5597	211800	8071.6	N/A
37	9/9/2017	74.6	6938	5956	5114	212750	8264.1	N/A
38	9/9/2017	72.9	7196	6300	5397	213100	8315.8	N/A
39	9/10/2017	74.8	7023	6726	5268	211400	8263.2	N/A
AVG=		73.3	7,622	5,931	5,092	8,280,110	336861.6	TOTAL

EXHIBIT 3

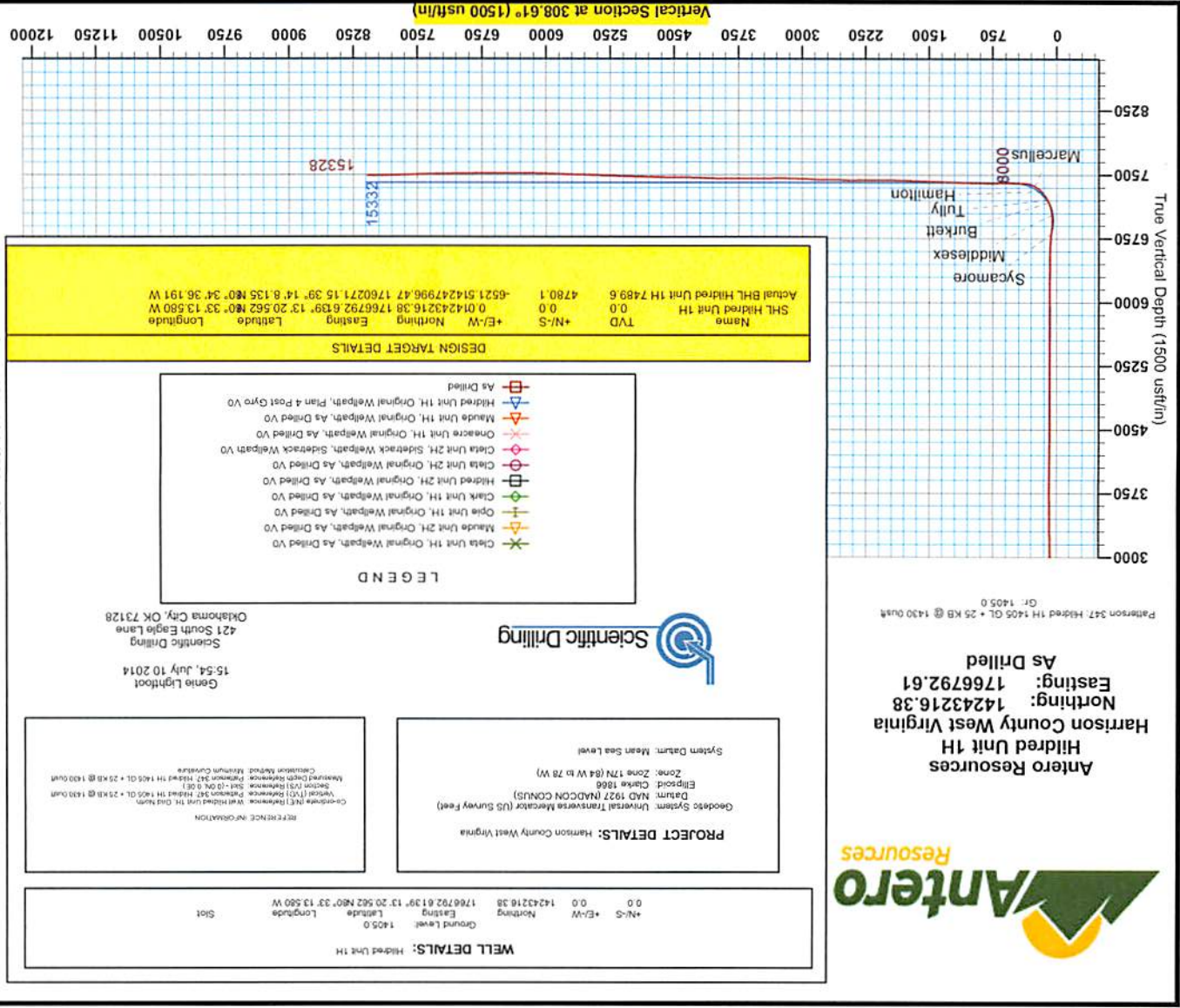
LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Fresh Water	87'	N/A	87'	N/A
Fresh Water	347'	N/A	347'	N/A
Siltstone	est. 0	327	est. 0	327
Shale and Coal	est. 327	367	est. 327	367
Shale and Siltstone	est. 367	407	est. 367	407
Sandstone w/trace coal	est. 407	427	est. 407	427
Sandstone	est. 427	587	est. 427	587
Siltstone	est. 587	887	est. 587	887
Sandstone w/ trace coal	est. 887	927	est. 887	927
Siltstone	est. 927	1107	est. 927	1107
Sandstone	est. 1107	1227	est. 1107	1227
Siltstone and Coal	est. 1227	1247	est. 1227	1247
Siltstone and Sandstone	est. 1247	1307	est. 1247	1307
Siltstone and Coal	est. 1307	1347	est. 1307	1347
Siltstone and Sandstone	est. 1347	1667	est. 1347	1667
Siltstone w/ trace coal	est. 1667	1747	est. 1667	1747
Siltstone and Sandstone	est. 1747	1847	est. 1747	1847
Siltstone w/ trace coal	est. 1847	1887	est. 1847	1887
Sandstone and Siltstone	est. 1887	2274	est. 1887	2277
Big Lime	2287	2689	2290	2693
Gantz Sand	2689	2816	2693	2820
Fifty Foot Sandstone	2816	2902	2820	2906
Gordon	2902	3067	2906	3071
Fifth Sandstone	3067	3122	3071	3126
Bayard	3122	3895	3126	3899
Speechley	3895	4151	3899	4155
Baltown	4151	4688	4155	4692
Bradford	4688	5195	4692	5199
Benson	5195	5365	5199	5369
Alexander	5365	5515	5369	5520
Elk	5515	6810	5520	6819
Sycamore	6785	7008	6794	7035
Middlesex	7008	7155	7035	7197
Burkett	7155	7182	7197	7229
Tully	7182	7343	7229	7464
Marcellus	7343	NA	7464	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.



Antero Resources
 Hildred Unit 1H
 Harrison County West Virginia
 Northing: 14243216.38
 Easting: 1766792.61
 As Drilled

Paterson 347, Hildred 1H 1405 CL + 25 KB @ 1430 Quat
 G1-1405.0



LEGEND

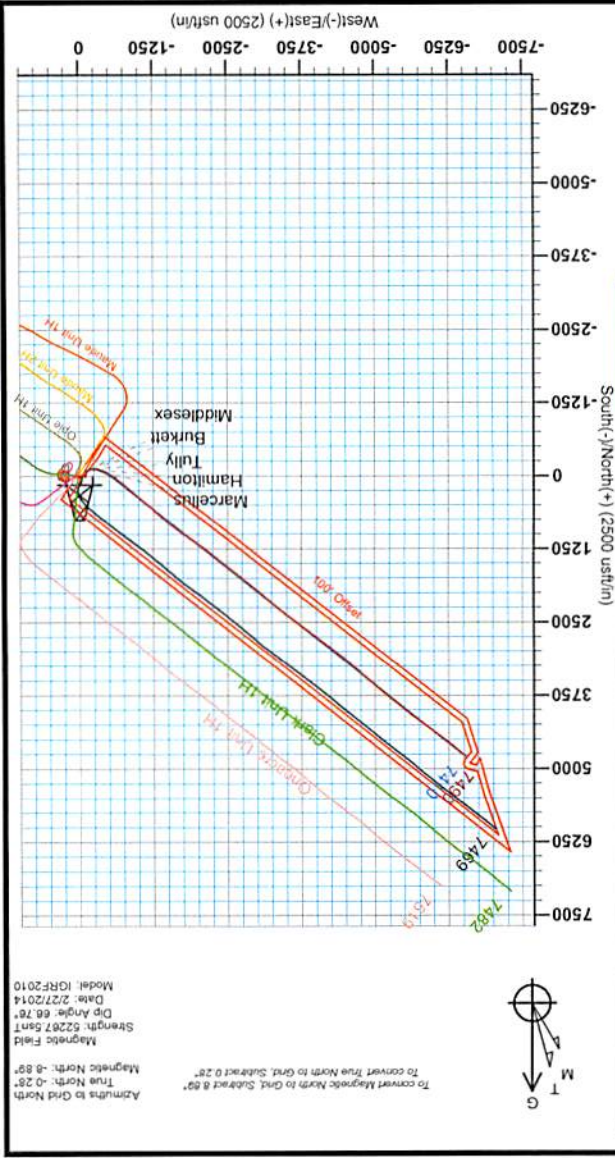
- As Drilled
- Hildred Unit 1H, Original Wellpath, As Drilled VO
- Mauda Unit 1H, Original Wellpath, As Drilled VO
- Oraclare Unit 1H, Original Wellpath, As Drilled VO
- Cata Unit 2H, Sidetrack Wellpath, Sidetrack Wellpath VO
- Cata Unit 2H, Original Wellpath, As Drilled VO
- Hildred Unit 2H, Original Wellpath, As Drilled VO
- Cata Unit 1H, Original Wellpath, As Drilled VO
- Oraclare Unit 1H, Original Wellpath, As Drilled VO
- Mauda Unit 2H, Original Wellpath, As Drilled VO
- Cata Unit 1H, Original Wellpath, As Drilled VO

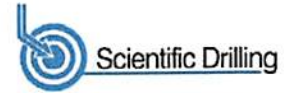
PROJECT DETAILS: Harrison County West Virginia
 Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: NAD 1927 (NADCCN CONUS)
 Epoch: Clark 1866
 Zone: 17N (84 W to 78 W)
 System Datum: Mean Sea Level

WELL DETAILS: Hildred Unit 1H
 Ground Level: 1405.0
 Easting: 1766792.6139° 13° 20' 56.2" N 80° 33' 13.580" W
 Longitude: 14243216.38
 +N-S: 0.0
 +E-W: 0.0
 Slot

REFERENCE INFORMATION
 Coordinates (N/E) Reference: Well Hildred Unit 1H Old Perm
 Section (V3) Reference: Paterson 347, Hildred 1H 1405 CL + 25 KB @ 1430 Quat
 Vertical (V3) Reference: Paterson 347, Hildred 1H 1405 CL + 25 KB @ 1430 Quat
 Section (V3) Reference: Pat -1.00E (0.0E)
 Measured Depth Reference: Paterson 347, Hildred 1H 1405 CL + 25 KB @ 1430 Quat
 Completion Method: Permian Completions

Scientific Drilling
 421 South Eagle Lane
 Oklahoma City, OK 73128
 15-54, July 10 2014
 Genie Lighthouse





Company:	Antero Resources	Local Co-ordinate Reference:	Well Hildred Unit 1H
Project:	Harrison County West Virginia	TVD Reference:	Patterson 347: Hildred 1H 1405 GL + 25 KB @ 1430.0usft
Site:	Cleta / Opie / Maude Pad	MD Reference:	Patterson 347: Hildred 1H 1405 GL + 25 KB @ 1430.0usft
Well:	Hildred Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Project	Harrison County West Virginia, Harrison County, USA		
Map System:	Universal Transverse Mercator (US Survey Fee	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site Cleta / Opie / Maude Pad, SHL Cleta Unit 1H

Site Position:		Northing:	14,243,194.63 usft	Latitude:	39° 13' 20.344 N
From:	Map	Easting:	1,766,859.11 usft	Longitude:	80° 33' 12.736 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.28 °

Well Hildred Unit 1H, Marcellus

Well Position	+N/-S	0.0 usft	Northing:	14,243,216.38 usft	Latitude:	39° 13' 20.562 N
	+E/-W	0.0 usft	Easting:	1,766,792.61 usft	Longitude:	80° 33' 13.580 W
Position Uncertainty		2.0 usft	Wellhead Elevation:	1,430.0 usft	Ground Level:	1,405.0 usft

Wellbore Original Wellpath

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/27/2014	-8.61	66.76	52,268

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	308.61

Survey Program Date 7/10/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
112.0	6,510.0	Survey #7 Final Gyro (Original Wellpath)	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
6,603.0	15,328.0	Survey #8 MWD (Original Wellpath)	MWD SDI	MWD - Standard ver 1.0.1

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	14,243,216.38	1,766,792.61	39° 13' 20.562 N	80° 33' 13.580 W
112.0	0.14	300.90	112.0	0.1	-0.1	14,243,216.45	1,766,792.49	39° 13' 20.563 N	80° 33' 13.582 W
212.0	0.13	103.69	212.0	0.1	-0.1	14,243,216.49	1,766,792.49	39° 13' 20.563 N	80° 33' 13.582 W
312.0	0.04	169.54	312.0	0.0	0.0	14,243,216.43	1,766,792.61	39° 13' 20.563 N	80° 33' 13.580 W
412.0	0.11	131.32	412.0	-0.1	0.1	14,243,216.33	1,766,792.69	39° 13' 20.562 N	80° 33' 13.579 W
512.0	0.19	106.83	512.0	-0.2	0.3	14,243,216.22	1,766,792.92	39° 13' 20.561 N	80° 33' 13.576 W
612.0	0.18	88.32	612.0	-0.2	0.6	14,243,216.17	1,766,793.23	39° 13' 20.560 N	80° 33' 13.572 W
712.0	0.21	99.78	712.0	-0.2	1.0	14,243,216.15	1,766,793.57	39° 13' 20.560 N	80° 33' 13.568 W
812.0	0.22	104.82	812.0	-0.3	1.3	14,243,216.07	1,766,793.94	39° 13' 20.559 N	80° 33' 13.564 W

Company:	Antero Resources	Local Co-ordinate Reference:	Well Hildred Unit 1H
Project:	Harrison County West Virginia	TVD Reference:	Patterson 347: Hildred 1H 1405 GL + 25 KB @ 1430.0usft
Site:	Cleta / Opie / Maude Pad	MD Reference:	Patterson 347: Hildred 1H 1405 GL + 25 KB @ 1430.0usft
Well:	Hildred Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
912.0	0.33	117.12	912.0	-0.5	1.8	14,243,215.89	1,766,794.38	39° 13' 20.557 N	80° 33' 13.558 W
1,012.0	0.35	131.69	1,012.0	-0.8	2.3	14,243,215.55	1,766,794.87	39° 13' 20.554 N	80° 33' 13.552 W
1,112.0	0.49	116.34	1,112.0	-1.2	2.9	14,243,215.16	1,766,795.48	39° 13' 20.550 N	80° 33' 13.544 W
1,212.0	0.47	116.50	1,212.0	-1.6	3.6	14,243,214.79	1,766,796.23	39° 13' 20.546 N	80° 33' 13.535 W
1,312.0	0.73	117.94	1,312.0	-2.1	4.6	14,243,214.31	1,766,797.16	39° 13' 20.542 N	80° 33' 13.523 W
1,412.0	0.41	130.93	1,412.0	-2.6	5.4	14,243,213.77	1,766,797.99	39° 13' 20.536 N	80° 33' 13.512 W
1,512.0	2.09	255.98	1,512.0	-3.3	3.9	14,243,213.10	1,766,796.49	39° 13' 20.530 N	80° 33' 13.531 W
1,612.0	5.23	259.59	1,611.7	-4.6	-2.4	14,243,211.83	1,766,790.24	39° 13' 20.518 N	80° 33' 13.611 W
1,712.0	6.95	263.28	1,711.2	-6.1	-12.9	14,243,210.30	1,766,779.75	39° 13' 20.503 N	80° 33' 13.744 W
1,812.0	6.94	271.16	1,810.4	-6.7	-24.9	14,243,209.71	1,766,767.70	39° 13' 20.498 N	80° 33' 13.898 W
1,912.0	6.24	275.77	1,909.8	-6.0	-36.4	14,243,210.38	1,766,756.25	39° 13' 20.505 N	80° 33' 14.043 W
2,012.0	5.63	277.94	2,009.2	-4.8	-46.6	14,243,211.61	1,766,745.98	39° 13' 20.517 N	80° 33' 14.173 W
2,112.0	5.04	277.55	2,108.8	-3.5	-55.8	14,243,212.86	1,766,736.77	39° 13' 20.530 N	80° 33' 14.290 W
2,212.0	4.56	277.16	2,208.5	-2.4	-64.1	14,243,213.93	1,766,728.47	39° 13' 20.541 N	80° 33' 14.396 W
2,312.0	4.00	279.25	2,308.2	-1.4	-71.5	14,243,214.99	1,766,721.08	39° 13' 20.552 N	80° 33' 14.490 W
2,412.0	3.26	281.34	2,408.0	-0.3	-77.8	14,243,216.11	1,766,714.85	39° 13' 20.563 N	80° 33' 14.569 W
2,512.0	2.78	282.77	2,507.8	0.8	-82.9	14,243,217.20	1,766,709.70	39° 13' 20.575 N	80° 33' 14.634 W
2,612.0	2.28	283.59	2,607.7	1.8	-87.2	14,243,218.21	1,766,705.40	39° 13' 20.585 N	80° 33' 14.689 W
2,712.0	1.51	288.47	2,707.7	2.7	-90.4	14,243,219.09	1,766,702.22	39° 13' 20.594 N	80° 33' 14.729 W
2,812.0	1.13	286.39	2,807.7	3.4	-92.6	14,243,219.79	1,766,700.02	39° 13' 20.601 N	80° 33' 14.757 W
2,912.0	0.79	285.51	2,907.6	3.9	-94.2	14,243,220.25	1,766,698.41	39° 13' 20.605 N	80° 33' 14.778 W
3,012.0	0.52	296.18	3,007.6	4.3	-95.3	14,243,220.64	1,766,697.34	39° 13' 20.609 N	80° 33' 14.791 W
3,112.0	0.56	307.17	3,107.6	4.7	-96.1	14,243,221.13	1,766,696.55	39° 13' 20.614 N	80° 33' 14.801 W
3,212.0	0.58	335.28	3,207.6	5.5	-96.7	14,243,221.89	1,766,695.94	39° 13' 20.622 N	80° 33' 14.809 W
3,312.0	0.31	326.28	3,307.6	6.2	-97.0	14,243,222.57	1,766,695.58	39° 13' 20.628 N	80° 33' 14.813 W
3,412.0	0.13	302.91	3,407.6	6.5	-97.3	14,243,222.86	1,766,695.34	39° 13' 20.631 N	80° 33' 14.816 W
3,512.0	0.55	256.55	3,507.6	6.4	-97.8	14,243,222.81	1,766,694.78	39° 13' 20.631 N	80° 33' 14.824 W
3,612.0	0.91	262.55	3,607.6	6.2	-99.1	14,243,222.59	1,766,693.52	39° 13' 20.629 N	80° 33' 14.840 W
3,712.0	0.68	261.50	3,707.6	6.0	-100.5	14,243,222.40	1,766,692.15	39° 13' 20.627 N	80° 33' 14.857 W
3,812.0	0.72	263.50	3,807.6	5.9	-101.7	14,243,222.24	1,766,690.94	39° 13' 20.625 N	80° 33' 14.872 W
3,912.0	0.34	266.06	3,907.6	5.8	-102.6	14,243,222.15	1,766,690.02	39° 13' 20.624 N	80° 33' 14.884 W
4,012.0	0.38	238.85	4,007.6	5.6	-103.2	14,243,221.96	1,766,689.44	39° 13' 20.623 N	80° 33' 14.892 W
4,112.0	0.38	246.83	4,107.6	5.3	-103.8	14,243,221.66	1,766,688.85	39° 13' 20.620 N	80° 33' 14.899 W
4,212.0	0.14	231.10	4,207.6	5.1	-104.2	14,243,221.45	1,766,688.45	39° 13' 20.618 N	80° 33' 14.904 W
4,312.0	0.23	178.53	4,307.6	4.8	-104.2	14,243,221.17	1,766,688.36	39° 13' 20.615 N	80° 33' 14.905 W
4,412.0	0.26	150.01	4,407.6	4.4	-104.1	14,243,220.78	1,766,688.48	39° 13' 20.611 N	80° 33' 14.904 W
4,512.0	0.36	139.47	4,507.6	4.0	-103.8	14,243,220.34	1,766,688.79	39° 13' 20.607 N	80° 33' 14.900 W
4,612.0	0.33	127.43	4,607.6	3.5	-103.4	14,243,219.93	1,766,689.23	39° 13' 20.602 N	80° 33' 14.894 W
4,712.0	0.35	131.23	4,707.6	3.2	-102.9	14,243,219.55	1,766,689.68	39° 13' 20.599 N	80° 33' 14.889 W
4,812.0	0.34	101.13	4,807.6	2.9	-102.4	14,243,219.29	1,766,690.21	39° 13' 20.596 N	80° 33' 14.882 W
4,912.0	0.34	101.32	4,907.6	2.8	-101.8	14,243,219.18	1,766,690.79	39° 13' 20.595 N	80° 33' 14.875 W
5,012.0	0.39	107.74	5,007.6	2.6	-101.2	14,243,219.01	1,766,691.40	39° 13' 20.593 N	80° 33' 14.867 W
5,112.0	0.39	98.17	5,107.6	2.5	-100.5	14,243,218.86	1,766,692.06	39° 13' 20.592 N	80° 33' 14.858 W
5,212.0	0.33	71.56	5,207.6	2.5	-99.9	14,243,218.91	1,766,692.67	39° 13' 20.592 N	80° 33' 14.851 W
5,312.0	0.36	65.16	5,307.6	2.7	-99.4	14,243,219.13	1,766,693.23	39° 13' 20.594 N	80° 33' 14.843 W
5,412.0	0.44	67.02	5,407.6	3.0	-98.7	14,243,219.41	1,766,693.87	39° 13' 20.597 N	80° 33' 14.835 W
5,512.0	0.41	45.43	5,507.6	3.4	-98.1	14,243,219.81	1,766,694.48	39° 13' 20.601 N	80° 33' 14.828 W
5,612.0	0.38	43.44	5,607.6	3.9	-97.6	14,243,220.30	1,766,694.96	39° 13' 20.606 N	80° 33' 14.821 W
5,712.0	0.32	45.57	5,707.6	4.4	-97.2	14,243,220.74	1,766,695.39	39° 13' 20.610 N	80° 33' 14.816 W
5,812.0	0.27	36.01	5,807.6	4.7	-96.9	14,243,221.13	1,766,695.73	39° 13' 20.614 N	80° 33' 14.812 W
5,912.0	0.39	11.41	5,907.6	5.3	-96.7	14,243,221.65	1,766,695.93	39° 13' 20.619 N	80° 33' 14.809 W
6,012.0	0.47	23.80	6,007.6	6.0	-96.4	14,243,222.36	1,766,696.17	39° 13' 20.626 N	80° 33' 14.806 W
6,112.0	0.40	42.40	6,107.6	6.6	-96.0	14,243,222.99	1,766,696.57	39° 13' 20.632 N	80° 33' 14.801 W

Company:	Antero Resources	Local Co-ordinate Reference:	Well Hildred Unit 1H
Project:	Harrison County West Virginia	TVD Reference:	Patterson 347: Hildred 1H 1405 GL + 25 KB @ 1430.0usft
Site:	Cleta / Opie / Maude Pad	MD Reference:	Patterson 347: Hildred 1H 1405 GL + 25 KB @ 1430.0usft
Well:	Hildred Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
6,212.0	0.34	29.02	6,207.6	7.1	-95.7	14,243,223.51	1,766,696.95	39° 13' 20.638 N	80° 33' 14.796 W	
6,312.0	0.41	79.13	6,307.5	7.5	-95.2	14,243,223.84	1,766,697.44	39° 13' 20.641 N	80° 33' 14.790 W	
6,412.0	0.43	82.04	6,407.5	7.6	-94.4	14,243,223.95	1,766,698.16	39° 13' 20.642 N	80° 33' 14.780 W	
6,510.0	0.44	82.61	6,505.5	7.7	-93.7	14,243,224.05	1,766,698.90	39° 13' 20.643 N	80° 33' 14.771 W	
6,603.0	0.36	105.56	6,598.5	7.6	-93.1	14,243,224.02	1,766,699.54	39° 13' 20.642 N	80° 33' 14.763 W	
6,635.0	1.42	180.59	6,630.5	7.2	-93.0	14,243,223.60	1,766,699.63	39° 13' 20.638 N	80° 33' 14.762 W	
6,666.0	4.36	187.01	6,661.5	5.7	-93.1	14,243,222.04	1,766,699.48	39° 13' 20.623 N	80° 33' 14.764 W	
6,698.0	7.65	190.36	6,693.3	2.4	-93.7	14,243,218.74	1,766,698.95	39° 13' 20.590 N	80° 33' 14.771 W	
6,729.0	11.34	194.23	6,723.9	-2.6	-94.8	14,243,213.76	1,766,697.83	39° 13' 20.541 N	80° 33' 14.785 W	
6,760.0	14.23	197.62	6,754.1	-9.2	-96.7	14,243,207.17	1,766,695.93	39° 13' 20.476 N	80° 33' 14.810 W	
6,792.0	16.50	198.59	6,785.0	-17.3	-99.3	14,243,199.11	1,766,693.29	39° 13' 20.396 N	80° 33' 14.844 W	
6,819.0	18.75	197.84	6,810.7	-25.0	-101.9	14,243,191.35	1,766,690.74	39° 13' 20.320 N	80° 33' 14.877 W	
Sycamore										
6,823.0	19.08	197.74	6,814.5	-26.3	-102.3	14,243,190.11	1,766,690.34	39° 13' 20.308 N	80° 33' 14.882 W	
6,855.0	22.88	197.92	6,844.4	-37.2	-105.8	14,243,179.21	1,766,686.83	39° 13' 20.200 N	80° 33' 14.927 W	
6,886.0	24.07	199.58	6,872.8	-48.9	-109.7	14,243,167.52	1,766,682.86	39° 13' 20.085 N	80° 33' 14.979 W	
6,918.0	23.17	207.60	6,902.1	-60.6	-114.9	14,243,155.79	1,766,677.75	39° 13' 19.969 N	80° 33' 15.044 W	
6,949.0	22.94	217.21	6,930.7	-70.8	-121.3	14,243,145.57	1,766,671.27	39° 13' 19.868 N	80° 33' 15.127 W	
6,981.0	22.83	224.33	6,960.1	-80.2	-129.4	14,243,136.16	1,766,663.16	39° 13' 19.775 N	80° 33' 15.231 W	
7,012.0	22.51	227.55	6,988.7	-88.5	-138.0	14,243,127.85	1,766,654.58	39° 13' 19.694 N	80° 33' 15.340 W	
7,043.0	22.34	229.64	7,017.4	-96.4	-146.9	14,243,120.03	1,766,645.71	39° 13' 19.617 N	80° 33' 15.454 W	
7,060.0	22.28	233.14	7,033.1	-100.4	-151.9	14,243,116.00	1,766,640.67	39° 13' 19.577 N	80° 33' 15.518 W	
Middlesex										
7,075.0	22.29	236.24	7,047.0	-103.7	-156.6	14,243,112.72	1,766,636.03	39° 13' 19.545 N	80° 33' 15.577 W	
7,106.0	22.54	243.30	7,075.7	-109.6	-166.8	14,243,106.78	1,766,625.83	39° 13' 19.487 N	80° 33' 15.707 W	
7,138.0	24.36	250.88	7,105.0	-114.5	-178.5	14,243,101.86	1,766,614.11	39° 13' 19.439 N	80° 33' 15.856 W	
7,169.0	26.17	256.53	7,133.1	-118.2	-191.2	14,243,098.17	1,766,601.42	39° 13' 19.403 N	80° 33' 16.018 W	
7,201.0	28.44	262.41	7,161.5	-120.9	-205.6	14,243,095.52	1,766,587.00	39° 13' 19.377 N	80° 33' 16.201 W	
7,222.0	29.92	266.04	7,179.8	-121.9	-215.8	14,243,094.50	1,766,576.82	39° 13' 19.368 N	80° 33' 16.331 W	
Burkett										
7,232.0	30.66	267.65	7,188.5	-122.2	-220.8	14,243,094.22	1,766,571.78	39° 13' 19.365 N	80° 33' 16.395 W	
7,254.0	32.76	270.88	7,207.2	-122.3	-232.4	14,243,094.08	1,766,560.22	39° 13' 19.364 N	80° 33' 16.542 W	
Tully										
7,263.0	33.64	272.10	7,214.7	-122.2	-237.3	14,243,094.21	1,766,555.30	39° 13' 19.366 N	80° 33' 16.605 W	
7,295.0	37.64	275.79	7,240.7	-120.9	-255.9	14,243,095.52	1,766,536.71	39° 13' 19.380 N	80° 33' 16.841 W	
7,326.0	41.44	277.80	7,264.6	-118.5	-275.5	14,243,097.87	1,766,517.12	39° 13' 19.404 N	80° 33' 17.090 W	
7,358.0	44.84	278.96	7,288.0	-115.3	-297.1	14,243,101.07	1,766,495.48	39° 13' 19.437 N	80° 33' 17.364 W	
7,386.0	47.36	281.62	7,307.4	-111.7	-317.0	14,243,104.68	1,766,475.64	39° 13' 19.473 N	80° 33' 17.616 W	
Hamilton										
7,389.0	47.63	281.89	7,309.4	-111.3	-319.1	14,243,105.13	1,766,473.47	39° 13' 19.478 N	80° 33' 17.644 W	
7,420.0	51.35	284.14	7,329.6	-105.9	-342.1	14,243,110.45	1,766,450.52	39° 13' 19.532 N	80° 33' 17.935 W	
7,452.0	55.52	287.36	7,348.6	-98.9	-366.8	14,243,117.44	1,766,425.80	39° 13' 19.602 N	80° 33' 18.249 W	
7,483.0	61.29	290.38	7,364.9	-90.4	-391.8	14,243,126.00	1,766,400.83	39° 13' 19.688 N	80° 33' 18.566 W	
7,489.0	62.45	290.83	7,367.7	-88.5	-396.7	14,243,127.86	1,766,395.88	39° 13' 19.706 N	80° 33' 18.629 W	
Marcellus										
7,515.0	67.48	292.67	7,378.7	-79.8	-418.6	14,243,136.59	1,766,374.01	39° 13' 19.794 N	80° 33' 18.906 W	
7,546.0	73.19	293.58	7,389.1	-68.3	-445.4	14,243,148.05	1,766,347.18	39° 13' 19.908 N	80° 33' 19.247 W	
7,577.0	80.64	295.59	7,396.1	-55.8	-472.9	14,243,160.61	1,766,319.74	39° 13' 20.034 N	80° 33' 19.595 W	
7,592.0	83.17	297.26	7,398.2	-49.2	-486.2	14,243,167.22	1,766,306.45	39° 13' 20.100 N	80° 33' 19.763 W	
7,632.0	88.36	302.69	7,401.2	-29.2	-520.7	14,243,187.14	1,766,271.92	39° 13' 20.299 N	80° 33' 20.201 W	
7,664.0	88.63	306.21	7,402.0	-11.1	-547.1	14,243,205.24	1,766,245.54	39° 13' 20.479 N	80° 33' 20.535 W	
7,695.0	89.13	307.27	7,402.6	7.4	-571.9	14,243,223.78	1,766,220.71	39° 13' 20.663 N	80° 33' 20.849 W	

Company:	Antero Resources	Local Co-ordinate Reference:	Well Hildred Unit 1H
Project:	Harrison County West Virginia	TVD Reference:	Patterson 347: Hildred 1H 1405 GL + 25 KB @ 1430.0usft
Site:	Cleta / Opie / Maude Pad	MD Reference:	Patterson 347: Hildred 1H 1405 GL + 25 KB @ 1430.0usft
Well:	Hildred Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
7,789.0	89.03	310.74	7,404.2	66.5	-644.9	14,243,282.92	1,766,147.68	39° 13' 21.252 N	80° 33' 21.774 W	
7,883.0	90.54	310.85	7,404.5	128.0	-716.1	14,243,344.34	1,766,076.52	39° 13' 21.862 N	80° 33' 22.675 W	
7,977.0	90.48	310.86	7,403.7	189.4	-787.2	14,243,405.82	1,766,005.43	39° 13' 22.474 N	80° 33' 23.575 W	
8,072.0	90.34	310.64	7,403.0	251.5	-859.1	14,243,467.83	1,765,933.46	39° 13' 23.090 N	80° 33' 24.486 W	
8,166.0	89.63	311.12	7,403.0	313.0	-930.2	14,243,529.35	1,765,862.39	39° 13' 23.702 N	80° 33' 25.385 W	
8,256.0	88.16	309.85	7,404.8	371.4	-998.7	14,243,587.77	1,765,793.95	39° 13' 24.283 N	80° 33' 26.251 W	
8,347.0	88.09	309.53	7,407.7	429.5	-1,068.6	14,243,645.86	1,765,723.96	39° 13' 24.861 N	80° 33' 27.137 W	
8,438.0	88.05	309.37	7,410.8	487.3	-1,138.9	14,243,703.65	1,765,653.74	39° 13' 25.435 N	80° 33' 28.027 W	
8,531.0	88.83	310.96	7,413.3	547.2	-1,209.9	14,243,763.61	1,765,582.70	39° 13' 26.032 N	80° 33' 28.926 W	
8,623.0	88.86	311.99	7,415.2	608.1	-1,278.8	14,243,824.52	1,765,513.78	39° 13' 26.637 N	80° 33' 29.798 W	
8,716.0	87.92	311.19	7,417.8	669.9	-1,348.4	14,243,886.23	1,765,444.25	39° 13' 27.251 N	80° 33' 30.678 W	
8,808.0	86.58	310.58	7,422.2	730.0	-1,417.8	14,243,946.38	1,765,374.78	39° 13' 27.849 N	80° 33' 31.557 W	
8,901.0	86.74	308.84	7,427.6	789.3	-1,489.2	14,244,005.69	1,765,303.36	39° 13' 28.439 N	80° 33' 32.462 W	
8,993.0	88.02	307.20	7,431.8	845.9	-1,561.6	14,244,062.30	1,765,230.96	39° 13' 29.002 N	80° 33' 33.378 W	
9,055.0	88.02	306.73	7,434.0	883.2	-1,611.2	14,244,099.56	1,765,181.45	39° 13' 29.373 N	80° 33' 34.005 W	
9,147.0	88.69	305.81	7,436.6	937.6	-1,685.3	14,244,153.96	1,765,107.31	39° 13' 29.914 N	80° 33' 34.944 W	
9,239.0	89.60	306.53	7,438.0	991.9	-1,759.6	14,244,208.25	1,765,033.05	39° 13' 30.455 N	80° 33' 35.885 W	
9,363.0	89.36	305.41	7,439.1	1,064.7	-1,859.9	14,244,281.08	1,764,932.70	39° 13' 31.180 N	80° 33' 37.156 W	
9,457.0	91.01	307.72	7,438.8	1,120.7	-1,935.4	14,244,337.07	1,764,857.21	39° 13' 31.737 N	80° 33' 38.112 W	
9,551.0	91.17	306.62	7,437.0	1,177.5	-2,010.3	14,244,393.85	1,764,782.32	39° 13' 32.302 N	80° 33' 39.061 W	
9,645.0	89.66	307.23	7,436.3	1,233.9	-2,085.4	14,244,450.32	1,764,707.18	39° 13' 32.864 N	80° 33' 40.012 W	
9,739.0	88.19	306.05	7,438.1	1,290.0	-2,160.8	14,244,506.41	1,764,631.77	39° 13' 33.422 N	80° 33' 40.968 W	
9,833.0	88.86	308.40	7,440.5	1,346.9	-2,235.7	14,244,563.25	1,764,556.95	39° 13' 33.987 N	80° 33' 41.915 W	
9,928.0	90.30	309.89	7,441.2	1,406.8	-2,309.3	14,244,623.22	1,764,483.28	39° 13' 34.584 N	80° 33' 42.848 W	
10,022.0	89.97	310.02	7,441.0	1,467.2	-2,381.4	14,244,683.58	1,764,411.23	39° 13' 35.184 N	80° 33' 43.760 W	
10,116.0	87.01	307.17	7,443.5	1,525.8	-2,454.8	14,244,742.19	1,764,337.80	39° 13' 35.767 N	80° 33' 44.690 W	
10,210.0	86.67	307.34	7,448.7	1,582.6	-2,529.5	14,244,799.01	1,764,263.10	39° 13' 36.333 N	80° 33' 45.636 W	
10,305.0	86.40	309.48	7,454.4	1,641.5	-2,603.8	14,244,857.92	1,764,188.80	39° 13' 36.919 N	80° 33' 46.577 W	
10,399.0	91.34	310.12	7,456.3	1,701.7	-2,676.0	14,244,918.06	1,764,116.62	39° 13' 37.517 N	80° 33' 47.491 W	
10,493.0	91.24	309.18	7,454.1	1,761.6	-2,748.3	14,244,978.02	1,764,044.26	39° 13' 38.113 N	80° 33' 48.407 W	
10,587.0	90.54	309.04	7,452.7	1,820.9	-2,821.3	14,245,037.31	1,763,971.33	39° 13' 38.703 N	80° 33' 49.330 W	
10,681.0	89.23	308.22	7,452.9	1,879.6	-2,894.7	14,245,095.99	1,763,897.90	39° 13' 39.286 N	80° 33' 50.260 W	
10,775.0	88.69	307.40	7,454.6	1,937.2	-2,969.0	14,245,153.61	1,763,823.65	39° 13' 39.860 N	80° 33' 51.201 W	
10,869.0	90.03	309.71	7,455.6	1,995.8	-3,042.5	14,245,212.19	1,763,750.15	39° 13' 40.442 N	80° 33' 52.131 W	
10,963.0	90.67	309.71	7,455.0	2,055.9	-3,114.8	14,245,272.24	1,763,677.84	39° 13' 41.040 N	80° 33' 53.047 W	
11,057.0	89.16	309.92	7,455.2	2,116.0	-3,187.0	14,245,332.43	1,763,605.64	39° 13' 41.638 N	80° 33' 53.961 W	
11,152.0	90.00	310.02	7,455.9	2,177.1	-3,259.8	14,245,393.45	1,763,532.84	39° 13' 42.245 N	80° 33' 54.883 W	
11,246.0	90.07	311.37	7,455.8	2,238.4	-3,331.0	14,245,454.74	1,763,461.57	39° 13' 42.854 N	80° 33' 55.785 W	
11,340.0	87.31	308.26	7,458.0	2,298.5	-3,403.2	14,245,514.90	1,763,389.40	39° 13' 43.453 N	80° 33' 56.699 W	
11,435.0	86.64	307.39	7,463.0	2,356.7	-3,478.1	14,245,573.08	1,763,314.47	39° 13' 44.031 N	80° 33' 57.648 W	
11,529.0	89.23	308.56	7,466.4	2,414.5	-3,552.2	14,245,630.88	1,763,240.42	39° 13' 44.606 N	80° 33' 58.586 W	
11,623.0	89.66	308.39	7,467.3	2,473.0	-3,625.8	14,245,689.36	1,763,166.84	39° 13' 45.188 N	80° 33' 59.518 W	
11,717.0	90.13	308.29	7,467.5	2,531.3	-3,699.5	14,245,747.67	1,763,093.11	39° 13' 45.768 N	80° 34' 0.451 W	
11,811.0	89.53	308.00	7,467.7	2,589.3	-3,773.4	14,245,805.73	1,763,019.18	39° 13' 46.346 N	80° 34' 1.388 W	
11,906.0	87.99	307.22	7,469.8	2,647.3	-3,848.7	14,245,863.69	1,762,943.95	39° 13' 46.922 N	80° 34' 2.340 W	
12,000.0	88.02	307.17	7,473.1	2,704.1	-3,923.5	14,245,920.48	1,762,869.11	39° 13' 47.487 N	80° 34' 3.288 W	
12,094.0	88.99	307.08	7,475.5	2,760.8	-3,998.4	14,245,977.20	1,762,794.19	39° 13' 48.052 N	80° 34' 4.237 W	
12,188.0	88.99	305.85	7,477.2	2,816.7	-4,074.0	14,246,033.05	1,762,718.61	39° 13' 48.607 N	80° 34' 5.195 W	
12,282.0	87.18	305.82	7,480.3	2,871.7	-4,150.2	14,246,088.05	1,762,642.45	39° 13' 49.155 N	80° 34' 6.160 W	
12,377.0	87.79	307.35	7,484.5	2,928.2	-4,226.4	14,246,144.62	1,762,566.24	39° 13' 49.718 N	80° 34' 7.125 W	
12,471.0	88.56	309.00	7,487.5	2,986.3	-4,300.2	14,246,202.68	1,762,492.39	39° 13' 50.295 N	80° 34' 8.060 W	
12,565.0	88.29	308.13	7,490.1	3,044.9	-4,373.7	14,246,261.26	1,762,418.92	39° 13' 50.878 N	80° 34' 8.991 W	
12,659.0	88.16	309.24	7,493.0	3,103.6	-4,447.0	14,246,319.99	1,762,345.58	39° 13' 51.462 N	80° 34' 9.920 W	



Company:	Antero Resources	Local Co-ordinate Reference:	Well Hildred Unit 1H
Project:	Harrison County West Virginia	TVD Reference:	Patterson 347: Hildred 1H 1405 GL + 25 KB @ 1430.0usft
Site:	Cleta / Opie / Maude Pad	MD Reference:	Patterson 347: Hildred 1H 1405 GL + 25 KB @ 1430.0usft
Well:	Hildred Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
12,754.0	88.05	310.15	7,496.1	3,164.2	-4,520.1	14,246,380.63	1,762,272.52	39° 13' 52.065 N	80° 34' 10.845 W
12,848.0	87.79	309.69	7,499.5	3,224.5	-4,592.1	14,246,440.91	1,762,200.47	39° 13' 52.665 N	80° 34' 11.757 W
12,942.0	89.03	312.06	7,502.1	3,286.0	-4,663.2	14,246,502.40	1,762,129.43	39° 13' 53.276 N	80° 34' 12.656 W
13,036.0	87.25	309.64	7,505.2	3,347.5	-4,734.2	14,246,563.84	1,762,058.37	39° 13' 53.887 N	80° 34' 13.556 W
13,130.0	88.42	311.22	7,508.7	3,408.4	-4,805.7	14,246,624.76	1,761,986.88	39° 13' 54.492 N	80° 34' 14.461 W
13,224.0	88.99	311.53	7,510.9	3,470.5	-4,876.2	14,246,686.87	1,761,916.36	39° 13' 55.110 N	80° 34' 15.354 W
13,318.0	89.50	312.87	7,512.1	3,533.6	-4,945.9	14,246,750.01	1,761,846.73	39° 13' 55.737 N	80° 34' 16.235 W
13,412.0	88.93	309.53	7,513.4	3,595.5	-5,016.6	14,246,811.91	1,761,776.02	39° 13' 56.353 N	80° 34' 17.131 W
13,507.0	88.22	308.59	7,515.8	3,655.4	-5,090.3	14,246,871.75	1,761,702.28	39° 13' 56.948 N	80° 34' 18.064 W
13,601.0	89.70	310.37	7,517.5	3,715.1	-5,162.9	14,246,931.50	1,761,629.74	39° 13' 57.542 N	80° 34' 18.983 W
13,695.0	90.00	308.80	7,517.7	3,775.0	-5,235.3	14,246,991.40	1,761,557.30	39° 13' 58.138 N	80° 34' 19.900 W
13,789.0	89.23	306.88	7,518.3	3,832.7	-5,309.5	14,247,049.06	1,761,483.07	39° 13' 58.711 N	80° 34' 20.841 W
13,883.0	90.20	307.83	7,518.8	3,889.7	-5,384.3	14,247,106.09	1,761,408.35	39° 13' 59.279 N	80° 34' 21.787 W
13,977.0	90.77	308.45	7,518.0	3,947.8	-5,458.2	14,247,164.15	1,761,334.43	39° 13' 59.856 N	80° 34' 22.723 W
14,071.0	90.00	308.15	7,517.4	4,006.0	-5,531.9	14,247,222.40	1,761,260.66	39° 14' 0.436 N	80° 34' 23.658 W
14,166.0	91.01	308.61	7,516.5	4,065.0	-5,606.4	14,247,281.38	1,761,186.19	39° 14' 1.022 N	80° 34' 24.601 W
14,260.0	90.77	306.76	7,515.1	4,122.5	-5,680.8	14,247,338.84	1,761,111.81	39° 14' 1.594 N	80° 34' 25.543 W
14,354.0	92.01	307.67	7,512.8	4,179.3	-5,755.6	14,247,395.67	1,761,036.98	39° 14' 2.159 N	80° 34' 26.491 W
14,448.0	91.10	306.37	7,510.2	4,235.9	-5,830.6	14,247,452.24	1,760,961.96	39° 14' 2.722 N	80° 34' 27.441 W
14,542.0	91.54	306.55	7,508.1	4,291.7	-5,906.2	14,247,508.09	1,760,886.38	39° 14' 3.278 N	80° 34' 28.399 W
14,636.0	92.24	307.52	7,505.0	4,348.3	-5,981.2	14,247,564.67	1,760,811.38	39° 14' 3.841 N	80° 34' 29.349 W
14,730.0	92.55	306.08	7,501.1	4,404.6	-6,056.4	14,247,620.93	1,760,736.18	39° 14' 4.400 N	80° 34' 30.302 W
14,824.0	91.21	307.02	7,498.0	4,460.5	-6,131.9	14,247,676.88	1,760,660.71	39° 14' 4.957 N	80° 34' 31.258 W
14,918.0	91.81	309.60	7,495.5	4,518.7	-6,205.6	14,247,733.13	1,760,586.98	39° 14' 5.536 N	80° 34' 32.192 W
15,012.0	90.40	309.79	7,493.7	4,578.8	-6,277.9	14,247,795.15	1,760,514.67	39° 14' 6.133 N	80° 34' 33.107 W
15,107.0	90.27	308.99	7,493.1	4,639.1	-6,351.4	14,247,855.44	1,760,441.25	39° 14' 6.733 N	80° 34' 34.037 W
15,200.0	91.10	309.89	7,492.0	4,698.1	-6,423.2	14,247,914.51	1,760,369.43	39° 14' 7.320 N	80° 34' 34.947 W
15,267.0	91.10	309.80	7,490.7	4,741.0	-6,474.6	14,247,957.43	1,760,318.00	39° 14' 7.747 N	80° 34' 35.598 W
15,328.0	91.10	309.80	7,489.6	4,780.1	-6,521.5	14,247,996.47	1,760,271.15	39° 14' 8.135 N	80° 34' 36.192 W

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
6,819.0	6,810.7	-25.0	-101.9	Sycamore
7,060.0	7,033.1	-100.4	-151.9	Middlesex
7,222.0	7,179.8	-121.9	-215.8	Burkett
7,254.0	7,207.2	-122.3	-232.4	Tully
7,386.0	7,307.4	-111.7	-317.0	Hamilton
7,489.0	7,367.7	-88.5	-396.7	Marcellus

Checked By: _____ Approved By: _____ Date: _____

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	8/21/2017
Job End Date:	9/10/2017
State:	West Virginia
County:	Harrison
API Number:	47-033-05711-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Hildred 1H
Latitude:	39.22240278
Longitude:	-80.55377222
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	7,519
Total Base Water Volume (gal):	14,502,824
Total Base Non Water Volume:	0



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Antero Resources	Carrier/Base Fluid					
			Water	7732-18-5	100.00000	87.98992	
Sand	U.S. Well Services, LLC	Proppant					
			Crystalline Silica, quartz	14808-60-7	100.00000	11.77300	
HCL Acid (12.6%-17.5%)	U.S. Well Services, LLC	Bulk Acid					
			Water	7732-18-5	87.40000	0.13243	
			Hydrogen Chloride	7647-01-0	17.50000	0.03079	
WFRA-405	U.S. Well Services, LLC	Friction Reducer					
			2-Propenoic acid, polymer with 2-propenamide	29003-06-9	30.00000	0.02024	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.01630	
LGC-15	U.S. Well Services, LLC	Gelling Agents					
			Guar Gum	9000-30-0	50.00000	0.01375	
			Petroleum Distillates	64742-47-8	60.00000	0.01303	
			Suspending agent (solid)	14808-60-7	3.00000	0.00210	
			Surfactant	68439-51-0	3.00000	0.00083	

Bioclear 2000	U.S. Well Services, LLC	Anti-Bacterial Agent					
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00415	
			Deionized Water	7732-18-5	28.00000	0.00237	
SI-1200s	U.S. Well Services, LLC	Scale Inhibitor					
			Alkyl Phosphonic Acid	Proprietary	5.00000	0.00063	
			Ammonia	7664-41-7	0.50000	0.00010	
AP One	U.S. Well Services, LLC	Gel Breakers					
			Ammonium Persulfate	7727-54-0	100.00000	0.00025	
AI-303	U.S. Well Services, LLC	Acid Corrosion Inhibitors					
			Ethylene glycol	107-21-1	40.00000	0.00005	
			Cinnamaldehyde	104-55-2	20.00000	0.00002	
			Formic acid	64-18-6	20.00000	0.00002	
			Butyl cellosolve	111-76-2	20.00000	0.00002	
			Polyether	60828-78-6	10.00000	0.00001	
			Acetophenone,thiourea,formaldehyde polymer	68527-49-1	5.00000	0.00000	

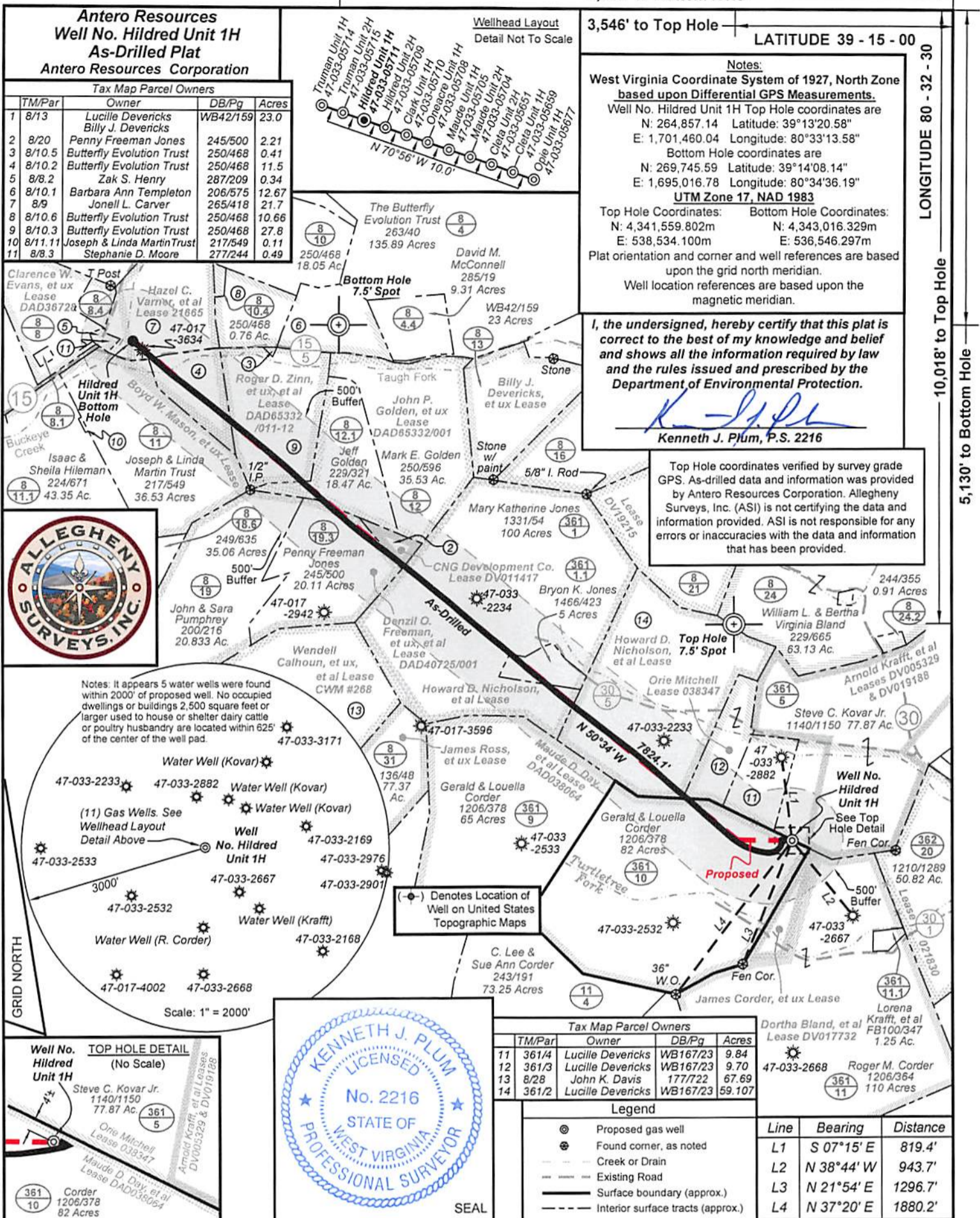
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

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

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

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

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



FILE NO: 232-30-G-12
DRAWING NO: As-Drilled Hildred 1H
SCALE: 1" = 1200'
MINIMUM DEGREE OF ACCURACY: Submeter
PROVEN SOURCE OF ELEVATION: WVDOT, Bridgeport, WV

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

DATE: October 19 2017
OPERATOR'S WELL NO. Hildred Unit 1H
API WELL NO: 47 - 033 - 05711
STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
(IF GAS) PRODUCTION: STORAGE DEEP SHALLOW

LOCATION: ELEVATION: As-Built Grade - 1405' WATERSHED: Tenmile Creek QUADRANGLE: Big Isaac
DISTRICT: Union Denzil O. Freeman, et ux, et al; Hazel C. Varner, et al; John P. Golden, et ux; DAD40725/001; 21665 20-361-2; DV011417
SURFACE OWNER: Gerald & Louella Corder Roger D. Zinn, et ux, et al; CNG Development Co.; DAD65332/011-12 ACREAGE: 82 31.5; 76
ROYALTY OWNER: Maude D. Day, et al; Orie Mitchell; Howard D. Nicholson, et al (2) LEASE NO: DAD038064; 038347 ACREAGE: 147; 48.69; 59; 165

PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled TVD 7,490'
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale DEPTH: MD 15,328'

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

WELL OPERATOR: Antero Resources Corporation
 ADDRESS: 1615 Wynkoop Street
 Denver, CO 80202

DESIGNATED AGENT: Diana Stamper - CT Corporation System
 ADDRESS: 5400 D Big Tyler Road
 Charleston, WV 25313

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF GAS) PRODUCTION: STORAGE DEEP SHALLOW

LOCATION: ELEVATION: As-Built Grade - 1405' WATERSHED: Tenmile Creek QUADRANGLE: Big Isaac
 DISTRICT: Union
 SURFACE OWNER: Gerald & Louella Corder
 Royalty Owner: Maude D. Day, et al; One Mitchell, Howard D. Nicholson, et al (2)
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 TARGET FORMATION: Marcellus Shale
 DEPTH: MD 15,328'

FILE NO: 232-30-G-12
 DRAWING NO: As-Drilled Hildred 1H
 SCALE: 1" = 1200'
 MINIMUM DEGREE OF ACCURACY:
 Submeter
 PROVEN SOURCE OF ELEVATION:
 WVDOT, Bridgeport, WV

DATE: October 19 2017
 OPERATORS WELL NO. Hildred Unit 1H
 API WELL NO:
 STATE 47 COUNTY 033 PERMIT 05711

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



Legend

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

Tax Map Parcel Owners

TM/Par	Owner	DB/Pg	Acres
11	Lucille Deventcks	WB167/23	9.84
12	Lucille Deventcks	WB167/23	9.70
13	John K. Davis	177/22	67.69
14	Lucille Deventcks	WB167/23	59.107

Notes:

West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.

Well No. Hildred Unit 1H Top Hole coordinates are N: 264.857, 14 Latitude: 39°13'20.58" E: 1,701,460.04 Longitude: 80°33'13.58"

Bottom Hole coordinates are N: 269,745.59 Latitude: 39°14'08.14" E: 1,695,018.78 Longitude: 80°34'36.19"

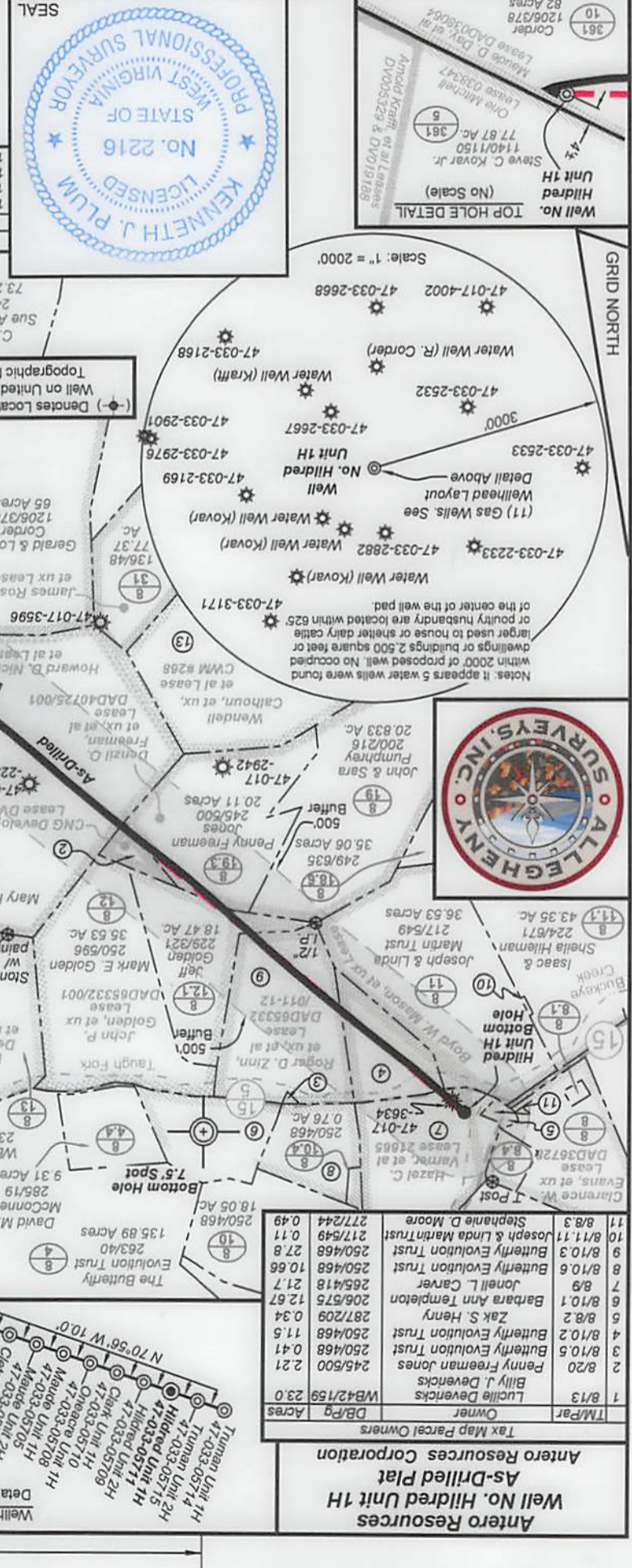
UTM Zone 17, NAD 1983
 Top Hole Coordinates: Bottom Hole Coordinates:
 N: 4,343,016.329m E: 536,546.297m
 N: 4,341,559.802m E: 538,534.100m

Well location references are based upon the plat orientation and corner and well references are based upon the grid north meridian.
 magnetic meridian.

I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the rules issued and prescribed by the Department of Environmental Protection.

Kenneth J. Plum, P.S. 2216

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.



9,989' to Bottom Hole
 3,546' to Top Hole
 LONGITUDE 80 - 32 - 30
 10,018' to Top Hole
 5,130' to Bottom Hole

9,989' to Bottom Hole

3,546' to Top Hole

LATITUDE 39 - 15 - 00

LONGITUDE 80 - 35 - 30

10'18. to Top Hole

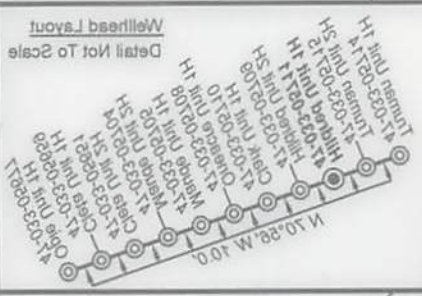
2'130. to Bottom Hole

Antero Resources Corporation
As-Drilled Plat
Well No. Hilled Unit 1H

Tax Map Parcel Owners

TMF#	Owner	DBF#	Acres
1	Lucille Dervencks	WB1723	23.0
2	Billy J. Dervencks	WB1723	2.21
3	Penny Freeman Jones	250488	0.41
4	Butterfly Evolution Trust	250488	11.5
5	Butterfly Evolution Trust	250488	0.34
6	Zak S. Henry	250488	12.87
7	Barbara Ann Templeton	250488	21.7
8	Jonell L. Carter	250488	10.66
9	Butterfly Evolution Trust	250488	27.8
10	Butterfly Evolution Trust	250488	0.11
11	Joseph & Linda Martin Trust	217249	0.49
12	Stephanie D. Moore	217249	0.49

Notes
 West Virginia Coordinate System of 1927, North Zone
 based upon Differential GPS Measurements.
 Well No. Hilled Unit 1H Top Hole coordinates are
 N: 264,857.14 Latitude: 39°13'20.58"
 E: 1,701,480.04 Longitude: 80°33'13.58"
 Bottom Hole coordinates are
 N: 269,745.59 Latitude: 39°14'08.14"
 E: 1,692,016.78 Longitude: 80°34'38.19"
UTM Zone 17 NAD 1983
 Top Hole Coordinates:
 N: 4,341,559.802m
 E: 538,534.100m
 Bottom Hole Coordinates:
 N: 4,343,016.329m
 E: 538,548.297m
 Flat orientation and corner and well references are based upon the grid north meridian.
 Well location references are based upon the magnetic meridian.



I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the rules issued and prescribed by the Department of Environmental Protection.

Kenneth J. Blum, P.S. 2216

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.

