WR-35
Rev. 8/23/13

APPROVED
NAME: [illegible]
DATE: 10/18/17

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

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API 47 - 017 - 06282 County Doddridge District Greenbrier
Quad New Milton & Smithburg 7.5' Pad Name Susie Jane Pad Field/Pool Name -----
Farm name John S. Jr. & Jacquelin S. Trent Well Number Kelley Unit 2H
Operator (as registered with the OOG) Antero Resources Corporation
Address 1615 Wynkoop Street City Denver State CO Zip 80202

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey

Top hole	Northing 4345018.123m	Easting 531743.515m
Landing Point of Curve	Northing 4344801.649m	Easting 531730.608m
Bottom Hole	Northing 4343411.089m	Easting 532180.073m

Elevation (ft) 1248' 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 08/16/2013 Date drilling commenced 07/03/2014 Date drilling ceased 12/01/2014
Date completion activities began 12/27/2014 Date completion activities ceased 02/10/2017
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 97', 184', 187' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1370', 1460', 2281' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 957' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by:

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API 47- 017 - 06282 Farm name John S. Jr. & Jacquelin S. Trent Well number Kelley Unit 2H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below
Conductor	24"	20"	90'	New	94#, K-55	N/A	Y
Surface	17-1/2"	13-3/8"	413'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2539'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	12560'	New	20#, P-110	N/A	Y
Tubing		2-3/8"	7454'		4.7#, N-80		
Packer type and depth set		N/A					

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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	94 sx	15.6	1.18	111	0'	8 Hrs.
Surface	Class A	485 sx	15.6	1.18	572	0'	8 Hrs.
Coal							
Intermediate 1	Class A	960 sx	15.6	1.18	1133	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	1140 sx (Lead) 838 sx (Tail)	14.5 (Lead), 15.2 (Tail)	1.30 (Lead), 1.86 (Tail)	3041	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 12560' MD, 7350' TVD (BHL) & 7376' TVD (Deepest Point Drilled) Loggers TD (ft) 12513' MD

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 6581'

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

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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 (bbls)	Amount of Nitrogen/other (units)

***PLEASE SEE ATTACHED EXHIBIT 2**

Please insert additional pages as applicable.

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API 47- 017 - 06282 Farm name John S. Jr. & Jacquelin S. Trent Well number Kelley Unit 2H

PRODUCING FORMATION(S)	DEPTHS			
Marcellus	7299' (TOP)	TVD	7583' (TOP)	MD

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Please insert additional pages as applicable.

GAS TEST □ Build up □ Drawdown ■ Open Flow OIL TEST ■ Flow □ Pump

SHUT-IN PRESSURE Surface 3950 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	11402 mcfpd	--- bpd	--- bpd	--- bpd	□ Estimated ■ Orifice □ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)

*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 STRC
Address 1560 Good Hope Pike City Clarksburg State WV Zip 26301

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

Stimulating Company Halliburton
Address 121 Champion Way Suite 200 City Canonsburg State PA Zip 15317

Please insert additional pages as applicable.

Completed by Samantha Klaas Telephone 303-357-6759
Signature Samantha Klaas Title Permitting Agent Date 08/18/2017

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

API 47-017-06282 Farm Name John S. Jr. & Jacquelin S. Trent Well Number Kelley Unit 2H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	12/27/2014	12098	12274	60	Marcellus
2	12/22/2016	11904	12068	60	Marcellus
3	12/22/2016	11709	11873	60	Marcellus
4	12/23/2016	11515	11679	60	Marcellus
5	12/26/2016	11321	11485	60	Marcellus
6	12/27/2016	11126	11290	60	Marcellus
7	12/27/2016	10932	11096	60	Marcellus
8	12/29/2016	10738	10902	60	Marcellus
9	12/29/2016	10543	10707	60	Marcellus
10	12/30/2016	10349	10513	60	Marcellus
11	12/30/2016	10155	10319	60	Marcellus
12	12/31/2016	9960	10124	60	Marcellus
13	1/3/2017	9766	9930	60	Marcellus
14	1/3/2017	9572	9736	60	Marcellus
15	1/4/2017	9377	9541	60	Marcellus
16	1/4/2017	9183	9347	60	Marcellus
17	1/4/2017	8989	9153	60	Marcellus
18	1/5/2017	8794	8958	60	Marcellus
19	1/6/2017	8600	8764	60	Marcellus
20	1/7/2017	8406	8569	60	Marcellus
21	1/8/2017	8211	8375	60	Marcellus
22	1/8/2017	8017	8181	60	Marcellus
23	1/9/2017	7823	7986	60	Marcellus
24	1/9/2017	7628	7792	60	Marcellus

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API 47-017-06282 Farm Name John S. Jr. & Jacquelin S. Trent Well Number Kelley Unit 2H

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	12/21/2016	74.4	7588	6054	4507	518623	10322	N/A
2	12/22/2016	77.9	7553	6589	5443	516954	10163	N/A
3	12/22/2016	70.1	7072	6296	4807	531772	10435	N/A
4	12/23/2016	77.4	7524	6787	4872	519175	10182	N/A
5	12/26/2016	76.3	7411	6194	5049	520904	10212	N/A
6	12/27/2016	78.0	7403	6170	5196	519734	10179	N/A
7	12/27/2016	77.2	7554	6624	4692	519604	10094	N/A
8	12/29/2016	77.4	7720	6433	5018	519059	10197	N/A
9	12/29/2016	74.8	7416	5923	6665	516083	10081	N/A
10	12/30/2016	77.4	7421	6083	5045	519085	10133	N/A
11	12/30/2016	76.3	7256	5896	5067	519586	10312	N/A
12	12/31/2016	74.6	7781	6241	4933	517074	12186	N/A
13	1/3/2017	77.0	7419	6611	4792	520331	10153	N/A
14	1/3/2017	76.3	7447	6423	5228	520037	10328	N/A
15	1/4/2017	78.1	7066	5823	5209	517085	10163	N/A
16	1/4/2017	70.6	7171	5865	5523	517738	10914	N/A
17	1/4/2017	77.2	7376	5742	5547	516716	11411	N/A
18	1/5/2017	74.4	7164	5957	5499	520446	9880	N/A
19	1/6/2017	74.5	7042	5815	5497	521119	10151	N/A
20	1/7/2017	77.9	6906	5428	5452	519088	9977	N/A
21	1/8/2017	78.8	7044	6233	5458	518970	10073	N/A
22	1/8/2017	78.4	7301	6345	5516	517889	10079	N/A
23	1/9/2017	75.8	6956	5748	5532	525729	10399	N/A
24	1/9/2017	77.8	6949	6094	5427	517636	9991	N/A
AVG=		76.2	7314	6,141	5,249	12,470,437	248,015	TOTAL

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API 47-017-06282 Farm Name John S. Jr. & Jacquelin S. Trent Well Number Kelley Unit 2H

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
Fresh Water	184'	N/A	184'	N/A
Fresh Water	187'	N/A	187'	N/A
Silt	0	147	0	147
Sandy siltstone	147	237	147	237
Sandstone	237	267	237	267
Silty Sandstone	267	337	267	337
Shale	337	417	337	417
Sandstone	417	487	417	487
Silty Sandstone	487	867	487	867
Sandy shale	867	957	867	957
Sandstone (Tr Coal)	957	1287	957	1287
Sandstone	1287	1437	1287	1437
Limey Shale	1437	1677	1437	1677
Silty Sandstone	1677	2037	1677	2037
Sandy siltstone	2037	2247	2037	2247
Limey Shale	2247	2293	2247	2306
Big Lime	2293	2421	2306	2423
Big Injun	2421	2685	2423	2687
Gantz Sand	2685	3892	2687	2895
Fifty Foot Sandstone	3892	3067	2895	3070
Gordon	3067	3423	3070	3426
Fifth Sandstone	3423	3489	3426	3491
Bayard	3489	3693	3491	3695
Warren	3693	4009	3695	4011
Speechley	4009	4218	4011	4220
Baltown	4218	4877	4220	4879
Bradford	4877	5326	4879	5329
Benson	5326	5577	5329	5580
Alexander	5577	5804	5580	5807
Elk	5804	6320	5807	6322
Rhinestreet	6320	6846	6322	6861
Sycamore	6846	7006	6861	7045
Middlesex	7006	7150	7045	7241
Burkett	7150	7181	7241	7294
Tully	7181	7299	7294	7583
Marcellus	7299	NA	7583	NA

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Kelley Unit 2H
Doddridge County WV
Northing: 14254564.53
Easting: 1744514.87
As Drilled

Antero Resources

Scientific Drilling

Frontier 22: GL 1248' + KB 25' @ 1273.0usft
Gr: 1248.0

WELL DETAILS Kelley Unit 2H
Ground Level: 1248.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	14254564.53	1744514.87	39° 15' 13.757 N	80° 37' 56.171 W

Genie Lightfoot
14:42, December 12 2014

Scientific Drilling
11220 N.W. 10th Street
Yukon, OK 73099

To convert Magnetic North to Grid, Subtract 8.80°
To convert True North to Grid, Subtract 0.23°

Azimuths to Grid North
True North: -0.23°
Magnetic North: -8.80°

Magnetic Field
Strength: 52203.0snT
Dip Angle: 66.81°
Date: 8/7/2014
Model: BGGM2014

SITE DETAILS: Trent/Kelley/Chumley/Roleson/Guss/Denv

Site Center: Chumley Unit 2H
Site Centre Northing: 14254558.34
Easting: 1744533.89
Positional Uncertainity: 2.0
Convergence: 0.23
Local North: Grid

PROJECT DETAILS: Doddridge County WV

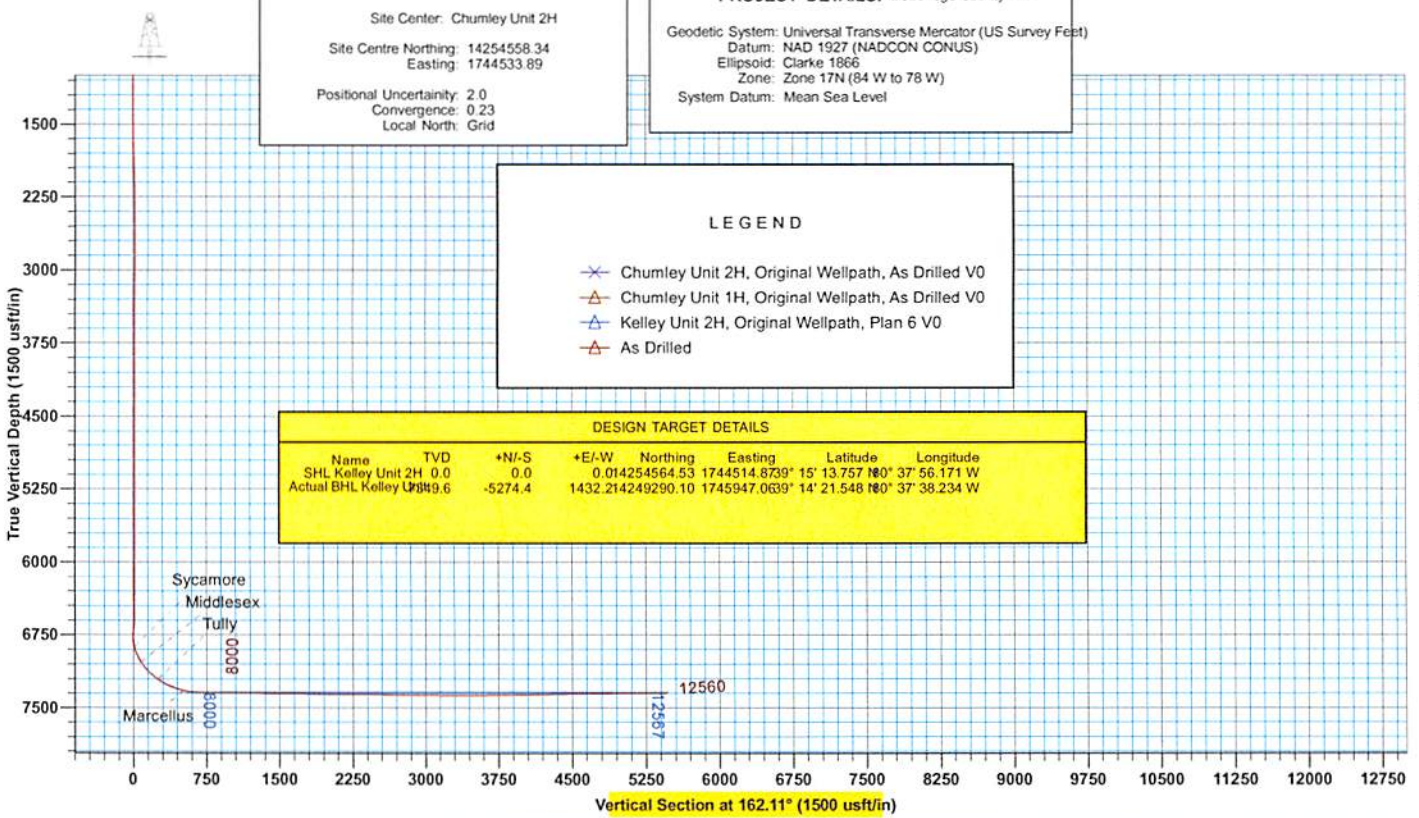
Geodetic System: Universal Transverse Mercator (US Survey Feet)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: Zone 17N (84 W to 78 W)
System Datum: Mean Sea Level

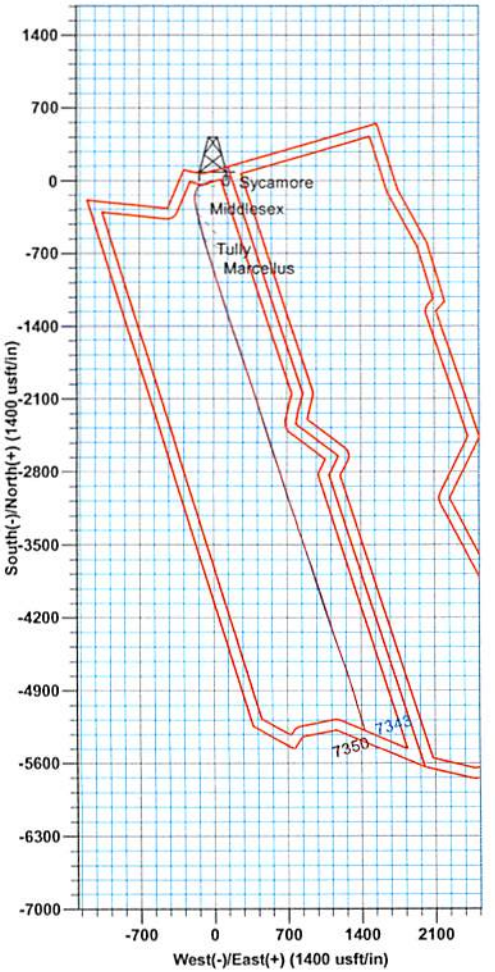
LEGEND

- Chumley Unit 2H, Original Wellpath, As Drilled V0
- Chumley Unit 1H, Original Wellpath, As Drilled V0
- Kelley Unit 2H, Original Wellpath, Plan 6 V0
- As Drilled

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL Kelley Unit 2H	0.0	0.0	0.0	14254564.53	1744514.87	39° 15' 13.757 N	80° 37' 56.171 W
Actual BHL Kelley Unit	7349.6	-5274.4	1432.2	14249290.10	1745947.06	39° 14' 21.548 N	80° 37' 38.234 W





Antero Resources

EOW Completion Report

Scientific Drilling

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Company:	Antero	**Local Co-ordinate Reference:**	Well Kelley Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	Frontier 22: GL 1248' + KB 25' @ 1273.0usft
Site:	Trent/Kelley/Chumley/Roleson/Guss/Denver	**MD Reference:**	Frontier 22: GL 1248' + KB 25' @ 1273.0usft
Well:	Kelley Unit 2H	**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 Fee	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site Trent/Kelley/Chumley/Roleson/Guss/Denver

Site Position:		**Northing:**	14,254,558.34 usft	**Latitude:**	39° 15' 13.695 N
From:	Map	**Easting:**	1,744,533.89 usft	**Longitude:**	80° 37' 55.929 W
Position Uncertainty:	2.0 usft	**Slot Radius:**	13-3/16"	**Grid Convergence:**	0.23 °

Well Kelley Unit 2H

Well Position	**+N/-S**	0.0 usft	**Northing:**	14,254,564.53 usft	**Latitude:**	39° 15' 13.757 N
	+E/-W	0.0 usft	**Easting:**	1,744,514.87 usft	**Longitude:**	80° 37' 56.171 W
Position Uncertainty		2.0 usft	**Wellhead Elevation:**	1,273.0 usft	**Ground Level:**	1,248.0 usft

Wellbore Original Wellpath

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	8/7/2014	-8.57	66.81	52,203

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	162.11

Survey Program **Date** 12/12/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
37.0	6,453.0	Survey #6 Def Gyro to KOP (Original Well	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
6,453.0	12,560.0	Survey #7 MWD Survey (Original Wellpath	MWD SDI	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
37.0	0.21	351.66	37.0	0.1	0.0	-0.1	0.57
62.0	0.43	351.66	62.0	0.2	0.0	-0.2	0.88
87.0	0.64	351.66	87.0	0.4	-0.1	-0.4	0.84
112.0	0.85	351.66	112.0	0.8	-0.1	-0.8	0.84
137.0	0.74	347.65	137.0	1.1	-0.2	-1.1	0.49
162.0	0.58	342.56	162.0	1.4	-0.2	-1.4	0.68
187.0	0.41	340.15	187.0	1.6	-0.3	-1.6	0.68
212.0	0.31	328.52	212.0	1.7	-0.4	-1.8	0.49
237.0	0.18	316.98	237.0	1.8	-0.4	-1.9	0.55
262.0	0.16	311.22	262.0	1.9	-0.5	-1.9	0.11

Company:	Antero	**Local Co-ordinate Reference:**	Well Kelley Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	Frontier 22: GL 1248' + KB 25' @ 1273.0usft
Site:	Trent/Kelley/Chumley/Roleson/Guss/Denver	**MD Reference:**	Frontier 22: GL 1248' + KB 25' @ 1273.0usft
Well:	Kelley Unit 2H	**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)
287.0	0.18	315.22	287.0	1.9	-0.5	-2.0	0.09
312.0	0.13	281.74	312.0	1.9	-0.6	-2.0	0.41
337.0	0.19	273.64	337.0	2.0	-0.7	-2.1	0.26
362.0	0.10	263.32	362.0	2.0	-0.7	-2.1	0.37
387.0	0.07	303.12	387.0	2.0	-0.8	-2.1	0.26
412.0	0.07	278.70	412.0	2.0	-0.8	-2.1	0.12
437.0	0.10	255.78	437.0	2.0	-0.8	-2.1	0.18
462.0	0.09	233.97	462.0	2.0	-0.9	-2.1	0.15
487.0	0.19	233.68	487.0	1.9	-0.9	-2.1	0.40
512.0	0.28	240.21	512.0	1.9	-1.0	-2.1	0.38
537.0	0.34	248.22	537.0	1.8	-1.1	-2.1	0.30
562.0	0.37	248.95	562.0	1.7	-1.3	-2.1	0.12
587.0	0.33	251.91	587.0	1.7	-1.4	-2.0	0.18
612.0	0.33	253.89	612.0	1.7	-1.6	-2.1	0.05
637.0	0.15	269.38	637.0	1.6	-1.7	-2.1	0.76
662.0	0.16	257.18	662.0	1.6	-1.7	-2.1	0.14
687.0	0.25	265.34	687.0	1.6	-1.8	-2.1	0.38
712.0	0.19	260.08	712.0	1.6	-1.9	-2.1	0.25
737.0	0.24	260.08	737.0	1.6	-2.0	-2.1	0.20
762.0	0.33	253.51	762.0	1.6	-2.1	-2.1	0.38
787.0	0.21	244.41	787.0	1.5	-2.2	-2.1	0.51
812.0	0.22	238.67	812.0	1.5	-2.3	-2.1	0.09
837.0	0.20	226.03	837.0	1.4	-2.4	-2.1	0.20
862.0	0.26	234.09	862.0	1.4	-2.5	-2.0	0.27
887.0	0.34	252.35	887.0	1.3	-2.6	-2.0	0.49
912.0	0.35	259.85	912.0	1.3	-2.7	-2.0	0.18
937.0	0.25	261.99	937.0	1.2	-2.9	-2.1	0.40
962.0	0.20	258.81	962.0	1.2	-3.0	-2.1	0.21
987.0	0.13	221.42	987.0	1.2	-3.0	-2.1	0.50
1,012.0	0.22	235.76	1,012.0	1.1	-3.1	-2.0	0.40
1,037.0	0.29	237.97	1,037.0	1.1	-3.2	-2.0	0.28
1,062.0	0.27	259.69	1,062.0	1.0	-3.3	-2.0	0.43
1,087.0	0.20	263.57	1,087.0	1.0	-3.4	-2.0	0.29
1,112.0	0.20	250.29	1,112.0	1.0	-3.5	-2.0	0.19
1,137.0	0.16	234.70	1,137.0	1.0	-3.5	-2.0	0.25
1,162.0	0.25	230.50	1,162.0	0.9	-3.6	-2.0	0.36
1,187.0	0.32	239.70	1,187.0	0.8	-3.7	-1.9	0.33
1,212.0	0.32	241.92	1,212.0	0.8	-3.8	-1.9	0.05
1,237.0	0.25	256.66	1,237.0	0.7	-3.9	-1.9	0.40
1,262.0	0.42	255.07	1,262.0	0.7	-4.1	-1.9	0.68
1,287.0	0.27	261.53	1,287.0	0.7	-4.2	-1.9	0.62
1,312.0	0.29	263.66	1,312.0	0.6	-4.3	-2.0	0.09
1,337.0	0.26	260.70	1,337.0	0.6	-4.5	-2.0	0.13
1,362.0	0.33	253.00	1,362.0	0.6	-4.6	-2.0	0.32

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Company:	Antero	**Local Co-ordinate Reference:**	Well Kelley Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	Frontier 22: GL 1248' + KB 25' @ 1273.0usft
Site:	Trent/Kelley/Chumley/Roleson/Guss/Denver	**MD Reference:**	Frontier 22: GL 1248' + KB 25' @ 1273.0usft
Well:	Kelley Unit 2H	**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)
1,387.0	0.26	253.84	1,387.0	0.6	-4.7	-2.0	0.28
1,412.0	0.52	251.44	1,412.0	0.5	-4.9	-2.0	1.04
1,437.0	0.83	248.35	1,437.0	0.4	-5.2	-2.0	1.25
1,462.0	1.70	245.26	1,462.0	0.2	-5.7	-1.9	3.49
1,487.0	2.65	242.60	1,487.0	-0.2	-6.5	-1.8	3.82
1,512.0	3.31	241.64	1,511.9	-0.8	-7.7	-1.6	2.65
1,537.0	3.51	243.27	1,536.9	-1.5	-9.0	-1.3	0.89
1,562.0	3.60	242.29	1,561.8	-2.2	-10.4	-1.1	0.43
1,587.0	4.23	241.14	1,586.8	-3.0	-11.9	-0.7	2.54
1,612.0	5.19	239.04	1,611.7	-4.1	-13.6	-0.3	3.90
1,637.0	6.01	238.50	1,636.6	-5.3	-15.7	0.3	3.29
1,662.0	6.48	237.46	1,661.4	-6.8	-18.0	0.9	1.93
1,687.0	6.60	237.12	1,686.3	-8.3	-20.4	1.6	0.50
1,712.0	6.75	236.70	1,711.1	-9.9	-22.9	2.4	0.63
1,737.0	6.72	236.74	1,735.9	-11.5	-25.3	3.2	0.12
1,762.0	6.86	236.62	1,760.7	-13.1	-27.8	4.0	0.56
1,787.0	5.88	234.65	1,785.6	-14.7	-30.1	4.8	4.02
1,812.0	5.48	232.43	1,810.5	-16.2	-32.1	5.5	1.83
1,837.0	5.19	231.32	1,835.3	-17.6	-33.9	6.3	1.23
1,862.0	5.04	231.37	1,860.3	-19.0	-35.6	7.1	0.60
1,887.0	4.59	229.51	1,885.2	-20.3	-37.2	7.9	1.91
1,912.0	4.21	229.67	1,910.1	-21.6	-38.7	8.6	1.52
1,937.0	3.74	230.13	1,935.0	-22.7	-40.0	9.3	1.88
1,962.0	3.42	229.25	1,960.0	-23.7	-41.2	9.9	1.30
1,987.0	3.16	229.37	1,984.9	-24.6	-42.3	10.5	1.04
2,012.0	2.78	227.34	2,009.9	-25.5	-43.3	11.0	1.58
2,037.0	2.64	229.50	2,034.9	-26.3	-44.2	11.4	0.69
2,062.0	2.45	230.87	2,059.9	-27.0	-45.0	11.9	0.80
2,087.0	2.25	233.80	2,084.8	-27.6	-45.8	12.2	0.93
2,112.0	1.85	233.49	2,109.8	-28.2	-46.5	12.5	1.60
2,137.0	1.81	237.53	2,134.8	-28.6	-47.2	12.7	0.54
2,162.0	1.71	240.58	2,159.8	-29.0	-47.9	12.9	0.55
2,187.0	1.61	244.14	2,184.8	-29.3	-48.5	13.0	0.57
2,212.0	1.30	240.89	2,209.8	-29.6	-49.1	13.1	1.28
2,237.0	0.98	237.83	2,234.8	-29.9	-49.5	13.2	1.30
2,262.0	0.82	248.82	2,259.8	-30.1	-49.8	13.3	0.94
2,287.0	0.82	233.46	2,284.8	-30.2	-50.2	13.4	0.88
2,312.0	0.76	239.43	2,309.8	-30.4	-50.4	13.5	0.41
2,337.0	0.69	240.13	2,334.8	-30.6	-50.7	13.5	0.28
2,362.0	0.58	237.61	2,359.8	-30.7	-51.0	13.6	0.45
2,387.0	0.53	243.04	2,384.8	-30.8	-51.2	13.6	0.29
2,412.0	0.46	231.22	2,409.8	-31.0	-51.3	13.7	0.49
2,437.0	0.55	236.21	2,434.8	-31.1	-51.5	13.8	0.40
2,462.0	0.37	229.90	2,459.8	-31.2	-51.7	13.8	0.75
2,487.0	0.40	220.11	2,484.8	-31.3	-51.8	13.9	0.29

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Company:	Antero	**Local Co-ordinate Reference:**	Well Kelley Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	Frontier 22: GL 1248' + KB 25' @ 1273.0usft
Site:	Trent/Kelley/Chumley/Roleson/Guss/Denver	**MD Reference:**	Frontier 22: GL 1248' + KB 25' @ 1273.0usft
Well:	Kelley Unit 2H	**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)
2,512.0	0.41	228.97	2,509.8	-31.4	-51.9	14.0	0.25
2,537.0	0.33	238.34	2,534.7	-31.5	-52.1	14.0	0.40
2,562.0	0.24	247.21	2,559.7	-31.6	-52.2	14.1	0.40
2,587.0	0.19	245.91	2,584.7	-31.6	-52.2	14.1	0.20
2,612.0	0.20	241.77	2,609.7	-31.7	-52.3	14.1	0.07
2,637.0	0.14	225.20	2,634.7	-31.7	-52.4	14.1	0.31
2,662.0	0.13	207.78	2,659.7	-31.8	-52.4	14.1	0.17
2,687.0	0.26	224.33	2,684.7	-31.8	-52.5	14.2	0.56
2,712.0	0.29	218.78	2,709.7	-31.9	-52.6	14.2	0.16
2,737.0	0.27	227.12	2,734.7	-32.0	-52.6	14.3	0.18
2,762.0	0.26	219.71	2,759.7	-32.1	-52.7	14.4	0.14
2,787.0	0.30	230.87	2,784.7	-32.2	-52.8	14.4	0.27
2,812.0	0.33	238.27	2,809.7	-32.3	-52.9	14.4	0.20
2,837.0	0.31	253.59	2,834.7	-32.3	-53.0	14.5	0.35
2,862.0	0.22	264.42	2,859.7	-32.3	-53.2	14.4	0.41
2,887.0	0.19	243.98	2,884.7	-32.4	-53.2	14.4	0.31
2,912.0	0.25	225.95	2,909.7	-32.4	-53.3	14.5	0.36
2,937.0	0.31	230.61	2,934.7	-32.5	-53.4	14.5	0.26
2,962.0	0.32	240.03	2,959.7	-32.6	-53.5	14.6	0.21
2,987.0	0.33	258.79	2,984.7	-32.6	-53.6	14.6	0.43
3,012.0	0.38	272.14	3,009.7	-32.6	-53.8	14.5	0.39
3,037.0	0.36	259.98	3,034.7	-32.6	-54.0	14.5	0.32
3,062.0	0.33	265.05	3,059.7	-32.7	-54.1	14.5	0.17
3,087.0	0.36	274.37	3,084.7	-32.7	-54.3	14.4	0.25
3,112.0	0.27	276.50	3,109.7	-32.7	-54.4	14.4	0.36
3,137.0	0.30	282.66	3,134.7	-32.6	-54.5	14.3	0.17
3,162.0	0.30	272.86	3,159.7	-32.6	-54.6	14.3	0.20
3,187.0	0.26	269.69	3,184.7	-32.6	-54.8	14.2	0.17
3,212.0	0.26	282.17	3,209.7	-32.6	-54.9	14.2	0.23
3,237.0	0.22	268.06	3,234.7	-32.6	-55.0	14.1	0.28
3,262.0	0.29	265.67	3,259.7	-32.6	-55.1	14.1	0.28
3,287.0	0.27	254.11	3,284.7	-32.6	-55.2	14.1	0.24
3,312.0	0.25	260.89	3,309.7	-32.6	-55.3	14.1	0.15
3,337.0	0.25	262.98	3,334.7	-32.7	-55.4	14.1	0.04
3,362.0	0.28	265.70	3,359.7	-32.7	-55.6	14.0	0.13
3,387.0	0.30	249.37	3,384.7	-32.7	-55.7	14.0	0.34
3,412.0	0.24	258.71	3,409.7	-32.7	-55.8	14.0	0.30
3,437.0	0.30	253.87	3,434.7	-32.8	-55.9	14.0	0.26
3,462.0	0.27	249.55	3,459.7	-32.8	-56.0	14.0	0.15
3,487.0	0.27	251.74	3,484.7	-32.8	-56.1	14.0	0.04
3,512.0	0.36	250.78	3,509.7	-32.9	-56.3	14.0	0.36
3,537.0	0.40	251.65	3,534.7	-32.9	-56.4	14.0	0.16
3,562.0	0.38	251.63	3,559.7	-33.0	-56.6	14.0	0.08
3,587.0	0.33	252.98	3,584.7	-33.0	-56.7	14.0	0.20

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Company:	Antero	**Local Co-ordinate Reference:**	Well Kelley Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	Frontier 22: GL 1248' + KB 25' @ 1273.0usft
Site:	Trent/Kelley/Chumley/Roleson/Guss/Denver	**MD Reference:**	Frontier 22: GL 1248' + KB 25' @ 1273.0usft
Well:	Kelley Unit 2H	**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)
3,612.0	0.31	260.98	3,609.7	-33.1	-56.9	14.0	0.20
3,637.0	0.33	257.70	3,634.7	-33.1	-57.0	14.0	0.11
3,662.0	0.35	262.59	3,659.7	-33.1	-57.1	14.0	0.14
3,687.0	0.31	263.35	3,684.7	-33.1	-57.3	13.9	0.16
3,712.0	0.24	273.00	3,709.7	-33.1	-57.4	13.9	0.33
3,737.0	0.23	275.22	3,734.7	-33.1	-57.5	13.9	0.05
3,762.0	0.21	253.45	3,759.7	-33.1	-57.6	13.8	0.34
3,787.0	0.21	248.53	3,784.7	-33.2	-57.7	13.8	0.07
3,812.0	0.21	249.10	3,809.7	-33.2	-57.8	13.9	0.01
3,837.0	0.22	239.01	3,834.7	-33.2	-57.9	13.9	0.16
3,862.0	0.28	244.44	3,859.7	-33.3	-58.0	13.9	0.26
3,887.0	0.25	239.46	3,884.7	-33.4	-58.1	13.9	0.15
3,912.0	0.28	236.93	3,909.7	-33.4	-58.2	13.9	0.13
3,937.0	0.34	252.48	3,934.7	-33.5	-58.3	13.9	0.41
3,962.0	0.36	248.15	3,959.7	-33.5	-58.4	14.0	0.13
3,987.0	0.34	255.72	3,984.7	-33.6	-58.6	14.0	0.20
4,012.0	0.36	258.45	4,009.7	-33.6	-58.7	13.9	0.10
4,037.0	0.36	262.51	4,034.7	-33.6	-58.9	13.9	0.10
4,062.0	0.39	264.21	4,059.7	-33.6	-59.0	13.9	0.13
4,087.0	0.42	269.16	4,084.7	-33.7	-59.2	13.8	0.18
4,112.0	0.34	271.30	4,109.7	-33.7	-59.4	13.8	0.32
4,137.0	0.30	267.32	4,134.7	-33.7	-59.5	13.7	0.18
4,162.0	0.36	271.30	4,159.7	-33.7	-59.7	13.7	0.26
4,187.0	0.33	268.65	4,184.7	-33.7	-59.8	13.7	0.14
4,212.0	0.33	270.21	4,209.7	-33.7	-60.0	13.6	0.04
4,237.0	0.32	265.18	4,234.7	-33.7	-60.1	13.6	0.12
4,262.0	0.23	260.52	4,259.7	-33.7	-60.2	13.6	0.37
4,287.0	0.24	260.98	4,284.7	-33.7	-60.3	13.5	0.04
4,312.0	0.23	260.82	4,309.7	-33.7	-60.4	13.5	0.04
4,337.0	0.22	256.60	4,334.7	-33.7	-60.5	13.5	0.08
4,362.0	0.26	243.08	4,359.7	-33.8	-60.6	13.5	0.28
4,387.0	0.23	238.05	4,384.7	-33.8	-60.7	13.5	0.15
4,412.0	0.17	234.00	4,409.7	-33.9	-60.8	13.6	0.25
4,437.0	0.24	240.93	4,434.7	-33.9	-60.8	13.6	0.30
4,462.0	0.18	240.60	4,459.7	-34.0	-60.9	13.6	0.24
4,487.0	0.23	263.71	4,484.7	-34.0	-61.0	13.6	0.38
4,512.0	0.21	241.74	4,509.7	-34.0	-61.1	13.6	0.34
4,537.0	0.18	245.87	4,534.7	-34.1	-61.2	13.6	0.13
4,562.0	0.18	243.54	4,559.7	-34.1	-61.3	13.6	0.03
4,587.0	0.12	248.38	4,584.7	-34.1	-61.3	13.6	0.25
4,612.0	0.06	355.09	4,609.7	-34.1	-61.3	13.6	0.60
4,637.0	0.11	303.30	4,634.7	-34.1	-61.4	13.6	0.35
4,662.0	0.09	277.52	4,659.7	-34.1	-61.4	13.6	0.19
4,687.0	0.15	281.83	4,684.7	-34.1	-61.4	13.5	0.24

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Company:	Antero	**Local Co-ordinate Reference:**	Well Kelley Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	Frontier 22: GL 1248' + KB 25' @ 1273.0usft
Site:	Trent/Kelley/Chumley/Roleson/Guss/Denver	**MD Reference:**	Frontier 22: GL 1248' + KB 25' @ 1273.0usft
Well:	Kelley Unit 2H	**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)
4,712.0	0.13	324.68	4,709.7	-34.0	-61.5	13.5	0.42
4,737.0	0.13	334.75	4,734.7	-34.0	-61.5	13.4	0.09
4,762.0	0.13	340.76	4,759.7	-33.9	-61.5	13.4	0.05
4,787.0	0.14	6.99	4,784.7	-33.9	-61.6	13.3	0.25
4,812.0	0.12	347.16	4,809.7	-33.8	-61.6	13.3	0.20
4,837.0	0.15	9.16	4,834.7	-33.8	-61.6	13.2	0.24
4,862.0	0.10	1.74	4,859.7	-33.7	-61.5	13.2	0.21
4,887.0	0.10	40.03	4,884.7	-33.7	-61.5	13.1	0.26
4,912.0	0.18	39.89	4,909.7	-33.6	-61.5	13.1	0.32
4,937.0	0.17	61.05	4,934.7	-33.6	-61.4	13.1	0.26
4,962.0	0.16	53.58	4,959.7	-33.5	-61.4	13.1	0.09
4,987.0	0.19	62.68	4,984.7	-33.5	-61.3	13.0	0.16
5,012.0	0.17	70.50	5,009.7	-33.5	-61.2	13.0	0.13
5,037.0	0.16	74.16	5,034.7	-33.4	-61.2	13.0	0.06
5,062.0	0.12	73.65	5,059.7	-33.4	-61.1	13.0	0.16
5,087.0	0.13	73.08	5,084.7	-33.4	-61.1	13.0	0.04
5,112.0	0.09	73.16	5,109.7	-33.4	-61.0	13.0	0.16
5,137.0	0.12	96.67	5,134.7	-33.4	-61.0	13.0	0.21
5,162.0	0.13	121.53	5,159.7	-33.4	-60.9	13.1	0.22
5,187.0	0.12	129.67	5,184.7	-33.4	-60.9	13.1	0.08
5,212.0	0.13	115.52	5,209.7	-33.5	-60.8	13.2	0.13
5,237.0	0.11	108.42	5,234.7	-33.5	-60.8	13.2	0.10
5,262.0	0.15	122.75	5,259.7	-33.5	-60.7	13.2	0.21
5,287.0	0.13	127.30	5,284.7	-33.5	-60.7	13.3	0.09
5,312.0	0.16	104.71	5,309.7	-33.6	-60.6	13.3	0.26
5,337.0	0.14	101.65	5,334.7	-33.6	-60.6	13.4	0.09
5,362.0	0.17	97.38	5,359.7	-33.6	-60.5	13.4	0.13
5,387.0	0.22	98.55	5,384.7	-33.6	-60.4	13.4	0.20
5,412.0	0.15	88.58	5,409.7	-33.6	-60.3	13.5	0.31
5,437.0	0.15	105.15	5,434.7	-33.6	-60.3	13.5	0.17
5,462.0	0.24	94.16	5,459.7	-33.6	-60.2	13.5	0.39
5,487.0	0.25	100.08	5,484.7	-33.6	-60.1	13.6	0.11
5,512.0	0.26	92.12	5,509.7	-33.7	-60.0	13.6	0.15
5,537.0	0.26	94.70	5,534.7	-33.7	-59.9	13.7	0.05
5,562.0	0.19	101.42	5,559.7	-33.7	-59.8	13.7	0.30
5,587.0	0.24	96.81	5,584.7	-33.7	-59.7	13.7	0.21
5,612.0	0.14	94.72	5,609.7	-33.7	-59.6	13.8	0.40
5,637.0	0.21	78.22	5,634.7	-33.7	-59.5	13.8	0.34
5,662.0	0.05	89.99	5,659.7	-33.7	-59.4	13.8	0.65
5,687.0	0.07	84.67	5,684.7	-33.7	-59.4	13.8	0.08
5,712.0	0.05	85.40	5,709.7	-33.7	-59.4	13.8	0.08
5,737.0	0.05	75.68	5,734.7	-33.7	-59.4	13.8	0.03
5,762.0	0.06	39.17	5,759.7	-33.7	-59.4	13.8	0.14
5,787.0	0.03	146.18	5,784.7	-33.7	-59.3	13.8	0.30

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Company:	Antero	**Local Co-ordinate Reference:**	Well Kelley Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	Frontier 22: GL 1248' + KB 25' @ 1273.0usft
Site:	Trent/Kelley/Chumley/Roleson/Guss/Denver	**MD Reference:**	Frontier 22: GL 1248' + KB 25' @ 1273.0usft
Well:	Kelley Unit 2H	**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)
5,812.0	0.06	300.79	5,809.7	-33.7	-59.4	13.8	0.35
5,837.0	0.14	311.42	5,834.7	-33.6	-59.4	13.8	0.33
5,862.0	0.14	275.09	5,859.7	-33.6	-59.4	13.7	0.35
5,887.0	0.20	279.19	5,884.7	-33.6	-59.5	13.7	0.24
5,912.0	0.21	282.62	5,909.7	-33.6	-59.6	13.7	0.06
5,937.0	0.17	350.55	5,934.7	-33.5	-59.7	13.6	0.86
5,962.0	0.25	293.00	5,959.7	-33.5	-59.7	13.5	0.86
5,987.0	0.22	337.09	5,984.7	-33.4	-59.8	13.4	0.71
6,012.0	0.11	269.71	6,009.7	-33.4	-59.8	13.4	0.82
6,037.0	0.17	5.22	6,034.7	-33.3	-59.8	13.3	0.84
6,062.0	0.33	336.51	6,059.7	-33.2	-59.9	13.2	0.79
6,087.0	0.14	311.01	6,084.7	-33.1	-59.9	13.1	0.85
6,112.0	0.27	318.26	6,109.7	-33.1	-60.0	13.1	0.53
6,137.0	0.32	303.49	6,134.7	-33.0	-60.1	12.9	0.36
6,162.0	0.39	320.80	6,159.7	-32.9	-60.2	12.8	0.51
6,187.0	0.37	323.02	6,184.7	-32.8	-60.3	12.7	0.10
6,212.0	0.14	324.73	6,209.7	-32.7	-60.4	12.6	0.92
6,237.0	0.35	328.53	6,234.7	-32.6	-60.4	12.4	0.84
6,262.0	0.27	326.25	6,259.7	-32.5	-60.5	12.3	0.32
6,287.0	0.21	326.87	6,284.7	-32.4	-60.5	12.2	0.24
6,312.0	0.19	307.94	6,309.7	-32.3	-60.6	12.1	0.27
6,337.0	0.21	307.40	6,334.7	-32.3	-60.7	12.1	0.08
6,362.0	0.26	291.48	6,359.7	-32.2	-60.8	12.0	0.33
6,387.0	0.27	314.57	6,384.7	-32.2	-60.9	11.9	0.43
6,412.0	0.22	333.78	6,409.7	-32.1	-60.9	11.8	0.38
6,437.0	0.31	272.03	6,434.7	-32.0	-61.0	11.7	1.13
6,453.0	0.34	250.04	6,450.7	-32.0	-61.1	11.7	0.80
6,549.0	0.52	283.58	6,546.7	-32.0	-61.8	11.5	0.31
6,581.0	3.76	268.64	6,578.7	-32.0	-63.0	11.1	10.19
6,613.0	7.63	269.32	6,610.5	-32.1	-66.2	10.2	12.10
6,645.0	11.18	272.65	6,642.1	-32.0	-71.4	8.5	11.22
6,677.0	15.15	273.52	6,673.2	-31.6	-78.7	5.9	12.42
6,709.0	17.79	273.65	6,703.9	-31.0	-87.7	2.5	8.25
6,741.0	17.84	269.29	6,734.4	-30.7	-97.5	-0.7	4.17
6,773.0	17.85	256.01	6,764.9	-32.0	-107.2	-2.5	12.69
6,805.0	18.80	243.28	6,795.3	-35.5	-116.5	-2.0	12.83
6,837.0	20.30	233.21	6,825.4	-41.1	-125.6	0.6	11.51
6,869.0	22.02	223.14	6,855.3	-48.8	-134.1	5.3	12.55
6,886.0	23.04	218.87	6,871.0	-53.8	-138.4	8.6	11.34
Sycamore							
6,901.0	24.03	215.40	6,884.7	-58.5	-142.0	12.1	11.34
6,934.0	26.22	208.55	6,914.6	-70.4	-149.4	21.1	11.02
6,966.0	28.48	202.99	6,943.0	-83.7	-155.7	31.8	10.65
6,998.0	30.33	197.82	6,970.9	-98.4	-161.2	44.1	9.81

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Company:	Antero	**Local Co-ordinate Reference:**	Well Kelley Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	Frontier 22: GL 1248' + KB 25' @ 1273.0usft
Site:	Trent/Kelley/Chumley/Roleson/Guss/Denver	**MD Reference:**	Frontier 22: GL 1248' + KB 25' @ 1273.0usft
Well:	Kelley Unit 2H	**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)
7,030.0	32.45	193.24	6,998.2	-114.4	-165.6	58.0	9.97
7,062.0	34.62	188.27	7,024.9	-131.8	-168.9	73.5	10.93
7,070.0	35.15	186.97	7,031.5	-136.3	-169.5	77.7	11.40
Middlesex							
7,094.0	36.81	183.27	7,050.9	-150.4	-170.8	90.6	11.40
7,126.0	38.83	177.87	7,076.2	-170.0	-170.9	109.2	12.12
7,158.0	41.36	175.57	7,100.7	-190.5	-169.8	129.2	9.16
7,190.0	44.38	173.25	7,124.1	-212.2	-167.6	150.4	10.65
7,223.0	47.85	170.40	7,147.0	-235.7	-164.2	173.9	12.22
7,255.0	51.13	168.79	7,167.8	-259.6	-159.8	198.0	10.94
7,287.0	53.69	168.32	7,187.3	-284.5	-154.8	223.2	8.08
7,319.0	55.48	167.66	7,205.8	-310.0	-149.4	249.1	5.84
Tully							
7,351.0	57.61	167.02	7,223.5	-336.0	-143.5	275.7	6.86
7,383.0	60.22	166.51	7,240.0	-362.7	-137.2	303.0	8.27
7,415.0	62.75	166.08	7,255.3	-390.0	-130.6	331.1	7.99
7,447.0	65.39	165.74	7,269.3	-417.9	-123.6	359.8	8.31
7,479.0	68.30	165.15	7,281.8	-446.4	-116.2	389.2	9.25
7,511.0	70.24	165.30	7,293.2	-475.4	-108.5	419.0	6.08
7,543.0	70.67	165.33	7,303.9	-504.5	-100.9	449.1	1.35
7,575.0	71.87	164.96	7,314.1	-533.8	-93.1	479.4	3.91
7,607.0	74.26	165.05	7,323.5	-563.4	-85.2	510.0	7.47
7,608.0	74.32	165.05	7,323.7	-564.3	-85.0	510.9	5.97
Marcellus							
7,640.0	76.23	165.07	7,331.9	-594.2	-77.0	541.8	5.97
7,672.0	80.24	164.70	7,338.4	-624.5	-68.8	573.1	12.58
7,704.0	85.16	163.54	7,342.5	-655.0	-60.1	604.8	15.79
7,762.0	90.47	162.00	7,344.7	-710.3	-43.0	662.8	9.53
7,800.0	90.47	161.57	7,344.4	-746.4	-31.1	700.8	1.13
7,896.0	89.87	162.65	7,344.1	-837.8	-1.6	796.8	1.29
7,992.0	89.80	163.30	7,344.3	-929.6	26.5	892.8	0.68
8,089.0	89.26	162.39	7,345.1	-1,022.2	55.1	989.7	1.09
8,185.0	89.76	163.08	7,346.0	-1,113.9	83.6	1,085.7	0.89
8,281.0	88.72	162.81	7,347.2	-1,205.7	111.8	1,181.7	1.12
8,378.0	88.08	162.58	7,349.9	-1,298.2	140.6	1,278.7	0.70
8,474.0	88.83	161.33	7,352.5	-1,389.5	170.3	1,374.6	1.52
8,570.0	88.49	160.69	7,354.8	-1,480.2	201.6	1,470.6	0.75
8,666.0	89.93	161.92	7,356.1	-1,571.2	232.3	1,566.6	1.97
8,763.0	89.97	162.25	7,356.2	-1,663.5	262.2	1,663.6	0.34
8,859.0	88.26	161.33	7,357.7	-1,754.6	292.2	1,759.5	2.02
8,955.0	88.56	161.44	7,360.3	-1,845.6	322.8	1,855.5	0.33
9,052.0	90.50	163.01	7,361.1	-1,937.9	352.4	1,952.5	2.57
9,148.0	89.29	161.57	7,361.3	-2,029.4	381.6	2,048.5	1.96
9,245.0	89.93	162.89	7,362.0	-2,121.8	411.2	2,145.5	1.51
9,341.0	90.37	163.58	7,361.7	-2,213.7	438.9	2,241.5	0.85

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Company:	Antero	**Local Co-ordinate Reference:**	Well Kelley Unit 2H
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Site:	Trent/Kelley/Chumley/Roleson/Guss/Denver	**MD Reference:**	Frontier 22: GL 1248' + KB 25' @ 1273.0usft
Well:	Kelley Unit 2H	**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)
9,437.0	89.13	162.01	7,362.1	-2,305.4	467.3	2,337.4	2.08
9,533.0	90.10	163.32	7,362.8	-2,397.0	495.9	2,433.4	1.70
9,629.0	88.09	161.79	7,364.3	-2,488.6	524.7	2,529.4	2.63
9,726.0	87.85	160.98	7,367.7	-2,580.4	555.6	2,626.3	0.87
9,822.0	88.89	161.48	7,370.5	-2,671.3	586.5	2,722.3	1.20
9,918.0	89.83	161.83	7,371.5	-2,762.4	616.7	2,818.3	1.04
10,015.0	90.61	162.92	7,371.2	-2,854.9	646.1	2,915.3	1.38
10,111.0	89.93	162.43	7,370.7	-2,946.5	674.7	3,011.3	0.87
10,208.0	89.30	161.76	7,371.4	-3,038.8	704.5	3,108.3	0.95
10,304.0	88.66	161.05	7,373.1	-3,129.8	735.1	3,204.2	1.00
10,400.0	88.46	160.65	7,375.5	-3,220.4	766.6	3,300.2	0.47
10,496.0	91.11	163.18	7,375.8	-3,311.7	796.4	3,396.2	3.82
10,592.0	90.13	161.74	7,374.8	-3,403.2	825.3	3,492.2	1.81
10,689.0	90.50	160.37	7,374.3	-3,494.9	856.8	3,589.1	1.46
10,785.0	92.62	161.95	7,371.7	-3,585.7	887.8	3,685.1	2.75
10,881.0	90.27	161.54	7,369.2	-3,676.9	917.8	3,781.0	2.48
10,978.0	90.37	160.88	7,368.7	-3,768.7	949.1	3,878.0	0.69
11,074.0	90.84	162.24	7,367.7	-3,859.8	979.4	3,974.0	1.50
11,170.0	90.77	161.49	7,366.3	-3,951.0	1,009.3	4,070.0	0.78
11,267.0	91.41	161.88	7,364.5	-4,043.1	1,039.8	4,167.0	0.77
11,363.0	91.19	162.58	7,362.3	-4,134.5	1,069.1	4,263.0	0.76
11,460.0	91.85	163.74	7,359.7	-4,227.3	1,097.2	4,359.9	1.38
11,556.0	90.27	161.46	7,358.0	-4,318.8	1,125.9	4,455.9	2.89
11,652.0	90.81	159.78	7,357.1	-4,409.4	1,157.7	4,551.8	1.84
11,748.0	91.48	162.36	7,355.1	-4,500.2	1,188.9	4,647.8	2.78
11,844.0	90.27	159.79	7,353.7	-4,591.0	1,220.0	4,743.8	2.96
11,941.0	90.30	160.25	7,353.2	-4,682.1	1,253.1	4,840.7	0.48
12,037.0	91.11	161.81	7,352.0	-4,772.9	1,284.3	4,936.7	1.83
12,134.0	90.84	163.85	7,350.4	-4,865.6	1,313.0	5,033.6	2.12
12,230.0	91.34	164.97	7,348.5	-4,958.0	1,338.8	5,129.5	1.28
12,327.0	90.94	164.14	7,346.6	-5,051.5	1,364.6	5,226.4	0.95
12,423.0	89.03	163.18	7,346.6	-5,143.6	1,391.6	5,322.4	2.23
12,502.0	88.66	162.59	7,348.2	-5,219.1	1,414.8	5,401.4	0.88
12,560.0	88.66	162.59	7,349.6	-5,274.4	1,432.2	5,459.4	0.00

Company:	Antero	**Local Co-ordinate Reference:**	Well Kelley Unit 2H
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Well:	Kelley Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

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Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
6,886.0	6,871.0	-53.8	-138.4	Sycamore
7,070.0	7,031.5	-136.3	-169.5	Middlesex
7,319.0	7,205.8	-310.0	-149.4	Tully
7,608.0	7,323.7	-564.3	-85.0	Marcellus

Checked By: _____ Approved By: _____ Date: _____

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	12/21/2016
Job End Date:	1/12/2017
State:	West Virginia
County:	Doddridge
API Number:	47-017-06282-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Kelley 2H
Latitude:	39.25382222
Longitude:	-80.63226944
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	7,374
Total Base Water Volume (gal):	10,556,418
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
Fresh Water	Operator	Base Fluid					
			Water	7732-18-5	100.00000	87.36411	Density = 8.330
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.20698	

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MC S-2510T	Halliburton	Scale Inhibitor					
				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			
HYDROCHLORIC ACID	Halliburton	Solvent					
				Listed Below			
FR-76	Halliburton	Friction Reducer					
				Listed Below			
SP BREAKER	Halliburton	Breaker					
				Listed Below			
MC B-8614	Halliburton	Biocide					
				Listed Below			
SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676)	Halliburton	Proppant					
				Listed Below			
SAND-PREMIUM WHITE-40/70, BULK	Halliburton	Proppant					
				Listed Below			

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Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.							
			Crystalline silica, quartz	14808-60-7	100.00000	12.38949	
			Hydrochloric acid	7647-01-0	15.00000	0.02342	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01770	
			Inorganic salt	Proprietary	30.00000	0.01770	
			Acrylamide acrylate copolymer	Proprietary	30.00000	0.01770	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Guar gum	9000-30-0	100.00000	0.00851	
			Ethylene Glycol	107-21-1	60.00000	0.00832	
			Glutaraldehyde	111-30-8	30.00000	0.00259	
			Neutralized Polyacrylic Emulsion	Proprietary	10.00000	0.00139	
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00043	
			Sodium persulfate	7775-27-1	100.00000	0.00029	
			Ethanol	64-17-5	1.00000	0.00009	
			Methanol	67-56-1	0.14000	0.00001	
			Phosphoric acid	7664-38-2	0.10000	0.00001	
			Sodium sulfate	7757-82-6	0.10000	0.00000	

* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water
** Information is based on the maximum potential for concentration and thus the total may be over 100%
*** If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

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)

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Notes:
West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
Well No. Kelley Unit 2H Top Hole coordinates are
N: 276,577.54' Latitude: 39° 15'13.76"
E: 1,679,366.04' Longitude: 80°37'56.18"
Bottom Hole coordinates are
N: 271,280.10' Latitude: 39°14'21.57"
E: 1,680,710.67' Longitude: 80°37'38.24"
UTM Zone 17, NAD 1983
Top Hole Coordinates Bottom Hole Coordinates
N: 4,345,018.123m N: 4,343,411.089m
E: 531,743.515m E: 532,180.073m
Plat orientation and corner and well references are based upon the grid north meridian.
Well location references are based upon the magnetic meridian.

Antero Resources Well No. Kelley Unit 2H As-Drilled Plat

Antero Resources Corporation

2,232' to Top Hole

697' to Bottom Hole

TOP HOLE LATITUDE 39 - 17 - 30
BTM HOLE LATITUDE 39 - 15 - 00

LONGITUDE 80 - 37 - 30

3,880' to Bottom Hole

13,757' to Top Hole

	Par.	Tax Map 3 Owner	DB/Pg.	Acres
1	42.1	Rodney H. & Terry L. Trent	270/439	7.05
2	37.4	Rodney H. & Terry L. Trent	215/49	12.97
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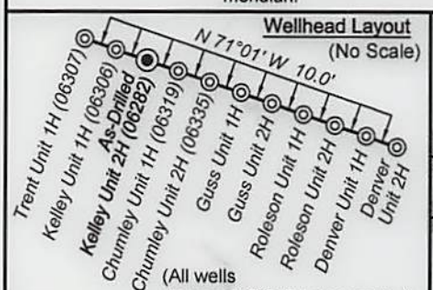
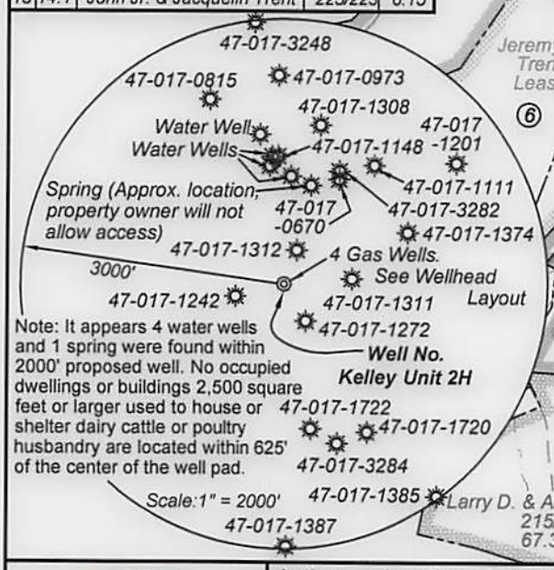
4	37	Loretta C. Kelley	235/543	1.64
5	37.1	John & Mary Anderson	242/612	0.23
6	42	Jeremy S. Trent	254/21	34.16

Wellhead Layout (No Scale)



(All wells have a "47-017-" designation)

	Par.	Tax Map 3 Owner	DB/Pg.	Acres
7	22.2	Sharon M. Davis	198/595	5.09
8	22.7	Linda Burnside	198/607	7.62
9	22.6	Eugene Errol Lloyd	198/604	2.65
10	22.5	Eugene Errol Lloyd	286/360	2.80
11	22.4	Eugene Errol Lloyd	286/360	2.02
12	22.3	Eugene Errol Lloyd	286/360	6.12
13	14.1	John Jr. & Jacquelin Trent	225/223	6.15



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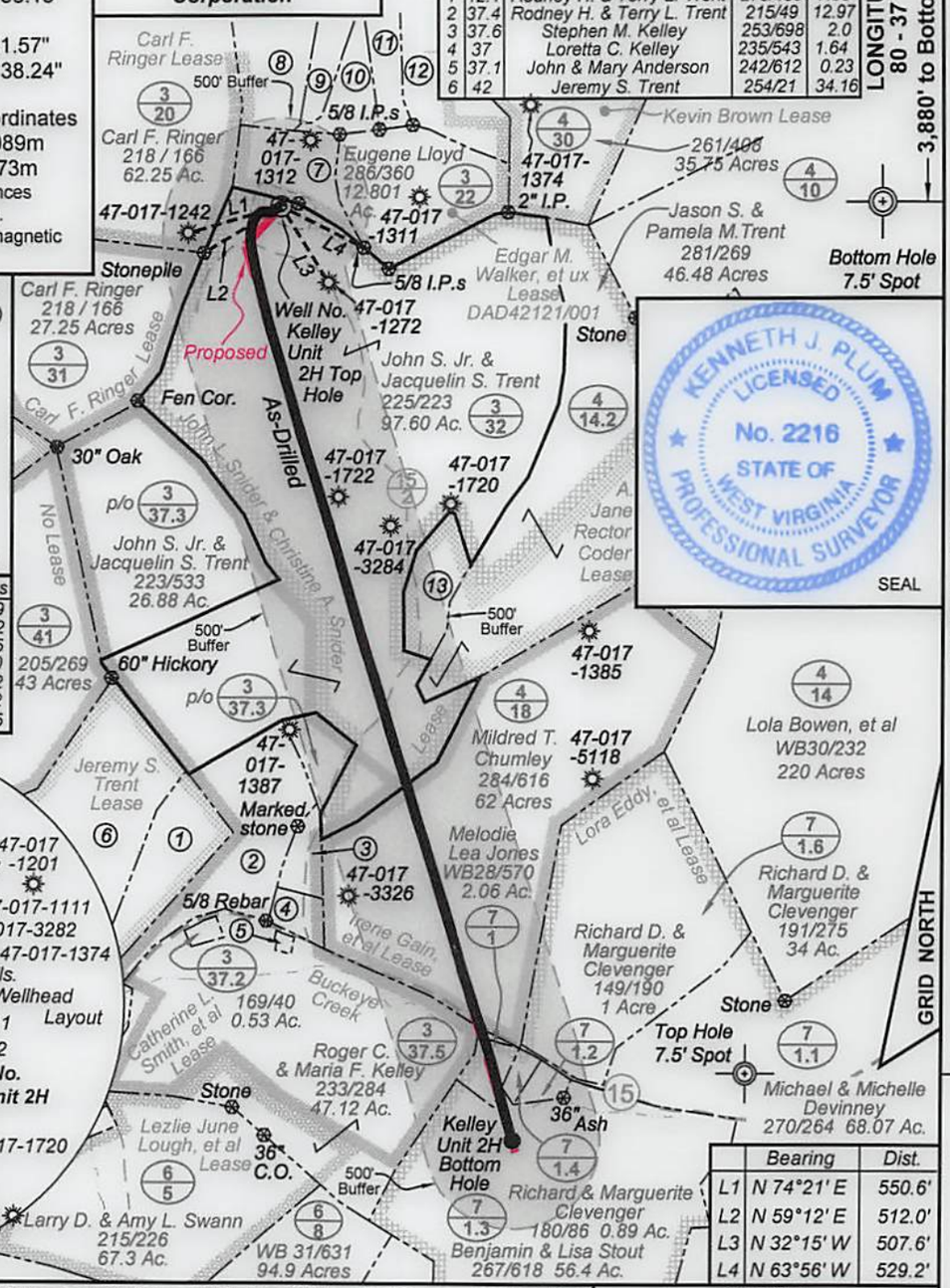

KENNETH J. PLUM LICENSED No. 2216 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR
SEAL

	Bearing	Dist.
L1	N 74°21' E	550.6'
L2	N 59°12' E	512.0'
L3	N 32°15' W	507.6'
L4	N 63°56' W	529.2'

ALLEGHENY SURVEYS, INC.

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

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

Top Hole coordinates verified by survey grade GPS. As-drilled data and information was provided by Antero Resources Corporation. Allegheny Surveys, Inc. (ASI) is not certifying the data and information provided. ASI is not responsible for any errors or inaccuracies with the data and information that has been provided.

FILE NO: 105-30-G-13
DRAWING NO: Kelly 2H Well Plat As-Drilled
SCALE: 1" = 1000'
MINIMUM DEGREE OF ACCURACY: Submeter
PROVEN SOURCE OF ELEVATION: WVDOT, Bridgeport, WV

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

DATE: July 13 2017
OPERATOR'S WELL NO. Kelley Unit 2H
API WELL NO
47 - 017 - 06282
STATE COUNTY PERMIT

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

LOCATION: ELEVATION: Existing Grade - 1248' Original Grade - 1269' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: New Milton & Smithburg
DISTRICT: Greenbrier COUNTY: Doddridge
SURFACE OWNER: John S. Jr. & Jacquelin S. Trent ACREAGE: 97.60
ROYALTY OWNER: John L. Snider & Christine A. Snider; Lora Eddy, et al; Irene Gain, et al LEASE NO: ACREAGE: 98.9; 65; 166.25
PROPOSED WORK: ☐ DRILL ☐ CONVERT ☐ DRILL DEEPER ☐ FRACTURE OR STIMULATE ☐ PLUG OFF OLD FORMATION
☐ PERFORATE NEW FORMATION ☒ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled
☐ PLUG AND ABANDON ☐ CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale DEPTH: 7,350' TVD 12,560' MD

WELL OPERATOR: Antero Resources Corporation
ADDRESS: 1615 Wynkoop Street, Denver, CO 80202
DESIGNATED AGENT: Dianna Stamper - CT Corporation System
ADDRESS: 5400 D Big Tyler Road, Charleston, WV 25313

Notes:
West Virginia Coordinate System of 1927, North Zone
based upon Differential GPS Measurements.
Well No. Kelley Unit 2H Top Hole coordinates are
N: 276,577.54' Latitude: 39°15'13.76"
E: 1,679,366.04' Longitude: 80°37'56.18"
Bottom Hole coordinates are
N: 271,280.10' Latitude: 39°14'21.57"
E: 1,680,710.67' Longitude: 80°37'38.24"
UTM Zone 17, NAD 1983
Top Hole Coordinates Bottom Hole Coordinates
N: 4,345,018.123m N: 4,343,411.089m
E: 531,743.515m E: 532,180.073m
Plat orientation and corner and well references are based upon the grid north meridian.
Well location references are based upon the magnetic meridian.

Antero Resources Well No. Kelley Unit 2H As-Drilled Plat
Antero Resources Corporation

2,232' to Top Hole
697' to Bottom Hole
TOP HOLE LATITUDE 39 - 17 - 30
BTM HOLE LATITUDE 39 - 15 - 00
LONGITUDE 80 - 37 - 30
3,880' to Bottom Hole
13,757' to Top Hole

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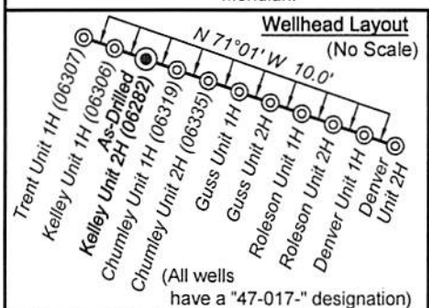

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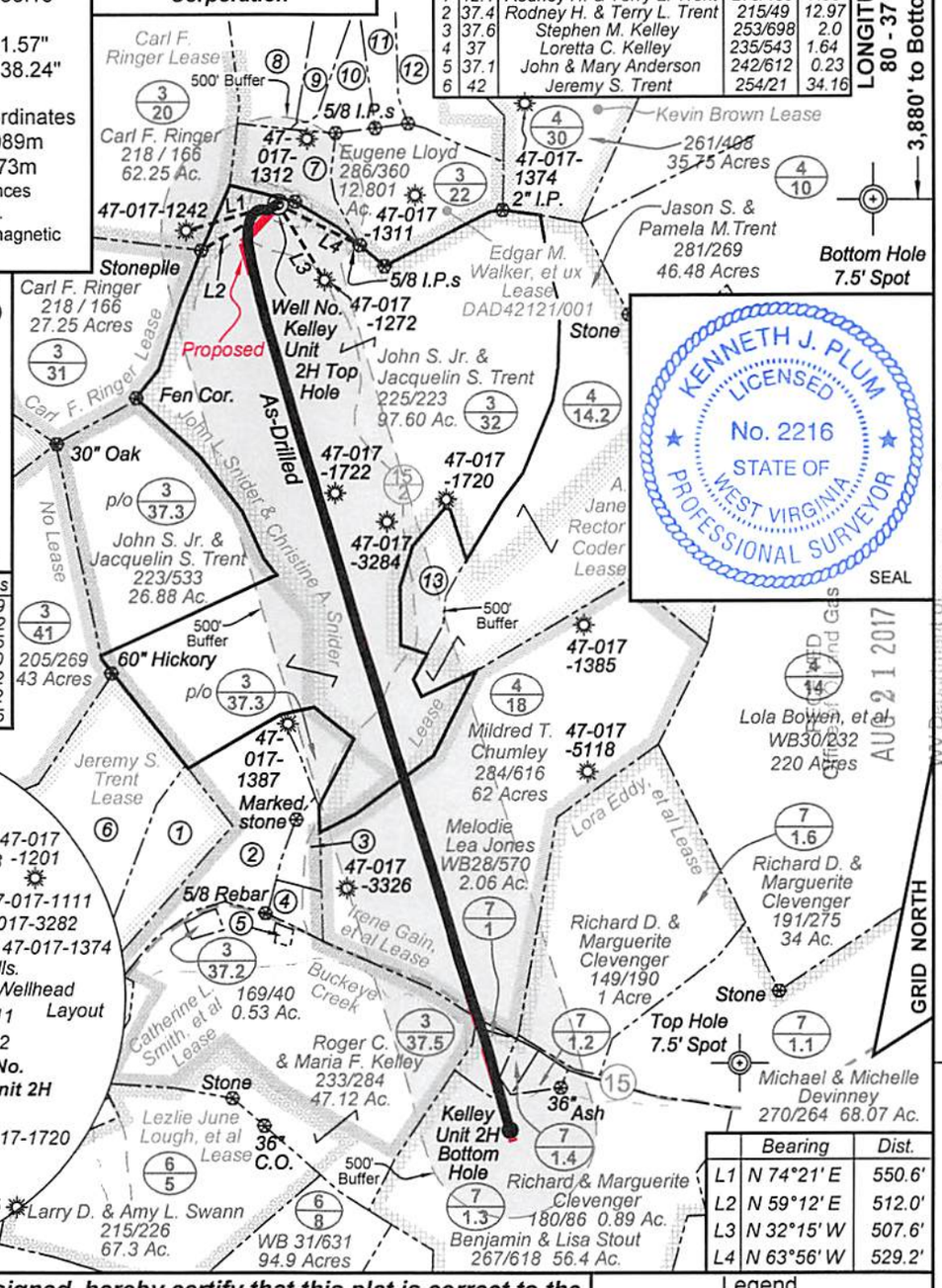

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SEAL

RECEIVED Office of Oil and Gas AUG 21 2017 WV Department of Environmental Protection

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