

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

API 47 - 017 - 06819 County Doddridge District West Union  
Quad West Union 7.5' Pad Name Middle Pad Field/Pool Name -----  
Farm name Antero Resources Corporation Well Number Chalk 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 4352583.197m Easting 516704.756m  
Landing Point of Curve Northing 4352375.49m Easting 517334.81m  
Bottom Hole Northing 4350344.37m Easting 518201.031m

Elevation (ft) 843' 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

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Date permit issued 6/19/2017 Date drilling commenced 9/29/2017 Date drilling ceased 2/18/2018  
Date completion activities began 6/5/2018 Date completion activities ceased 9/25/2018  
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 None Identified Open mine(s) (Y/N) depths No  
Salt water depth(s) ft None Identified Void(s) encountered (Y/N) depths No  
Coal depth(s) ft None Identified Cavern(s) encountered (Y/N) depths No  
Is coal being mined in area (Y/N) No

Reviewed by: \_\_\_\_\_

Reviewed

*Jul C...* 2/27/19

API 47-017 - 06819 Farm name Antero Resources Corporation Well number Chalk 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"	112'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	551'	New	54#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2666'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"78-1/2"	5-1/2"	15388'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6778'		4.7#, 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 <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	Class A	204 sx	15.6	1.18	241	0'	8 Hrs.
Surface	Class A	480 sx	15.6	1.21	581	0'	8 Hrs.
Coal							
Intermediate 1	Class A	890 sx	15.6	1.21	1077	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	688 sx (Lead) 1370 sx (Tail)	13.5(Lead), 15.2 (Tail)	1.53 (Lead), 1.83 (Tail)	3560	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 15388' MD, 6543' TVD (BHL), 6562' (Deepest Point Drilled) Loggers TD (ft) 15388' MD **RECEIVED**  
 Deepest formation penetrated Marcellus Plug back to (ft) Office of Oil and Gas  
 Plug back procedure N/A

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Kick off depth (ft) 6019'

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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 47-017 - 06819 Farm name Antero Resources Corporation Well number Chalk Unit 2H

PERFORATION RECORD

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

Please insert additional pages as applicable.

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STIMULATION INFORMATION PER STAGE **JAN 24 2019**

Complete a separate record for each stimulation stage.

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Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbbls)	Amount of Nitrogen/other (units)
<b>*PLEASE SEE ATTACHED EXHIBIT 2</b>								

Please insert additional pages as applicable.

API 47- 017 - 06819 Farm name Antero Resources Corporation Well number Chalk Unit 2H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus</u>	<u>6380' (TOP)</u> TVD	<u>6826' (TOP)</u> 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 13702.4 mcfpd Oil 178.56 bpd NGL --- bpd Water 665.43 bpd GAS MEASURED BY  Estimated  Orifice  Pilot

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

**\*PLEASE SEE ATTACHED EXHIBIT 3**


Please insert additional pages as applicable.

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

Logging Company Nine Energy Service  
Address 125 Museum Rd City Washington State PA Zip 15301

Cementing Company C&J Energy Services  
Address 1650 Hackers Creek City Lane Jew State WV Zip 26378

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

Please insert additional pages as applicable.

Completed by Karin Cox Telephone 303-357-6820  
Signature \_\_\_\_\_ Title Permitting Agent Date \_\_\_\_\_

API 47-017-06819 Farm Name Antero Resources Corp Well Number Chalk Unit 2H

**EXHIBIT 1**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	6/5/2018	15195	15287.9	60	Marcellus
2	6/6/2018	14996.982	15163.997	60	Marcellus
3	6/6/2018	14798.964	14965.979	60	Marcellus
4	6/7/2018	14600.946	14767.961	60	Marcellus
5	6/7/2018	14402.928	14569.943	60	Marcellus
6	6/8/2018	14204.91	14371.925	60	Marcellus
7	6/8/2018	14006.892	14173.907	60	Marcellus
8	6/9/2018	13808.874	13975.889	60	Marcellus
9	6/9/2018	13610.856	13777.871	60	Marcellus
10	6/9/2018	13412.838	13579.853	60	Marcellus
11	6/10/2018	13214.82	13381.835	60	Marcellus
12	6/10/2018	13016.802	13183.817	60	Marcellus
13	6/12/2018	12818.784	12985.799	60	Marcellus
14	6/12/2018	12620.766	12787.781	60	Marcellus
15	6/12/2018	12422.748	12589.763	60	Marcellus
16	6/13/2018	12224.73	12391.745	60	Marcellus
17	6/13/2018	12026.712	12193.727	60	Marcellus
18	6/13/2018	11828.694	11995.709	60	Marcellus
19	6/14/2018	11630.676	11797.691	60	Marcellus
20	6/14/2018	11432.658	11599.673	60	Marcellus
21	6/14/2018	11234.64	11401.655	60	Marcellus
22	6/15/2018	11036.622	11203.637	60	Marcellus
23	6/15/2018	10838.604	11005.619	60	Marcellus
24	6/15/2018	10640.586	10807.601	60	Marcellus
25	6/16/2018	10442.568	10609.583	60	Marcellus
26	6/16/2018	10244.55	10411.565	60	Marcellus
27	6/16/2018	10046.532	10213.547	60	Marcellus
28	6/17/2018	9848.514	10015.529	60	Marcellus
29	6/17/2018	9650.496	9817.511	60	Marcellus
30	6/17/2018	9452.478	9619.493	60	Marcellus
31	6/18/2018	9254.46	9421.475	60	Marcellus
32	6/18/2018	9056.442	9223.457	60	Marcellus
33	6/20/2018	8858.424	9025.439	60	Marcellus
34	6/21/2018	8660.406	8827.421	60	Marcellus
35	6/22/2018	8462.388	8629.403	60	Marcellus
36	6/22/2018	8264.37	8431.385	60	Marcellus
37	6/23/2018	8066.352	8233.367	60	Marcellus
38	6/23/2018	7868.334	8035.349	60	Marcellus
39	6/23/2018	7670.316	7837.331	60	Marcellus
40	6/24/2018	7472.298	7639.313	60	Marcellus
41	6/24/2018	7274.28	7441.295	60	Marcellus
42	6/25/2018	7076.262	7243.277	60	Marcellus
43	6/25/2018	6878.244	7045.259	60	Marcellus

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API 47-017-06819 Farm Name Antero Resources Corp Well Number Chalk 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 (bbbls)	Amount of Nitrogen/ other (units)
1	6/5/2018	73.88	7577	5635	4654	258180	5470	N/A
2	6/6/2018	74.5	7850	5349	4756	403660	7725	N/A
3	6/6/2018	74.39	7959	5404	4500	402080	7749	N/A
4	6/7/2018	73.7	7975	5780	5106	392400	7702	N/A
5	6/7/2018	77.3	8048	5438	5329	397120	7904	N/A
6	6/8/2018	73.8	7916	5423	5559	402860	7952	N/A
7	6/8/2018	79.2	7918	5270	4874	396280	8372	N/A
8	6/9/2018	75.76	7954	8198	4941	397300	8190	N/A
9	6/9/2018	72.1	8122	5335	4090	400040	10646	N/A
10	6/9/2018	75.7	8020	5354	3892	403680	9989	N/A
11	6/10/2018	74.77	8019	5459	4232	402500	10367	N/A
12	6/10/2018	78.4	7877	5115	4992	396400	8374	N/A
13	6/12/2018	72.55	7748	5709	4809	399920	8560	N/A
14	6/12/2018	73.9	7698	5927	4367	402580	8892	N/A
15	6/12/2018	71.98	8174	5547	4256	386380	8911	N/A
16	6/13/2018	76.58	7946	5611	4142	411260	8854	N/A
17	6/13/2018	67.9	8002	5221	3792	342000	10286	N/A
18	6/13/2018	70.41	7948	5395	4415	423820	10968	N/A
19	6/14/2018	73.57	7541	5936	4880	420670	9958	N/A
20	6/14/2018	73.5	7661	6306	3772	412150	8438	N/A
21	6/14/2018	53.62	8182	5709	4457	397820	10633	N/A
22	6/15/2018	71.7	8012	5570	4471	394220	9881	N/A
23	6/15/2018	74.3	7928	5985	4368	406340	9587	N/A
24	6/15/2018	68.12	7974	6299	4250	397380	10088	N/A
25	6/16/2018	57.41	8295	5725	4275	391820	12839	N/A
26	6/16/2018	74.04	7489	5781	4510	403940	8312	N/A
27	6/16/2018	72.01	8018	5983	4000	397740	11251	N/A
28	6/17/2018	77.24	7988	5864	4350	402560	8079	N/A
29	6/17/2018	74.77	7359	5678	4882	402900	8130	N/A
30	6/17/2018	73.39	7022	5847	4015	394440	8079	N/A
31	6/18/2018	74.79	7149	5763	4725	398900	8038	N/A
32	6/18/2018	72.86	7352	5774	4479	404840	8004	N/A
33	6/20/2018	68.45	7306	5985	3935	402340	8173	N/A
34	6/21/2018	68.6	7618	6211	4844	404820	10259	N/A
35	6/22/2018	73.58	7083	5729	5153	398520	7610	N/A
36	6/22/2018	71.29	7008	5653	5111	399220	8075	N/A
37	6/23/2018	74.86	7121	5965	4045	404200	8085	N/A
38	6/23/2018	77.35	7388	5991	4037	407160	8193	N/A
39	6/23/2018	71.41	7119	5649	4892	405120	7872	N/A
40	6/24/2018	71.77	6880	5876	4209	410260	8882	N/A
41	6/24/2018	75.14	6906	5859	4865	401600	8472	N/A
42	6/25/2018	73.9	6998	5719	3708	406460	8480	N/A
43	6/25/2018	72.51	7797	6154	3912	405720	8569	N/A
	AVG=	73	7,673	5,772	4,485	17,089,600	380,898	TOTAL

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**EXHIBIT 3**

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Sandstone	0	177	0	177
Sandstone tr coal	est. 177	217	est. 177	217
Sandy shale	est. 217	232	est. 217	232
Calcareous Shale	est. 232	319	est. 232	319
Sandstone	est. 319	373	est. 319	373
Calcareous Shale	est. 373	1,065	est. 373	1,065
Silty Sandstone	est. 1065	1,137	est. 1065	1,137
Silty shale	est. 1137	1,287	est. 1137	1,287
Sandy Shale	est. 1287	1,357	est. 1287	1,357
Shale	est. 1357	1,567	est. 1357	1,591
Big Lime	1,567	2,187	1,591	2,243
Fifty Foot Sandstone	2,187	2,442	2,243	2,507
Gordon	2,442	2,665	2,507	2,739
Fifth Sandstone	2,665	2,729	2,739	2,806
Bayard	2,729	3,536	2,806	3,652
Speechley	3,536	3,822	3,652	3,948
Balltown	3,822	4,323	3,948	4,470
Bradford	4,323	4,749	4,470	4,917
Benson	4,749	5,009	4,917	5,188
Alexander	5,009	5,984	5,188	6,217
Sycamore	5,984	6,173	6,217	6,441
Middlesex	6,173	6,306	6,441	6,654
Burkett	6,306	6,335	6,654	6,714
Tully	6,335	6,380	6,714	6,826
Marcellus	6,380	NA	6,826	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.



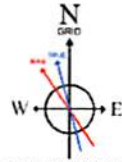
# ANTERO RESOURCES CORPORATION

Location: Doddridge Co., WV  
 Field: Doddridge  
 Facility: Middle Pad

Slot: Slot #10  
 Well: Chalk Unit 2H  
 Wellbore: Chalk Unit 2H PWB



API: 47-017-06819-0000  
 BH Job #: 9002117  
 Rig: Frontier 32  
 Duration: 02/12/18 - 02/16/18



User specified Dip: 66.55° Field: 52041 nT  
 Magnetic North is 7.64 degrees West of True North (at 2/11/2018)  
 Grid North is 0.12 degrees East of True North  
 To correct azimuth from True to Grid subtract 0.12 degrees  
 To correct azimuth from Magnetic to Grid subtract 7.76 degrees



Gyrodata MS Gyro <17-1/2"> (100'-500') : 117.00ft TVD, 0.11ft N, 0.03ft E  
 Gyrodata MS Gyro <12-1/4"> (500')(507'-717') : 524.00ft TVD, 0.19ft N, 0.01ft W  
 Directional ONE MWD <12-1/4"> (717')(770'-2577') : 785.99ft TVD, 14.47ft N, 10.58ft E  
 Directional ONE MWD <12-1/4"> (2577')(2692'-6753') : 2636.42ft TVD, 290.72ft N, 442.10ft E

BH AT Curve <8-1/2">(6770')(6843'-15364') : 6406.47ft TVD, 502.12ft N, 1600.54ft E  
 POE Marcellus: 6858' MD / 6412' TVD : 6411.67ft TVD, 490.09ft N, 1607.83ft E

Plot reference wellpath is Chalk Unit 2H PWP Rev-A.0	Grid System: NAD27 / UTM Zone 17 North, US feet
True vertical depths are referenced to Frontier 32 (RKB)	North Reference: Grid north
Measured depths are referenced to Frontier 32 (RKB)	Scale: True distance
Frontier 32 (RKB) to Mean Sea Level: 875 feet	Depths are in feet
Mean Sea Level to Ground level (At Slot: Slot #10): -843 feet	Created by: mccerrib on 2018-05-11
Coordinates are in feet referenced to Slot	Database: WA_MPL_EASTERNUS_Defn

Gyrodata MS Gyro <17-1/2"> (100'-500') : 0.15° Inc, 117.00ft MD, 117.00ft TVD, -0.09ft VS  
 Gyrodata MS Gyro <12-1/4"> (500')(507'-717') : 0.21° Inc, 524.00ft MD, 524.00ft TVD, -0.18ft VS  
 Directional ONE MWD <12-1/4"> (717')(770'-2577') : 9.82° Inc, 787.00ft MD, 785.99ft TVD, -9.35ft VS

Well Profile Data								
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	6770.00	64.700	143.870	6377.91	557.98	1563.29	7.09	79.26
Proj. to Bottom	6864.00	71.200	148.000	6413.20	485.82	1611.99	8.02	164.53
Landing Pt.	7059.56	90.000	150.860	6445.00	320.40	1709.55	9.72	354.64
On Azimuth	7397.33	90.000	157.615	6445.00	16.38	1856.27	2.00	691.62
BHL	15381.33	90.000	157.615	6445.00	-7366.01	4896.74	0.00	8675.62

Directional ONE MWD <12-1/4"> (2577')(2692'-6753') : 16.71° Inc, 2709.00ft MD, 2636.42ft TVD, -100.50ft VS

Location Information				
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Middle Pad	1695090.990	14279417.689	39°19'21.010"N	80°48'24.020"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)
Slot #10	-32.20	84.16	1695175.115	14279385.505
Comment	Chalk Unit 2H			
Frontier 32 (RKB) to Ground level (At Slot: Slot #10)	32ft			
Mean Sea Level to Ground level (At Slot: Slot #10)	-843ft			
Frontier 32 (RKB) to Mean Sea Level	875ft			

Well Data			
Slot	Well	Wellbore	Wellpath
Slot #10	Chalk Unit 2H	Chalk Unit 2H AWP	Chalk Unit 2H AWP Proj: 15388'
Slot #10	Chalk Unit 2H	Chalk Unit 2H PWB	Chalk Unit 2H PWP Rev-A.0

BH AT Curve <8-1/2">(6770')(6843'-15364') : 69.26° Inc, 6843.00ft MD, 6406.47ft TVD, 145.10ft VS  
 POE Marcellus: 6858' MD / 6412' TVD : 70.12° Inc, 6858.00ft MD, 6411.67ft TVD, 159.00ft VS

Projected MD @ TD: 15388' : 90.68° Inc, 15388.00ft MD, 6543.09ft TVD, 8667.95ft VS

Scale 1 inch = 1500

True Vertical Depth (ft)

4500

5250

6000

6750

Vertical Section (ft)

Azimuth 157.62° with reference 0.00 N, 0.00 E

Scale 1 inch = 1500

Northing (ft)

1000

2000

3000

4000

5000

6000

7000

8000

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## Actual Wellpath Report

Chalk Unit 2H AWP Proj: 15388'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #10
Area	Doddridge Co., WV	Well	Chalk Unit 2H
Field	Doddridge	Wellbore	Chalk Unit 2H AWB
Facility	Middle Pad		

REPORT SETUP INFORMATION			
Projection System	NAD27 / UTM Zone 17 North, US feet	Software System	WellArchitect® 5.1
North Reference	Grid	User	Mccrerib
Scale	0.999603	Report Generated	5/11/2018 at 3:45:20 PM
Convergence at slot	0.12° East	Database/Source file	WA_MPL_EASTERNUS_Defn/Chalk_Unit_2H_AWP_Proj_15388_.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-32.20	84.16	1695175.12	14279385.51	39°19'20.690"N	80°48'22.950"W
Facility Reference Pt			1695090.99	14279417.69	39°19'21.010"N	80°48'24.020"W
Field Reference Pt			0.00	0.00	0°00'00.000"	85°29'19.301"W

WELLPATH DATUM			
Calculation method	Minimum curvature	Frontier 32 (RKB) to Facility Vertical Datum	875.00ft
Horizontal Reference Pt	Slot	Frontier 32 (RKB) to Mean Sea Level	875.00ft
Vertical Reference Pt	Frontier 32 (RKB)	Frontier 32 (RKB) to Ground Level at Slot (Slot #10)	32.00ft
MD Reference Pt	Frontier 32 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	157.62°

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Chalk Unit 2H AWP Proj: 15388'  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #10
Area	Doddridge Co., WV	Well	Chalk Unit 2H
Field	Doddridge	Wellbore	Chalk Unit 2H AWB
Facility	Middle Pad		

WELLPATH DATA (189 stations) † = interpolated/extrapolated station																
MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Comments
0.00	0.00	16.000	0.00	0.00	0.00	0.00	1695175.12	14279385.51	39°19'20.690"N	80°48'22.950"W	0.00	0.000	0.00	0.00	0.00	
32.00	0.00	16.000	32.00	0.00	0.00	0.00	1695175.12	14279385.51	39°19'20.690"N	80°48'22.950"W	0.00	0.000	0.00	0.00	0.00	
117.00	0.150	16.000	117.00	-0.09	0.11	0.03	1695175.15	14279385.61	39°19'20.691"N	80°48'22.950"W	0.11	16.000	0.18	0.18	18.82	Gyrodata MS Gyro <17-1/2"> (100'-500')
217.00	0.140	0.770	217.00	-0.30	0.35	0.07	1695175.18	14279385.86	39°19'20.694"N	80°48'22.949"W	0.36	10.906	0.04	-0.01	-15.23	
317.00	0.060	60.890	317.00	-0.42	0.50	0.12	1695175.23	14279386.01	39°19'20.695"N	80°48'22.949"W	0.52	12.973	0.12	-0.08	60.12	
417.00	0.120	204.670	417.00	-0.36	0.43	0.12	1695175.23	14279385.94	39°19'20.694"N	80°48'22.948"W	0.45	15.225	0.17	0.06	143.78	
517.00	0.170	206.250	517.00	-0.19	0.20	0.01	1695175.12	14279385.71	39°19'20.692"N	80°48'22.950"W	0.20	2.376	0.05	0.05	1.58	
524.00	0.210	236.030	524.00	-0.18	0.19	-0.01	1695175.11	14279385.69	39°19'20.692"N	80°48'22.950"W	0.19	357.949	1.50	0.57	425.43	Gyrodata MS Gyro <12-1/4"> (500')(507'-717')
583.00	0.620	348.880	583.00	-0.47	0.44	-0.16	1695174.96	14279385.95	39°19'20.694"N	80°48'22.952"W	0.47	340.292	1.23	0.69	191.27	
674.00	4.380	29.490	673.90	-3.10	3.95	1.46	1695176.57	14279389.45	39°19'20.729"N	80°48'22.931"W	4.21	20.263	4.32	4.13	44.63	
734.00	7.300	40.880	733.58	-6.23	8.83	5.08	1695180.20	14279394.33	39°19'20.777"N	80°48'22.885"W	10.19	29.928	5.21	4.87	18.98	
787.00	9.820	46.860	785.99	-9.35	14.47	10.58	1695185.70	14279399.96	39°19'20.833"N	80°48'22.815"W	17.92	36.194	5.04	4.75	11.28	Directional ONE MWD <12-1/4"> (717')(770'-2577')
847.00	11.550	58.280	844.95	-12.13	21.12	19.43	1695194.54	14279406.62	39°19'20.898"N	80°48'22.702"W	28.70	42.608	4.54	2.88	19.03	
936.00	12.190	67.200	932.06	-13.65	29.45	35.67	1695210.77	14279414.94	39°19'20.980"N	80°48'22.495"W	46.26	50.458	2.18	0.72	10.02	
1024.00	11.490	64.430	1018.18	-14.21	36.83	52.14	1695227.24	14279422.32	39°19'21.053"N	80°48'22.286"W	63.84	54.763	1.02	-0.80	-3.15	
1113.00	10.950	62.400	1105.48	-15.47	44.58	67.63	1695242.72	14279430.06	39°19'21.129"N	80°48'22.088"W	81.00	56.611	0.75	-0.61	-2.28	
1201.00	13.220	59.180	1191.53	-17.71	53.60	83.68	1695258.76	14279439.09	39°19'21.218"N	80°48'21.884"W	99.38	57.357	2.69	2.58	-3.66	
1289.00	15.440	57.900	1276.79	-21.16	64.99	102.25	1695277.32	14279450.47	39°19'21.330"N	80°48'21.647"W	121.15	57.561	2.55	2.52	-1.45	
1377.00	16.300	58.770	1361.43	-25.04	77.61	122.73	1695297.80	14279463.09	39°19'21.455"N	80°48'21.386"W	145.21	57.691	1.01	0.98	0.99	
1465.00	16.910	60.080	1445.76	-28.62	90.40	144.38	1695319.44	14279475.87	39°19'21.580"N	80°48'21.110"W	170.35	57.949	0.81	0.69	1.49	
1553.00	16.400	59.800	1530.07	-31.99	103.03	166.21	1695341.26	14279488.50	39°19'21.705"N	80°48'20.832"W	195.56	58.206	0.59	-0.58	-0.32	
1641.00	16.860	56.300	1614.39	-36.18	116.36	187.57	1695362.61	14279501.82	39°19'21.836"N	80°48'20.560"W	220.73	58.185	1.25	0.52	-3.98	
1730.00	17.680	54.550	1699.38	-41.77	131.36	209.32	1695384.35	14279516.82	39°19'21.984"N	80°48'20.283"W	247.12	57.888	1.09	0.92	-1.97	
1818.00	19.060	53.200	1782.89	-48.37	147.72	231.71	1695406.73	14279533.17	39°19'22.145"N	80°48'19.998"W	274.79	57.481	1.64	1.57	-1.53	
1906.00	19.330	53.720	1866.00	-55.45	164.95	254.95	1695429.97	14279550.39	39°19'22.315"N	80°48'19.701"W	303.66	57.098	0.36	0.31	0.59	
1994.00	17.770	53.690	1949.42	-62.18	181.52	277.52	1695452.52	14279566.95	39°19'22.478"N	80°48'19.414"W	331.61	56.812	1.77	-1.77	-0.03	
2082.00	16.640	54.200	2033.49	-68.34	196.84	298.56	1695473.55	14279582.27	39°19'22.629"N	80°48'19.146"W	357.61	56.603	1.30	-1.28	0.58	
2170.00	17.550	57.180	2117.60	-73.67	211.40	319.93	1695494.92	14279596.82	39°19'22.773"N	80°48'18.873"W	383.46	56.544	1.44	1.03	3.39	
2259.00	17.610	57.610	2202.44	-78.44	225.89	342.57	1695517.55	14279611.30	39°19'22.915"N	80°48'18.585"W	410.34	56.600	0.16	0.07	0.48	
2347.00	15.780	57.390	2286.73	-82.88	239.47	363.90	1695538.87	14279624.88	39°19'23.049"N	80°48'18.313"W	435.62	56.652	2.08	-2.08	-0.25	

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# Actual Wellpath Report

Chalk Unit 2H AWP Proj: 15388

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Operator	ANTERO RESOURCES CORPORATION
Area	Doddridge Co., WV
Field	Doddridge
Facility	Middle Pad
Slot	Slot #10
Well	Chalk Unit 2H
Wellbore	Chalk Unit 2H AWP

## REFERENCE WELLPATH IDENTIFICATION

MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	East (ft)	Grid East (ft)	Grid North (ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (ft/100ft)	Build Rate (ft/100ft)	Turn Rate (ft/100ft)	Comments
2434.00	14.640	55.910	2370.68	-87.21	252.01	382.97	14279637.41	39°19'23.173"N	80°48'18.070"W	458.44	56.654	1.38	-1.31	-1.70	
2523.00	14.590	55.380	2456.80	-91.87	264.68	401.50	1695576.46	14279650.08	39°19'23.297"N	480.90	56.607	0.16	-0.06	-0.60	
2594.00	14.170	56.580	2525.58	-95.43	274.54	416.12	1695591.07	14279659.94	39°19'23.395"W	498.53	56.584	0.73	-0.59	1.69	
2709.00	16.710	59.370	2636.42	-100.50	290.72	442.10	1695617.04	14279676.11	39°19'23.554"N	529.12	56.671	2.30	2.21	2.43	Directional ONE MWD <12-1/4"> (2577)(2692-6753)
2797.00	16.420	53.310	2720.77	-105.39	304.60	482.96	1695637.89	14279689.99	39°19'23.691"N	554.18	56.657	1.99	-0.33	-6.89	
2886.00	15.890	46.800	2806.26	-112.83	320.46	481.93	1695656.85	14279705.84	39°19'23.847"N	578.75	56.378	2.12	-0.60	-7.31	
2974.00	16.160	54.610	2890.85	-119.87	335.80	500.70	1695675.61	14279721.17	39°19'23.998"W	602.87	56.152	2.47	0.31	8.88	
3062.00	16.370	56.880	2975.33	-124.94	349.67	521.07	1695695.97	14279735.03	39°19'24.135"N	627.52	56.136	0.76	0.24	2.58	
3150.00	16.960	59.660	3059.64	-128.97	362.88	542.56	1695717.46	14279748.24	39°19'24.265"W	652.72	56.225	1.20	0.67	3.47	
3239.00	18.400	62.590	3144.43	-131.94	375.85	566.26	1695741.15	14279761.21	39°19'24.393"N	679.65	56.426	1.85	1.62	2.96	
3327.00	19.880	61.180	3227.57	-134.84	389.47	591.70	1695766.58	14279774.82	39°19'24.527"W	708.37	56.646	1.76	1.68	-1.57	
3415.00	19.090	59.500	3310.53	-138.56	403.98	617.21	1695792.08	14279789.33	39°19'24.670"N	737.66	56.794	1.10	-0.90	-1.91	
3503.00	17.950	57.350	3393.97	-143.01	418.60	641.02	1695815.88	14279803.94	39°19'24.814"W	765.60	56.855	1.51	-1.30	-2.44	
3591.00	16.920	55.970	3477.93	-148.01	433.09	663.05	1695837.91	14279818.42	39°19'24.956"W	791.96	56.849	1.26	-1.17	-1.57	
3680.00	16.000	51.580	3563.28	-154.01	447.96	683.40	1695858.24	14279833.28	39°19'25.103"N	817.13	56.756	1.74	-1.03	-4.93	
3768.00	15.700	57.010	3647.94	-159.56	461.98	702.89	1695877.72	14279847.30	39°19'25.241"N	841.12	56.685	1.72	-0.34	6.17	
3856.00	15.810	60.550	3732.64	-163.23	474.36	723.32	1695898.14	14279859.67	39°19'25.363"N	864.98	56.743	1.10	0.13	4.02	
3944.00	15.000	53.700	3817.48	-167.44	486.99	742.93	1695917.75	14279872.30	39°19'25.487"N	888.32	56.755	2.26	-0.92	-7.78	
4033.00	14.520	50.910	3903.54	-173.42	500.85	760.86	1695935.69	14279886.15	39°19'25.624"N	910.92	56.645	0.96	-0.54	-3.13	
4121.00	16.400	49.330	3988.36	-180.49	515.90	778.86	1695953.67	14279901.20	39°19'25.772"N	934.23	56.480	2.19	-1.80	-1.80	
4209.00	17.520	56.920	4072.54	-186.85	531.23	799.39	1695974.18	14279916.52	39°19'25.923"N	959.80	56.394	2.82	1.27	8.63	
4297.00	16.910	54.440	4156.60	-192.23	545.90	820.90	1695995.69	14279931.19	39°19'26.068"N	985.84	56.376	1.08	-0.69	-2.82	
4386.00	16.230	58.290	4241.90	-197.20	559.97	842.01	1696016.76	14279945.25	39°19'26.207"N	1011.21	56.375	1.45	-0.76	4.33	
4474.00	16.540	64.260	4326.34	-199.92	571.87	863.76	1696038.53	14279957.15	39°19'26.324"W	1035.91	56.492	1.95	0.35	6.78	
4562.00	18.920	66.200	4410.15	-201.01	583.07	888.10	1696062.86	14279968.34	39°19'26.434"W	1062.40	56.714	2.79	2.70	2.20	
4650.00	18.270	63.800	4493.56	-202.28	594.92	913.53	1696088.28	14279980.19	39°19'26.550"W	1090.16	56.927	1.14	-0.74	-2.73	
4739.00	17.390	60.620	4578.28	-204.83	607.60	937.63	1696112.38	14279992.86	39°19'26.675"N	1117.29	57.056	1.47	-0.99	-3.57	
4827.00	16.640	57.640	4662.43	-208.62	620.80	959.74	1696134.47	14280006.06	39°19'26.805"N	1143.02	57.104	1.31	-0.85	-3.39	
4915.00	16.030	54.000	4746.88	-213.67	634.68	980.21	1696154.94	14280019.94	39°19'26.942"W	1167.75	57.077	1.35	-0.69	-4.14	
5004.00	15.950	51.030	4832.44	-220.05	649.60	999.66	1696174.38	14280034.84	39°19'27.089"N	1192.18	56.983	0.92	-0.09	-3.34	

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# Actual Wellpath Report

Chalk Unit 2H AWP Proj: 15388



Operator	Area	Field	Facility
ANTERO RESOURCES CORPORATION	Doddridge Co., WV	Doddridge	Middle Pad
Slot	Well	Wellbore	Chalk Unit 2H AWP
Slot #10	Chalk Unit 2H	Chalk Unit 2H	

**REFERENCE WELLPATH IDENTIFICATION**

WELLPATH DATA (189 stations) † = interpolated/extrapolated station														
MD	Inclination	Azimuth	TVD	Vert Sect	North	East	Grid East	Grid North	Latitude	Longitude	Closure Dist	Closure Dir	DLS	Turn Rate
(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)	(US ft)	(US ft)	(Latitude)	(Longitude)	(ft)	(ft)	(ft)	(%/100ft)
5092.00	16.830	53.140	4916.86	-226.69	664.84	1039.25	1696193.96	14280050.08	39°19'27.239"N	80°48'09.962"W	1216.92	56.884	1.21	2.40
5180.00	16.700	48.520	5001.13	-234.01	680.86	1038.92	1696213.62	14280066.10	39°19'27.397"N	80°48'09.711"W	1242.15	56.761	1.52	-5.25
5269.00	18.570	47.230	5085.94	-243.13	698.96	1058.91	1696233.60	14280084.18	39°19'27.576"N	80°48'09.457"W	1268.79	56.572	2.15	-1.45
5357.00	18.690	51.000	5169.33	-252.05	717.35	1080.15	1696254.84	14280102.56	39°19'27.757"N	80°48'09.186"W	1296.65	56.411	1.38	4.28
5445.00	17.750	57.900	5252.93	-258.35	733.35	1102.47	1696277.15	14280118.56	39°19'27.915"N	80°48'08.901"W	1324.10	56.369	2.67	7.84
5534.00	17.160	56.160	5337.83	-263.25	747.87	1124.87	1696299.54	14280133.08	39°19'28.058"N	80°48'08.616"W	1350.80	56.382	0.89	-1.96
5622.00	17.340	53.710	5421.88	-268.98	762.86	1146.23	1696320.88	14280148.06	39°19'28.205"N	80°48'08.344"W	1376.88	56.355	0.85	-2.78
5710.00	17.640	55.060	5505.81	-275.03	778.26	1167.73	1696342.38	14280163.45	39°19'28.357"N	80°48'08.070"W	1403.31	56.318	0.57	1.53
5795.00	16.500	52.990	5590.89	-281.16	793.59	1188.87	1696363.52	14280178.78	39°19'28.508"N	80°48'07.800"W	1429.41	56.276	1.45	-2.33
5887.00	17.410	47.360	5675.07	-288.87	810.03	1208.54	1696383.17	14280195.22	39°19'28.670"N	80°48'07.550"W	1454.90	56.168	2.13	-6.40
5975.00	16.010	56.530	5759.36	-295.77	825.65	1228.35	1696402.98	14280210.82	39°19'28.824"N	80°48'07.297"W	1480.05	56.093	3.39	10.42
6063.00	18.810	81.510	5843.66	-294.48	833.97	1251.92	1696426.54	14280219.14	39°19'28.906"N	80°48'06.997"W	1504.26	56.331	9.47	23.55
6151.00	22.630	103.020	5925.75	-280.94	832.27	1283.36	1696447.13	14280212.08	39°19'28.835"N	80°48'06.391"W	1540.31	57.531	9.20	24.00
6240.00	23.750	123.360	6007.94	-256.54	818.70	1314.49	1696449.08	14280203.88	39°19'28.754"N	80°48'06.201"W	1548.59	58.084	9.27	21.68
6284.00	26.800	131.900	6047.74	-240.27	807.19	1329.28	1696503.87	14280192.38	39°19'28.640"N	80°48'06.013"W	1555.17	58.732	10.79	19.41
6372.00	32.970	135.710	6123.87	-199.92	776.59	1360.96	1696535.53	14280161.79	39°19'28.336"N	80°48'05.611"W	1566.94	60.290	6.54	4.84
6416.00	35.910	135.630	6160.15	-176.84	758.80	1378.35	1696552.91	14280144.00	39°19'28.160"N	80°48'05.390"W	1573.41	61.167	6.68	3.82
6460.00	39.180	134.290	6195.03	-152.11	739.86	1397.32	1696571.88	14280125.07	39°19'27.973"N	80°48'05.149"W	1581.11	62.099	7.66	-0.18
6504.00	43.390	131.370	6228.09	-125.78	720.16	1418.63	1696593.18	14280105.37	39°19'27.777"N	80°48'04.879"W	1590.95	63.086	10.52	6.64
6549.00	48.100	131.450	6259.49	-96.87	698.84	1442.79	1696617.33	14280084.07	39°19'27.566"N	80°48'04.572"W	1603.13	64.156	10.47	9.57
6593.00	53.390	134.010	6287.32	-65.96	675.72	1467.79	1696642.32	14280060.95	39°19'27.337"N	80°48'04.254"W	1615.86	65.280	12.84	5.82
6637.00	56.970	139.390	6312.45	-32.24	649.42	1492.51	1696667.03	14280034.67	39°19'27.077"N	80°48'03.940"W	1627.68	66.485	12.92	12.23
6682.00	59.060	141.890	6336.29	4.27	619.91	1516.71	1696691.22	14280005.17	39°19'26.784"N	80°48'03.633"W	1638.50	67.769	6.62	5.66
6686.00†	59.294	142.012	6338.34	7.57	617.20	1518.83	1696693.34	14280002.46	39°19'26.758"N	80°48'03.607"W	1639.44	67.885	6.41	3.05
6726.00	61.640	143.200	6358.06	41.19	589.55	1539.96	1696714.46	14279974.83	39°19'26.484"N	80°48'03.338"W	1648.95	69.051	6.41	2.97
6746.00†	63.031	143.509	6367.34	58.35	575.34	1550.53	1696725.03	14279960.62	39°19'26.343"N	80°48'03.204"W	1653.83	69.642	7.09	1.55

† = interpolated/extrapolated station

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# Actual Wellpath Report

Chalk Unit 2H AWP Proj: 15388'  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #10
Area	Doddridge Co., WV	Well	Chalk Unit 2H
Field	Doddridge	Wellbore	Chalk Unit 2H AWB
Facility	Middle Pad		

WELLPATH DATA (189 stations) † = interpolated/extrapolated station																
MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Comments
6770.00	64.700	143.870	6377.91	79.26	557.98	1563.29	1696737.78	14279943.26	39°19'26.171"N	80°48'03.042"W	1659.88	70.357	7.09	6.96	1.50	
6834.00†	68.690	148.069	6403.24	136.81	509.27	1596.14	1696770.62	14279894.58	39°19'25.689"N	80°48'02.626"W	1675.41	72.304	8.67	6.23	6.56	Hamilton: 6834'MD / 6403'TVD
6843.00	69.260	148.640	6406.47	145.10	502.12	1600.54	1696775.02	14279887.43	39°19'25.618"N	80°48'02.570"W	1677.46	72.582	8.67	6.33	6.35	BH AT Curve <8-1/2">(6770')(6843'-15364')
6858.00†	70.122	148.947	6411.67	159.00	490.09	1607.83	1696782.31	14279875.40	39°19'25.499"N	80°48'02.478"W	1680.87	73.048	6.06	5.75	2.04	POE Marcellus: 6858'MD / 6412'TVD
6875.00	71.100	149.290	6417.32	174.86	476.33	1616.06	1696790.53	14279861.64	39°19'25.363"N	80°48'02.373"W	1684.80	73.577	6.06	5.75	2.02	
6922.00	76.710	150.490	6430.34	219.59	437.28	1638.70	1696813.16	14279822.61	39°19'24.977"N	80°48'02.086"W	1696.04	75.059	12.19	11.94	2.55	
6970.00	80.950	152.470	6439.64	266.40	395.91	1661.17	1696835.63	14279781.26	39°19'24.567"N	80°48'01.801"W	1707.70	76.595	9.72	8.83	4.12	
7017.00	83.740	153.110	6445.90	312.81	354.49	1682.47	1696856.92	14279739.85	39°19'24.157"N	80°48'01.532"W	1719.41	78.102	6.09	5.94	1.36	
7065.00	84.390	151.850	6450.86	360.36	312.15	1704.53	1696878.97	14279697.53	39°19'23.739"N	80°48'01.252"W	1732.88	79.622	2.94	1.35	-2.62	
7112.00	88.340	152.790	6453.84	407.05	270.62	1726.31	1696900.74	14279656.02	39°19'23.328"N	80°48'00.976"W	1747.40	81.091	8.64	8.40	2.00	
7160.00	88.740	151.680	6455.06	454.83	228.16	1748.67	1696923.09	14279613.57	39°19'22.907"N	80°48'00.693"W	1763.49	82.566	2.46	0.83	-2.31	
7255.00	88.860	154.670	6457.05	549.51	143.41	1791.52	1696965.92	14279528.86	39°19'22.069"N	80°48'00.150"W	1797.25	85.423	3.15	0.13	3.15	
7350.00	88.860	153.880	6458.94	644.33	57.84	1832.75	1697007.14	14279443.33	39°19'21.222"N	80°47'59.628"W	1833.66	88.192	0.83	0.00	-0.83	
7446.00	88.610	156.960	6461.06	740.22	-29.42	1872.67	1697047.04	14279356.09	39°19'20.359"N	80°47'59.122"W	1872.90	90.900	3.22	-0.26	3.21	
7541.00	88.950	158.130	6463.09	835.20	-117.20	1908.95	1697083.30	14279268.35	39°19'19.491"N	80°47'58.663"W	1912.54	93.513	1.28	0.36	1.23	
7636.00	89.050	155.740	6464.75	930.17	-204.59	1946.16	1697120.50	14279181.00	39°19'18.626"N	80°47'58.192"W	1956.88	96.001	2.52	0.11	-2.52	
7731.00	88.520	156.710	6466.76	1025.12	-291.50	1984.45	1697158.77	14279094.12	39°19'17.766"N	80°47'57.707"W	2005.74	98.357	1.16	-0.56	1.02	
7827.00	89.720	161.680	6468.24	1121.04	-381.20	2018.53	1697192.84	14279004.45	39°19'16.879"N	80°47'57.276"W	2054.21	100.694	5.33	1.25	5.18	
7922.00	89.660	162.530	6468.75	1215.75	-471.60	2047.72	1697222.02	14278914.09	39°19'15.985"N	80°47'56.907"W	2101.32	102.969	0.90	-0.06	0.89	
8017.00	89.570	159.660	6469.39	1310.56	-561.47	2078.49	1697252.78	14278824.26	39°19'15.096"N	80°47'56.518"W	2152.99	105.117	3.02	-0.09	-3.02	
8112.00	90.400	154.430	6469.41	1405.52	-648.91	2115.53	1697289.80	14278736.85	39°19'14.231"N	80°47'56.050"W	2212.82	107.053	5.57	0.87	-5.51	
8207.00	88.830	158.620	6470.05	1500.48	-736.03	2153.36	1697327.62	14278649.77	39°19'13.369"N	80°47'55.571"W	2275.68	108.871	4.71	-1.65	4.41	
8302.00	89.080	155.050	6471.78	1595.44	-823.34	2190.72	1697364.97	14278562.49	39°19'12.505"N	80°47'55.098"W	2340.33	110.598	3.77	0.26	-3.76	
8397.00	89.170	153.200	6473.24	1690.25	-908.80	2232.18	1697406.40	14278477.07	39°19'11.660"N	80°47'54.573"W	2410.09	112.153	1.95	0.09	-1.95	
8492.00	89.170	152.160	6474.61	1784.88	-993.20	2275.77	1697449.98	14278392.71	39°19'10.824"N	80°47'54.020"W	2483.06	113.577	1.09	0.00	-1.09	
8588.00	88.710	157.200	6476.39	1880.71	-1079.93	2316.81	1697491.00	14278306.01	39°19'09.966"N	80°47'53.501"W	2556.14	114.992	5.27	-0.48	5.25	
8683.00	88.950	154.690	6478.33	1975.64	-1166.65	2355.52	1697529.70	14278219.32	39°19'09.108"N	80°47'53.011"W	2628.60	116.349	2.65	0.25	-2.64	
8778.00	88.830	153.990	6480.17	2070.47	-1252.27	2396.65	1697570.81	14278133.74	39°19'08.261"N	80°47'52.490"W	2704.09	117.587	0.75	-0.13	-0.74	
8873.00	89.290	156.410	6481.73	2165.36	-1338.49	2436.49	1697610.63	14278047.55	39°19'07.408"N	80°47'51.985"W	2779.93	118.782	2.59	0.48	2.55	
8968.00	88.520	155.820	6483.54	2260.31	-1425.34	2474.95	1697649.08	14277960.74	39°19'06.549"N	80°47'51.498"W	2856.04	119.938	1.02	-0.81	-0.62	

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# Actual Wellpath Report

Chalk Unit 2H AWP Proj: 15388'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #10
Area	Doddridge Co., WV	Well	Chalk Unit 2H
Field	Doddridge	Wellbore	Chalk Unit 2H AWB
Facility	Middle Pad		

WELLPATH DATA (189 stations)																
MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Comments
9064.00	89.110	160.390	6485.53	2356.26	-1514.37	2510.73	1697684.84	14277871.74	39°19'05.668"N	80°47'51.046"W	2932.08	121.097	4.80	0.61	4.76	
9159.00	89.080	163.380	6487.03	2450.97	-1604.64	2540.26	1697714.36	14277781.51	39°19'04.775"N	80°47'50.672"W	3004.63	122.280	3.15	-0.03	3.15	
9254.00	89.720	163.350	6488.03	2545.49	-1695.66	2567.45	1697741.55	14277690.52	39°19'03.875"N	80°47'50.329"W	3076.86	123.442	0.67	0.67	-0.03	
9349.00	89.290	158.530	6488.85	2640.30	-1785.42	2598.47	1697772.55	14277600.80	39°19'02.987"N	80°47'49.937"W	3152.74	124.493	5.09	-0.45	-5.07	
9443.00	88.890	164.710	6490.34	2734.01	-1874.57	2628.09	1697802.16	14277511.68	39°19'02.105"N	80°47'49.563"W	3228.14	125.500	6.59	-0.43	6.57	
9538.00	88.430	164.650	6492.56	2828.27	-1966.17	2653.18	1697827.24	14277420.12	39°19'01.200"N	80°47'49.246"W	3302.30	126.541	0.49	-0.48	-0.06	
9634.00	89.420	167.390	6494.36	2923.21	-2059.30	2676.37	1697850.42	14277327.03	39°19'00.279"N	80°47'48.954"W	3376.93	127.576	3.03	1.03	2.85	
9728.00	89.170	164.990	6495.52	3016.15	-2150.57	2698.80	1697872.84	14277235.80	39°18'59.376"N	80°47'48.671"W	3450.86	128.550	2.57	-0.27	-2.55	
9823.00	89.720	160.120	6496.44	3110.76	-2241.17	2727.27	1697901.30	14277145.23	39°18'58.480"N	80°47'48.311"W	3529.99	129.412	5.16	0.58	-5.13	
9919.00	88.920	162.160	6497.58	3206.57	-2332.00	2758.30	1697932.32	14277054.43	39°18'57.581"N	80°47'47.919"W	3611.99	130.213	2.28	-0.83	2.12	
10014.00	90.520	156.280	6498.05	3301.48	-2420.78	2791.99	1697965.99	14276965.69	39°18'56.703"N	80°47'47.493"W	3695.32	130.927	6.41	1.68	-6.19	
10108.00	88.550	154.760	6498.81	3395.41	-2506.32	2830.94	1698004.92	14276880.19	39°18'55.857"N	80°47'47.000"W	3780.98	131.519	2.65	-2.10	-1.62	
10203.00	88.710	154.080	6501.08	3490.24	-2591.98	2871.94	1698045.91	14276794.56	39°18'55.009"N	80°47'46.481"W	3868.64	132.067	0.74	0.17	-0.72	
10298.00	88.620	153.440	6503.29	3584.99	-2677.17	2913.93	1698087.89	14276709.40	39°18'54.167"N	80°47'45.949"W	3957.05	132.575	0.68	-0.09	-0.67	
10393.00	88.610	155.900	6505.59	3679.83	-2763.00	2954.66	1698128.50	14276623.60	39°18'53.317"N	80°47'45.434"W	4045.20	133.081	2.59	-0.01	2.59	
10488.00	88.650	157.490	6507.86	3774.79	-2850.22	2992.13	1698166.06	14276536.42	39°18'52.454"N	80°47'44.959"W	4132.39	133.609	1.67	0.04	1.67	
10584.00	88.430	152.780	6510.31	3870.64	-2937.27	3032.48	1698206.38	14276449.40	39°18'51.593"N	80°47'44.448"W	4221.79	134.086	4.91	-0.23	-4.91	
10679.00	88.710	149.890	6512.68	3965.03	-3020.59	3078.03	1698251.92	14276366.12	39°18'50.769"N	80°47'43.871"W	4312.57	134.460	3.06	0.29	-3.04	
10774.00	88.890	152.050	6514.67	4059.37	-3103.64	3124.11	1698297.98	14276283.11	39°18'49.947"N	80°47'43.287"W	4403.71	134.812	2.28	0.19	2.27	
10869.00	89.170	155.980	6516.28	4154.15	-3189.00	3165.72	1698339.58	14276197.77	39°18'49.102"N	80°47'42.760"W	4493.50	135.210	4.15	0.29	4.14	
10964.00	89.170	157.480	6517.65	4249.12	-3276.26	3203.25	1698377.09	14276110.55	39°18'48.239"N	80°47'42.285"W	4582.00	135.646	1.58	0.00	1.58	
11059.00	88.830	156.940	6519.31	4344.10	-3363.83	3240.04	1698413.87	14276023.01	39°18'47.372"N	80°47'41.819"W	4670.46	136.074	0.67	-0.36	-0.57	
11154.00	88.890	154.370	6521.20	4439.02	-3450.36	3279.19	1698453.00	14275936.52	39°18'46.516"N	80°47'41.324"W	4760.05	136.457	2.71	0.06	-2.71	
11250.00	88.650	154.800	6523.26	4534.86	-3537.05	3320.38	1698494.18	14275849.87	39°18'45.659"N	80°47'40.802"W	4851.36	136.810	0.51	-0.25	0.45	
11345.00	88.890	156.220	6525.30	4629.78	-3623.48	3359.75	1698533.53	14275763.47	39°18'44.804"N	80°47'40.304"W	4941.41	137.163	1.52	0.25	1.49	
11440.00	88.890	158.330	6527.14	4724.75	-3711.08	3396.44	1698570.21	14275675.90	39°18'43.937"N	80°47'39.840"W	5030.70	137.535	2.22	0.00	2.22	
11535.00	89.170	157.950	6528.75	4819.73	-3799.24	3431.81	1698605.56	14275587.78	39°18'43.065"N	80°47'39.392"W	5119.72	137.909	0.50	0.29	-0.40	
11629.00	88.860	156.230	6530.37	4913.71	-3885.81	3468.40	1698642.13	14275501.24	39°18'42.208"N	80°47'38.929"W	5208.58	138.249	1.86	-0.33	-1.83	
11724.00	88.920	155.560	6532.21	5008.65	-3972.51	3507.19	1698680.91	14275414.58	39°18'41.351"N	80°47'38.438"W	5299.17	138.560	0.71	0.06	-0.71	
11819.00	88.890	153.190	6534.02	5103.47	-4058.14	3548.26	1698721.97	14275328.98	39°18'40.503"N	80°47'37.918"W	5390.61	138.835	2.49	-0.03	-2.49	

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# Actual Wellpath Report

Chalk Unit 2H AWP Proj: 15388'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #10
Area	Doddridge Co., WV	Well	Chalk Unit 2H
Field	Doddridge	Wellbore	Chalk Unit 2H AWB
Facility	Middle Pad		

WELLPATH DATA (189 stations)																
MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Comments
11914.00	88.860	152.600	6535.89	5198.13	-4142.69	3591.54	1698765.22	14275244.46	39°18'39.667"N	80°47'37.370"W	5482.80	139.076	0.62	-0.03	-0.62	
12008.00	88.400	157.000	6538.14	5291.97	-4227.70	3631.54	1698805.21	14275159.49	39°18'38.825"N	80°47'36.864"W	5573.29	139.338	4.71	-0.49	4.68	
12102.00	88.920	159.900	6540.34	5385.92	-4315.10	3666.06	1698839.71	14275072.13	39°18'37.961"N	80°47'36.427"W	5662.16	139.649	3.13	0.55	3.09	
12197.00	88.890	158.780	6542.15	5480.86	-4403.97	3699.57	1698873.21	14274983.29	39°18'37.082"N	80°47'36.003"W	5751.67	139.968	1.18	-0.03	-1.18	
12296.00	88.890	157.720	6544.07	5579.83	-4495.90	3736.25	1698909.87	14274891.39	39°18'36.172"N	80°47'35.539"W	5845.74	140.272	1.07	0.00	-1.07	
12387.00	88.860	154.230	6545.86	5670.76	-4578.99	3773.28	1698946.89	14274808.34	39°18'35.350"N	80°47'35.071"W	5933.36	140.510	3.83	-0.03	-3.84	
12482.00	88.800	156.980	6547.80	5765.68	-4665.48	3812.51	1698986.10	14274721.88	39°18'34.495"N	80°47'34.574"W	6025.11	140.745	2.89	-0.06	2.89	
12577.00	88.830	156.280	6549.76	5860.64	-4752.67	3850.18	1699023.76	14274634.73	39°18'33.632"N	80°47'34.097"W	6116.52	140.989	0.74	0.03	-0.74	
12672.00	89.230	158.660	6551.37	5955.62	-4840.40	3886.58	1699060.14	14274547.03	39°18'32.764"N	80°47'33.637"W	6207.65	141.237	2.54	0.42	2.51	
12766.00	89.350	159.340	6552.54	6049.59	-4928.15	3920.26	1699093.81	14274459.32	39°18'31.896"N	80°47'33.211"W	6297.23	141.498	0.73	0.13	0.72	
12861.00	89.320	160.670	6553.64	6144.50	-5017.42	3952.74	1699126.28	14274370.09	39°18'31.013"N	80°47'32.800"W	6387.38	141.769	1.40	-0.03	1.40	
12955.00	89.450	162.850	6554.65	6238.24	-5106.68	3982.16	1699155.69	14274280.86	39°18'30.130"N	80°47'32.429"W	6475.78	142.053	2.32	0.14	2.32	
13050.00	89.380	164.110	6555.62	6332.74	-5197.75	4009.17	1699182.69	14274189.82	39°18'29.229"N	80°47'32.088"W	6564.30	142.356	1.33	-0.07	1.33	
13146.00	89.320	163.150	6556.71	6428.20	-5289.86	4036.22	1699209.73	14274097.76	39°18'28.318"N	80°47'31.746"W	6653.85	142.656	1.00	-0.06	-1.00	
13241.00	89.350	159.240	6557.81	6522.99	-5379.76	4066.84	1699240.33	14274007.89	39°18'27.429"N	80°47'31.359"W	6743.96	142.912	4.12	0.03	-4.12	
13337.00	89.320	154.700	6558.92	6618.95	-5468.08	4104.38	1699277.86	14273919.60	39°18'26.555"N	80°47'30.884"W	6837.09	143.108	4.73	-0.03	-4.73	
13432.00	89.110	152.310	6560.23	6713.69	-5553.09	4146.76	1699320.22	14273834.63	39°18'25.714"N	80°47'30.348"W	6930.54	143.250	2.53	-0.22	-2.52	
13527.00	89.480	157.990	6561.40	6808.56	-5639.25	4186.66	1699360.11	14273748.50	39°18'24.862"N	80°47'29.843"W	7023.48	143.409	5.99	0.39	5.98	
13622.00	90.250	156.220	6561.62	6903.55	-5726.76	4223.62	1699397.05	14273661.03	39°18'23.996"N	80°47'29.375"W	7115.81	143.590	2.03	0.81	-1.86	
13718.00	90.060	153.580	6561.36	6999.43	-5813.69	4264.34	1699437.75	14273574.13	39°18'23.136"N	80°47'28.860"W	7209.96	143.740	2.76	-0.20	-2.75	
13813.00	90.030	159.720	6561.28	7094.37	-5900.87	4301.97	1699475.37	14273486.99	39°18'22.273"N	80°47'28.383"W	7302.55	143.906	6.46	-0.03	6.46	
13908.00	89.880	159.380	6561.36	7189.32	-5989.88	4335.16	1699508.55	14273398.01	39°18'21.393"N	80°47'27.964"W	7394.07	144.105	0.39	-0.16	-0.36	
14003.00	90.620	157.550	6560.94	7284.30	-6078.24	4370.03	1699543.41	14273309.69	39°18'20.519"N	80°47'27.523"W	7486.14	144.285	2.08	0.78	-1.93	
14098.00	90.400	156.780	6560.10	7379.30	-6165.79	4406.90	1699580.26	14273222.17	39°18'19.652"N	80°47'27.056"W	7578.77	144.445	0.84	-0.23	-0.81	
14193.00	90.830	157.610	6559.08	7474.29	-6253.36	4443.72	1699617.06	14273134.64	39°18'18.786"N	80°47'26.591"W	7671.45	144.602	0.98	0.45	0.87	
14288.00	90.650	160.770	6557.85	7569.23	-6342.14	4477.46	1699650.79	14273045.89	39°18'17.908"N	80°47'26.164"W	7763.41	144.778	3.33	-0.19	3.33	
14383.00	90.580	159.150	6556.83	7664.14	-6431.38	4510.01	1699683.33	14272956.68	39°18'17.025"N	80°47'25.752"W	7855.12	144.960	1.71	-0.07	-1.71	
14478.00	90.580	156.840	6555.87	7759.13	-6519.45	4545.60	1699718.91	14272868.65	39°18'16.154"N	80°47'25.302"W	7947.69	145.114	2.43	0.00	-2.43	
14573.00	90.770	158.500	6554.75	7854.12	-6607.32	4581.70	1699754.98	14272780.82	39°18'15.285"N	80°47'24.846"W	8040.44	145.262	1.76	0.20	1.75	
14668.00	90.490	156.820	6553.71	7949.11	-6695.18	4617.80	1699791.08	14272692.99	39°18'14.415"N	80°47'24.389"W	8133.24	145.405	1.79	-0.29	-1.77	

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# Actual Wellpath Report

Chalk Unit 2H AWP Proj: 15388'  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #10
Area	Doddridge Co., WV	Well	Chalk Unit 2H
Field	Doddridge	Wellbore	Chalk Unit 2H AWB
Facility	Middle Pad		

WELLPATH DATA (189 stations)																
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]	Comments
14761.00	90.770	159.160	6552.68	8042.10	-6781.39	4652.65	1699825.91	14272606.82	39°18'13.562"N	80°47'23.948"W	8224.02	145.546	2.53	0.30	2.52	
14856.00	91.480	162.280	6550.82	8136.93	-6871.04	4684.01	1699857.26	14272517.21	39°18'12.676"N	80°47'23.552"W	8315.71	145.718	3.37	0.75	3.28	
14951.00	90.650	160.040	6549.05	8231.72	-6960.92	4714.68	1699887.92	14272427.36	39°18'11.787"N	80°47'23.164"W	8407.30	145.890	2.51	-0.87	-2.36	
15046.00	90.920	159.000	6547.75	8326.66	-7049.91	4747.91	1699921.14	14272338.41	39°18'10.906"N	80°47'22.744"W	8499.64	146.041	1.13	0.28	-1.09	
15141.00	90.860	155.280	6546.27	8421.63	-7137.42	4784.81	1699958.02	14272250.93	39°18'10.041"N	80°47'22.278"W	8592.86	146.163	3.92	-0.06	-3.92	
15236.00	90.740	152.500	6544.95	8516.41	-7222.71	4826.61	1699999.80	14272165.67	39°18'09.197"N	80°47'21.748"W	8686.98	146.247	2.93	-0.13	-2.93	
15331.00	90.680	153.340	6543.77	8611.08	-7307.29	4869.85	1700043.03	14272081.13	39°18'08.360"N	80°47'21.201"W	8781.34	146.319	0.89	-0.06	0.88	
15364.00	90.680	153.930	6543.38	8644.00	-7336.85	4884.51	1700057.68	14272051.58	39°18'08.067"N	80°47'21.015"W	8814.07	146.346	1.79	0.00	1.79	
15388.00	90.680	153.930	6543.09	8667.95	-7358.41	4895.05	1700068.22	14272030.03	39°18'07.854"N	80°47'20.882"W	8837.86	146.367	0.00	0.00	0.00	Projected MD @ TD: 15388'

HOLE & CASING SECTIONS - Ref Wellbore: Chalk Unit 2H AWB Ref Wellpath: Chalk Unit 2H AWP Proj: 15388'									
String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	Start E/W [ft]	End N/S [ft]	End E/W [ft]
20in Conductor	32.00	112.00	80.00	32.00	112.00	0.00	0.00	0.09	0.03
17.5in Open Hole	112.00	551.00	439.00	112.00	551.00	0.09	0.03	0.21	-0.08
13.375in Casing Surface	32.00	551.00	519.00	32.00	551.00	0.00	0.00	0.21	-0.08
12.25in Open Hole	551.00	2666.00	2115.00	551.00	2595.13	0.21	-0.08	284.52	431.80
9.625in Casing Intermediate	32.00	2666.00	2634.00	32.00	2595.13	0.00	0.00	284.52	431.80
8.75in Open Hole	2666.00	6864.00	4198.00	2595.13	6413.70	284.52	431.80	485.25	1610.74
8.5in Open Hole	6864.00	15388.00	8524.00	6413.70	6543.09	485.25	1610.74	-7358.41	4895.05
5.5in Casing Production	32.00	15388.00	15356.00	32.00	6543.09	0.00	0.00	-7358.41	4895.05

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# Actual Wellpath Report

Chalk Unit 2H AWP Proj: 15388'  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #10
Area	Doddridge Co., WV	Well	Chalk Unit 2H
Field	Doddridge	Wellbore	Chalk Unit 2H AWB
Facility	Middle Pad		

TARGETS								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Chalk Unit 2H BHL Rev-3	6445.00	-7366.01	4896.74	1700069.91	14272022.43	39°18'07.779"N	80°47'20.860"W	point
Chalk Unit 2H LP Rev-2	6445.00	320.40	1709.55	1696883.98	14279705.78	39°19'23.820"N	80°48'01.188"W	point

WELLPATH COMPOSITION - Ref Wellbore: Chalk Unit 2H AWB Ref Wellpath: Chalk Unit 2H AWP Proj: 15388'				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
32.00	517.00	Gyrodatta standard - Drop gyro or Multi-shot	01 Gyrodatta MS Gyro <17-1/2"> (100'-500')	Chalk Unit 2H AWB
517.00	734.00	Gyrodatta standard - Drop gyro or Multi-shot	02 Gyrodatta MS Gyro <12-1/4"> (500')(507'-717')	Chalk Unit 2H AWB
734.00	2594.00	ISCWSA MWD, Rev. 4 (Standard)	03 Directional ONE MWD <12-1/4"> (717')(770'-2577')	Chalk Unit 2H AWB
2594.00	6770.00	ISCWSA MWD, Rev. 4 (Standard)	04 Directional ONE MWD <12-1/4"> (2577')(2692'-6753')	Chalk Unit 2H AWB
6770.00	15364.00	BHI AutoTrak Curve (Short)	05 BH AT Curve <8-1/2"> (6770')(6843'-15364')	Chalk Unit 2H AWB
15364.00	15388.00	Blind Drilling (std)	Projection to bit	Chalk Unit 2H AWB

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## Actual Wellpath Report

Chalk Unit 2H AWP Proj: 15388'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #10
Area	Doddridge Co., WV	Well	Chalk Unit 2H
Field	Doddridge	Wellbore	Chalk Unit 2H AWB
Facility	Middle Pad		

COMMENTS
<p><b>Wellpath general comments</b>            API: 47-017-06819-0000            BH Job #: 9002117            Rig: Frontier 32            Duration: 02/12/18 - 02/16/18            Gyrodata MS Gyro &lt;17-1/2"&gt; (100'-500')            Gyrodata MS Gyro &lt;12-1/4"&gt; (500')(507'-717')            Directional ONE MWD &lt;12-1/4"&gt; (717')(770'-2577')            Directional ONE MWD &lt;12-1/4"&gt; (2577')(2692'-6753')            Burket: 6686'MD / 6338'TVD            Tully: 6746'MD / 6367'TVD            Hamilton: 6834'MD / 6403'TVD            BH AT Curve &lt;8-1/2"&gt;(6770')(6843'-15364')            POE Marcellus: 6858'MD / 6412'TVD            Projected MD @ TD: 15388'</p>

# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	6/5/2018
Job End Date:	6/28/2018
State:	West Virginia
County:	Doddridge
API Number:	47-017-06819-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Chalk 2H
Latitude:	39.32232000
Longitude:	-80.80458100
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,561
Total Base Water Volume (gal):	16,379,066
Total Base Non Water Volume:	0



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## 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	88.57457	Density = 8.340
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.28769	

SP BREAKER	Halliburton	Breaker					
				Listed Below			
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor					
				Listed Below			
SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676)	Halliburton	Proppant					
				Listed Below			
MC B-8614	Halliburton	Biocide					
				Listed Below			
HYDROCHLORIC ACID	Halliburton	Solvent					
				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			
EXCELERATE PS-2	Halliburton	Friction Reducer					
				Listed Below			
SCALECHEK LP-70	Halliburton	Scale Inhibitor					
				Listed Below			

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SAND-PREMIUM WHITE-40/70, BULK	Halliburton	Proppant					
				Listed Below			
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	11.08191	
			Hydrochloric acid	7647-01-0	15.00000	0.03582	
			Guar gum	9000-30-0	100.00000	0.02601	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01640	
			Acrylamide acrylate polymer	Proprietary	30.00000	0.01640	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Inorganic salt	Proprietary	30.00000	0.01640	
			Ethylene glycol	107-21-1	60.00000	0.00856	
			Glutaraldehyde	111-30-8	30.00000	0.00273	
			Telmer	Proprietary	10.00000	0.00143	
			Sodium persulfate	7775-27-1	100.00000	0.00052	
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00045	
			Sodium polyacrylate	9003-04-7	1.00000	0.00014	
			Methanol	67-56-1	60.00000	0.00012	
			Ethanol	64-17-5	1.00000	0.00009	
			Modified thiourea polymer	Proprietary	30.00000	0.00005	
			Fatty acids, tall oil	Proprietary	30.00000	0.00005	
			Ethoxylated alcohols	Proprietary	30.00000	0.00005	
			Olefins	Proprietary	5.00000	0.00002	
			Propargyl alcohol	107-19-7	10.00000	0.00002	
			Phosphoric acid	7664-38-2	0.10000	0.00001	

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			Acrylic acid	79-10-7	0.01000	0.00000
			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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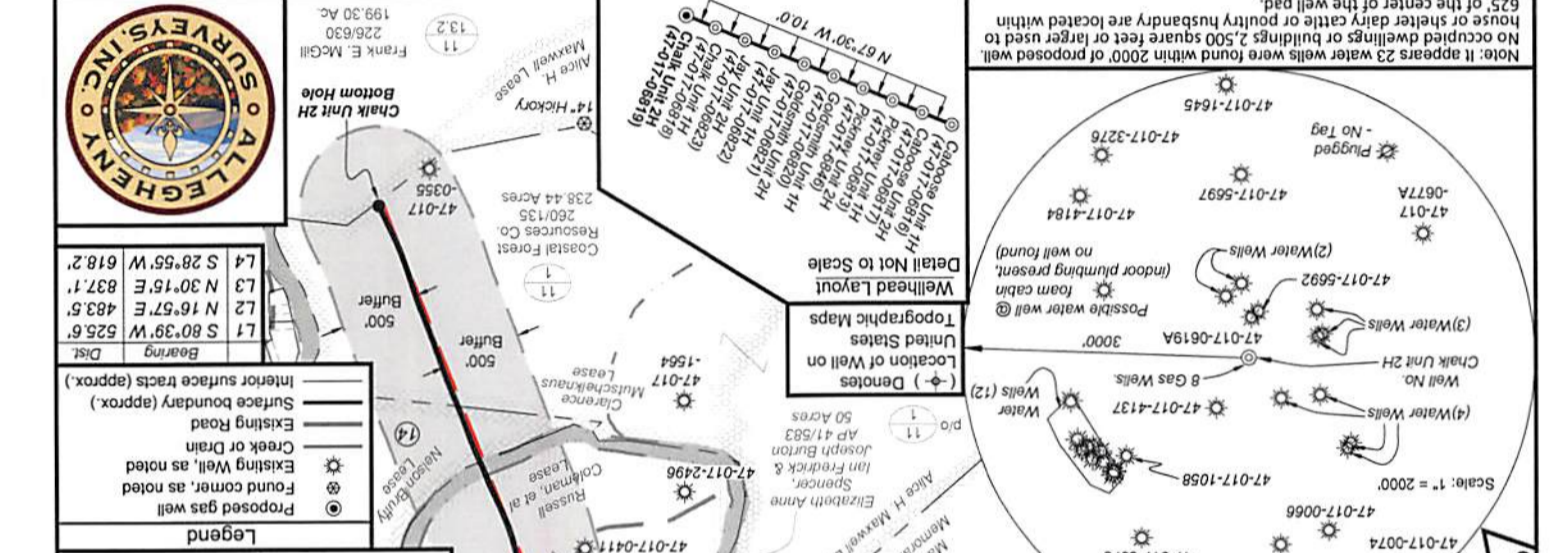
WELL OPERATOR: Antero Resources Corporation  
 ADDRESS: 1615 Wynkoop Street, Denver, CO 80202  
 DESIGNATED AGENT: Diana Stamper - CT Corporation System  
 ADDRESS: 5400 D Big Tyler Road, Charleston, WV 25313

WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
 (IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW  
 LOCATION: ELEVATION: As-Built Grade - 843' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: West Union  
 DISTRICT: West Union SURFACE OWNER: William Randall Lynch & Dixie Craig  
 ROYALTY OWNER: William Randall Lynch & Dixie Craig; Laura A. Ford & S.L. Ford; S.N. Montgomery, et ux; Russell Coleman, et al; Nelson Bruffy, Clarence Mutschelknaus; WV Division of Natural Resources  
 PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 15,388' MD 6,543' TVD

FILE NO: 237-30-WU-14  
 DRAWING NO: Chalk 2H As-Drilled Well Plat  
 SCALE: 1" = 1200'  
 MINIMUM DEGREE OF ACCURACY: Submeter  
 PROVEN SOURCE OF ELEVATION: CORS, Marietta, OH

STATE 47 COUNTY 017 PERMIT 06819

DATE: January 16 2019  
 API WELL NO  
 Operators Well No. Chalk Unit 2H



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

*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.*

**Bradley D. Miller, P.S. 2167**

West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements. Well No. Chalk Unit 2H Top Hole coordinates are N: 302,226.70' Latitude: 39°19'20.69" E: 1,630,430.19' Longitude: 80°42'22.95" Bottom Hole coordinates are N: 294,797.89' Latitude: 39°18'07.92" E: 1,635,217.72' Longitude: 80°47'20.68" UTM Zone 17, NAD 1983

Owner(s)	Acres	Bk / Pg	T/M/Par
William Randall Lynch & Dixie Craig	8.66	2/2	253 / 222
William Randall Lynch & Dixie Craig	32.19	6/2	214 / 279
Antero Resources Corporation	2.68	3/2	305 / 419
William Randall Lynch et ux	8.66	6/2	253 / 222
Dominion Field Services, Inc.	3.52	4/2	266 / 36
Equitrans, L.P.	14.98	6/1	305 / 416
Equitrans, L.P.	4.98	6/2	163 / 44
Carl & Althea Painter	4.15	7/2	197 / 659
Randy K. Smith	4.68	6/2	294 / 473
Reber w/cap	2.16	8/2	294 / 473
Reber w/cap	3.46	9/7	AP 35 / 212
Debra L. Stout	4.19	6/7	293 / 340
Joseph D. Brittainy C. McConnell	4.19	7/4	293 / 340
Robert F. Holden & Sherri M. Bailey	5.49	7/4	301 / 466
Robert F. Holden & Sherri M. Bailey	6.14	7/4	301 / 464
Mason Memorial Park	8.78	6/3	237 / 371
Nelson Bruffy, et ux	99.52	7/23	129 / 38

TOP LONGITUDE 80 - 47 - 30  
 BOTTOM LONGITUDE 80 - 45 - 00

4.218' to Top Hole  
 4.218' to Bottom Hole

11.179' to Top Hole  
 11.179' to Bottom Hole

3.917' to Top Hole  
 3.917' to Bottom Hole

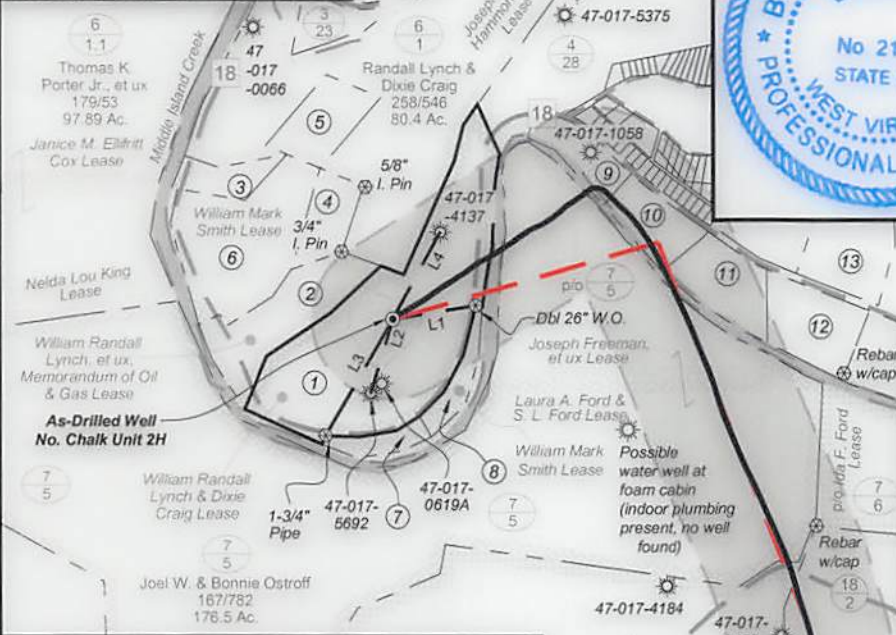
11,215' to Bottom Hole

4,218' to Top Hole  
LATITUDE 39 - 20 - 00

TOP LONGITUDE 80 - 47 - 30  
BTM LONGITUDE 80 - 45 - 00

3,917' to Top Hole  
11,179' to Bottom Hole

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



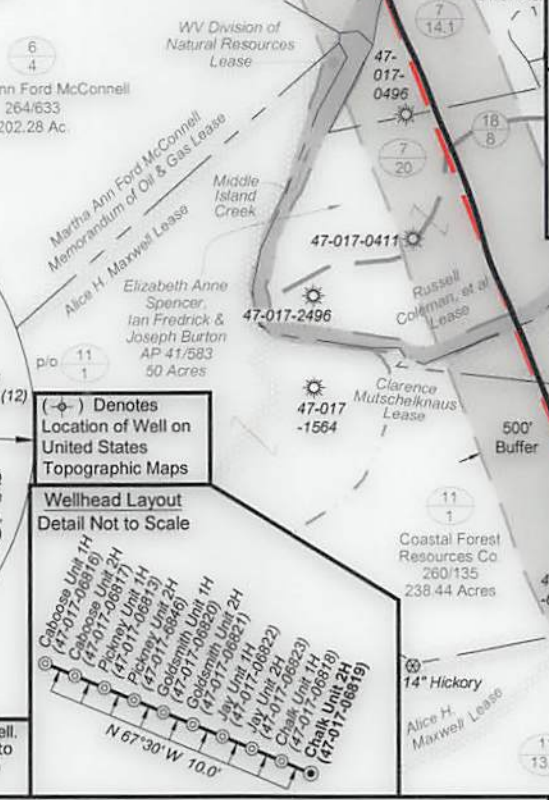
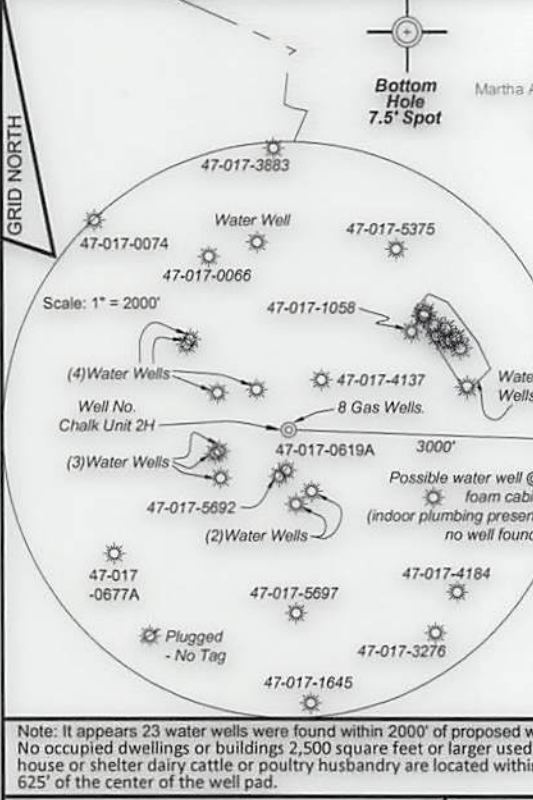
TM/Par	Bk / Pg	Acres	Owner(s)
1	6/2	214 / 279	32.19
2	6/2.5	253 / 222	8.66
3	6/2.8	305 / 419	2.68
4	6/2.6	266 / 36	3.52
5	6/1.3	305 / 416	4.68
6	6/2.4	163 / 44	14.98
7	6/2.3	197 / 659	4.15
8	6/2.7	294 / 473	2.16
9	6/7	AP 35 / 212	3.46
10	7/4.2	293 / 340	4.19
11	7/4.1	301 / 466	5.49
12	7/4	301 / 464	6.14
13	6/3.1	237 / 371	8.78
14	7/23	129 / 38	99.52

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.

*Bradley D. Miller*  
**Bradley D. Miller, P.S. 2167**

**Notes:**  
West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.  
Well No. Chalk Unit 2H Top Hole coordinates are N: 302,226.70' Longitude: 80°48'22.95"  
Bottom Hole coordinates are N: 294,797.89' Longitude: 80°47'20.68"  
UTM Zone 17, NAD 1983  
Top Hole Coordinates Bottom Hole Coordinates  
N: 4,352,583.197m N: 4,350,344.370m  
E: 516,704.756m E: 518,201.031m  
Plat orientation and corner and well references are based upon the grid north meridian.  
Well location references are based upon the magnetic meridian.

Top Hole Coordinates, 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.



**Legend**

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

Bearing	Dist.
L1 S 80°39' W	525.6'
L2 N 16°57' E	483.5'
L3 N 30°15' E	837.1'
L4 S 28°55' W	618.2'



FILE NO: 237-30-WU-14  
DRAWING NO: Chalk 2H As-Drilled Well Plat  
SCALE: 1" = 1200'  
MINIMUM DEGREE OF ACCURACY: Submeter  
PROVEN SOURCE OF ELEVATION: CORS, Marietta, OH

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

DATE: January 16 2019  
Operator's Well No. Chalk Unit 2H  
API WELL NO  
47 - 017 - 06819  
STATE COUNTY PERMIT

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

LOCATION: ELEVATION: As-Built Grade - 843' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: West Union  
DISTRICT: West Union COUNTY: Doddridge 32.15  
SURFACE OWNER: William Randall Lynch & Dixie Craig; Clarence Mutschelknaus; WV Division of Natural Resources; Russell Coleman, et al; Nelson Bruffy; ACREAGE: 32.19 600; 180; 56.07  
ROYALTY OWNER: William Randall Lynch & Dixie Craig; Joseph Freeman, et ux; Ida F. Ford (2) LEASE NO: ACREAGE: 50; 100; 102.85  
PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled 6,543' TVD  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 15,388' MD

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



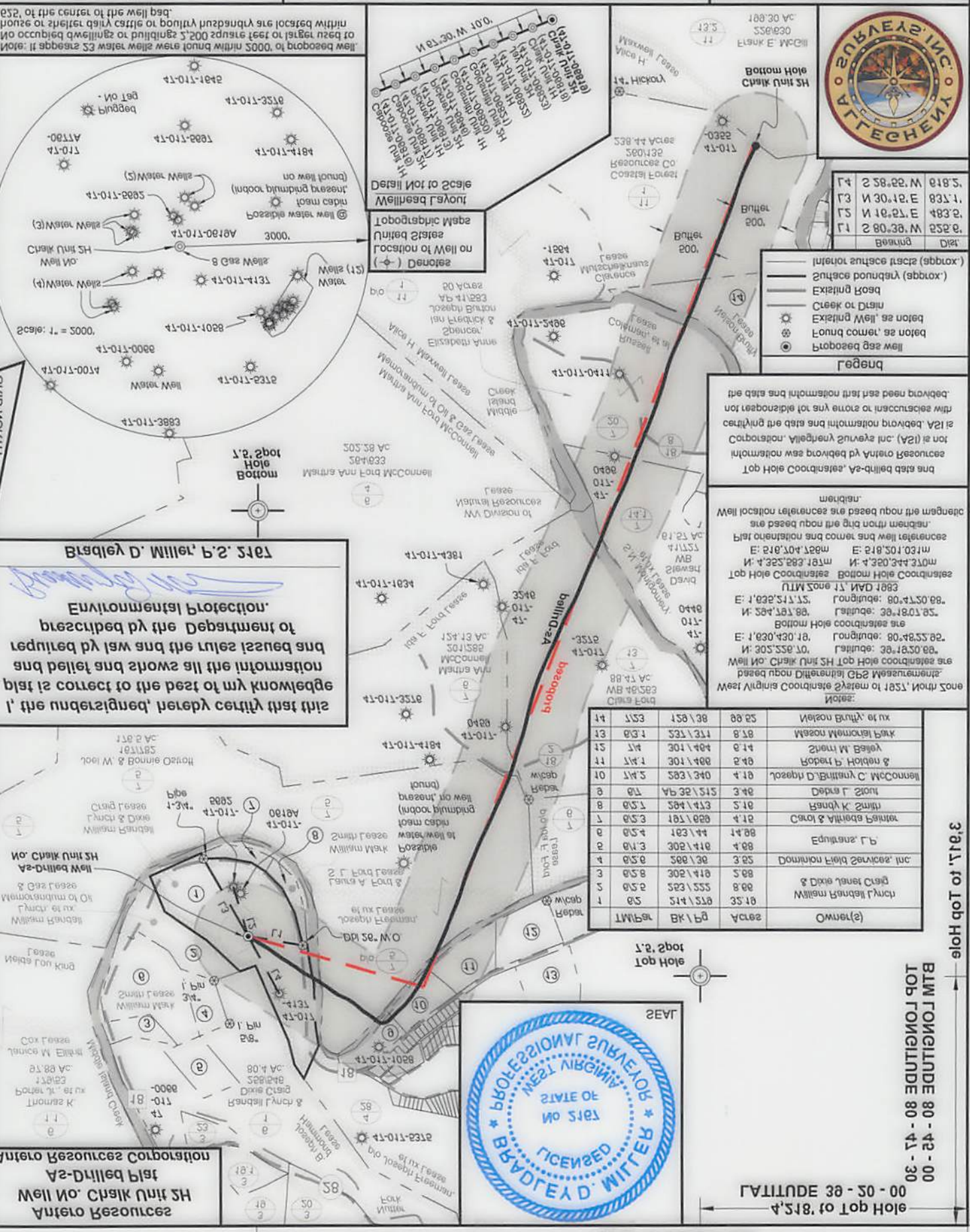
Denver, CO 80505      Charleston, WV 25313  
 ADDRESS: 1812 Wlyukooob Street      ADDRESS: 2400 D Big Tyler Road  
 MEGG OPERATOR: Antero Resources Corporation      DESIGNATED AGENT: Diana Stimpert - CT Corporation System

BGC AND AVOIDANCE     GRAVE OUT AND BEGINS    TARGET FORMATION: Marcellus shale    ESTIMATED DEPTH: 12,388.00  
 PREPARE THEM FORMATION     OTHER PHYSICAL CHANGE IN MEGG (SPECIFY) AS-DILLED    8,243.100  
 PROPOSED WORK:  DRILL     COMPLET     DRILL DEEPER     FRACTURE OR STIMULATE     BGC OFF OLD FORMATION  
 BOYALTY OWNER: William Randolph Lynch & Dixie Craig, Joseph Fleeman, et al; 198 E. Ford (S)    LEASE NO:    ACREAGE: 20,400,405.82  
 SURFACE OWNER: Dixie Craig    Lewis A. Ford & 27 Ford, 271 Montgomery, et al;    ACREAGE: 154,80,415  
 DISTRICT: West Union    Clarence Coleman, et al; Nelson Brilly;    COUNTY: Doddridge    800,180,220.0  
 LOCATION: ELEVATION: AS-Dilled Circle - 843.    WATERSHED: Headwaters Middle Island Creek    QUADRANGLE: West Union    35.42  
 (IF GAS) PRODUCTION:  STORAGE     DEEP     SHALLOW  
 MEGG TYPE:  OIL     GAS     FLUID INJECTION     WASTE DISPOSAL

CORR. MATTERS ON  
 PROVEN SOURCE OF ELEVATION:  
 271-110-110  
 MINIMUM DEGREE OF ACCURACY:  
 SCALE: 1" = 1500.  
 DRAWING NO: CHALK UNIT SH AS-DILLED Well Plat  
 FILE NO: 537-30-WV-14

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

STATE: WV    COUNTY: TOWSON    PERMIT: 018810  
 API MEGG NO:    OPERATOR: Well No. CHALK UNIT SH  
 DATE: 12/10/2014



11,128.00 to Bottom Hole

3,911.00 to Top Hole

BLM LONGITUDE 80 - 42 - 00  
 TOP LONGITUDE 80 - 41 - 30

LONGITUDE 80 - 38 - 00  
 LATITUDE 38 - 30 - 00

11,112.00 to Bottom Hole