

APPROVED

NAME: Dullin
DATE 1/3/18

Page ___ of ___

WR-35
Rev. 8/23/13

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 - 06704 County Doddridge District Central **WV Department of Environmental Protection**
Quad Oxford 7.5' Pad Name James Webb Pad Field/Pool Name -----
Farm name James E. Webb Well Number Hunter 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 4343271m Easting 510948m
Landing Point of Curve Northing 4343267.706m Easting 511433.043m
Bottom Hole Northing 4340372m Easting 512775m

Elevation (ft) 991' 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 03/26/2015 Date drilling commenced 08/20/2015 Date drilling ceased 07/28/2016
Date completion activities began 02/13/2017 Date completion activities ceased 08/30/2017
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 62', 173' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1145' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 1552', 1632' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by: _____

01/05/2018

API 47-017 - 06704 Farm name James E. Webb Well number Hunter 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"	65'	New	94#, K-55	N/A	Y
Surface	17-1/2"	13-3/8"	454'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2575'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	17858'	New	23#, HCP-110	N/A	Y
Tubing		2-3/8"	6868'		4.7#, N-80		
Packer type and depth set		N/A					

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	60 sx	15.6	1.18	71	0'	8 Hrs.
Surface	Class A	575 sx	15.6	1.18	679	0'	8 Hrs.
Coal							
Intermediate 1	Class A	998 sx	15.6	1.18	1178	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	918 sx (Lead) 1706 sx (Tail)	13.77 (Lead), 15.13 (Tail)	1.45 (Lead), 1.84 (Tail)	4470	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 17858' MD, 6507' TVD (BHL) & 6533' TVD (Deepest Point Drilled) Loggers TD (ft) 17844' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6330'

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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EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	2/13/2017	17587	17756	60	Marcellus
2	2/14/2017	17386	17555	60	Marcellus
3	2/14/2017	17186	17355	60	Marcellus
4	2/14/2017	16985	17154	60	Marcellus
5	2/14/2017	16785	16954	60	Marcellus
6	2/15/2017	16584	16753	60	Marcellus
7	2/15/2017	16384	16553	60	Marcellus
8	2/15/2017	16183	16352	60	Marcellus
9	2/15/2017	15983	16152	60	Marcellus
10	2/16/2017	15782	15951	60	Marcellus
11	2/16/2017	15582	15751	60	Marcellus
12	2/16/2017	15381	15550	60	Marcellus
13	2/17/2017	15181	15350	60	Marcellus
14	2/17/2017	14980	15149	60	Marcellus
15	2/17/2017	14780	14949	60	Marcellus
16	2/17/2017	14579	14748	60	Marcellus
17	2/18/2017	14379	14548	60	Marcellus
18	2/18/2017	14178	14347	60	Marcellus
19	2/18/2017	13978	14147	60	Marcellus
20	2/19/2017	13777	13946	60	Marcellus
21	2/19/2017	13577	13746	60	Marcellus
22	2/19/2017	13376	13545	60	Marcellus
23	2/20/2017	13176	13345	60	Marcellus
24	2/20/2017	12975	13144	60	Marcellus
25	2/20/2017	12775	12944	60	Marcellus
26	2/20/2017	12574	12743	60	Marcellus
27	2/21/2017	12374	12543	60	Marcellus
28	2/21/2017	12173	12342	60	Marcellus
29	2/21/2017	11973	12142	60	Marcellus
30	2/21/2017	11772	11941	60	Marcellus
31	2/22/2017	11571	11741	60	Marcellus
32	2/22/2017	11371	11540	60	Marcellus
33	2/22/2017	11170	11340	60	Marcellus
34	2/22/2017	10970	11139	60	Marcellus
35	2/23/2017	10769	10939	60	Marcellus
36	2/23/2017	10569	10738	60	Marcellus
37	2/23/2017	10368	10537	60	Marcellus
38	2/23/2017	10168	10337	60	Marcellus
39	2/23/2017	9967	10136	60	Marcellus
40	2/24/2017	9767	9936	60	Marcellus
41	2/24/2017	9566	9735	60	Marcellus
42	2/24/2017	9366	9535	60	Marcellus
43	2/24/2017	9165	9334	60	Marcellus
44	2/25/2017	8965	9134	60	Marcellus
45	2/25/2017	8764	8933	60	Marcellus
46	2/25/2017	8564	8733	60	Marcellus
47	2/25/2017	8363	8532	60	Marcellus
48	2/25/2017	8163	8332	60	Marcellus
49	2/26/2017	7962	8131	60	Marcellus
50	2/26/2017	7762	7931	60	Marcellus
51	2/26/2017	7561	7730	60	Marcellus
52	2/26/2017	7361	7530	60	Marcellus
53	2/27/2017	7160	7329	60	Marcellus
54	2/27/2017	6960	7129	60	Marcellus

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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
Fresh Water	62'	N/A	62'	N/A
Fresh Water	173'	N/A	173'	N/A
Siltstone	est. 0	177	est. 0	177
Sandstone	est. 177	237	est. 177	237
Siltstone	est. 237	567	est. 237	567
Sandstone	est. 567	1552	est. 567	1552
Coal	est. 1552	1557	est. 1552	1557
Shale	est. 1557	1587	est. 1557	1587
Sandstone	est. 1587	1632	est. 1587	1632
Coal	est. 1632	1634	est. 1632	1634
Sandstone	est. 1634	2045	est. 1634	2046
Big Lime	2045	2131	2046	2132
Big Injun	2131	2440	2132	2441
Gantz Sand	2440	2686	2441	2687
Fifty Foot Sandstone	2686	2763	2687	2764
Gordon	2763	3080	2764	3081
Fifth Sandstone	3080	3105	3081	3107
Bayard	3105	3433	3107	3434
Warren	3433	3797	3434	3798
Speechley	3797	4541	3798	4542
Bradford	4541	4933	4542	4935
Benson	4933	5199	4935	5200
Alexander	5199	5354	5200	5356
Elk	5354	5804	5356	5806
Rhinestreet	5804	6127	5806	6398
Sycamore	6127	6293	6398	6594
Middlesex	6293	6411	6594	6773
Burkett	6411	6440	6773	6835
Tully	6440	6467	6835	6915
Marcellus	6467	NA	6915	NA

*Please note Antero determines formation tops based on mud logs that are only run on one well on a multi-well pad. The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	2/13/2017
Job End Date:	2/27/2017
State:	West Virginia
County:	Doddridge
API Number:	47-017-06704-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Hunter 2H
Latitude:	39.23859167
Longitude:	-80.87333333
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,533
Total Base Water Volume (gal):	22,001,498
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
Water	Supplied by Operator	Base Fluid					
			Water	7732-18-5	100.00000	89.13541	
Acetic Acid	CWS	Acid					
				Listed Below			

DAP-902	CWS	Scale Inhibitor					
				Listed Below			
DWP-641	CWS	Friction Reducer					
				Listed Below			
DWP-111	CWS	Gel Slurry					
				Listed Below			
DAP-103	CWS	Iron Control					
				Listed Below			
DWP-975	CWS	Breaker					
				Listed Below			
SANIFRAC 8844	CWS	Biocide					
				Listed Below			
Sand (Proppant)	CWS	Propping Agent					
				Listed Below			
DAP-925	CWS	Acid Corrosion Inhibitor					
				Listed Below			
Other Chemical (s)	Listed Above	See Trade Name (s) List					

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				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	10.64436	
			Hydrochloric acid	7647-01-0	37.00000	0.04906	
			Polymer	26100-47-0	45.00000	0.03616	
			Paraffinic hydrocarbon solvent	64742-47-8	30.00000	0.02411	
			Guar gum	9000-30-0	60.00000	0.01716	
			Distillates (petroleum), hydrotreated middle	64742-46-7	60.00000	0.01716	
			Calcite	471-34-1	1.00000	0.01666	
			Ammonium chloride	12125-02-9	11.00000	0.00884	
			Illite	12173-60-3	1.00000	0.00744	
			Polyethylene glycol mixture	25322-68-3	54.50000	0.00635	
			2-Propenoic acid, homopolymer, sodium salt	9003-04-7	40.00000	0.00616	
			Goethite	1310-14-1	0.10000	0.00513	
			Biotite	1302-27-8	0.10000	0.00355	
			Apatite	64476-38-6	0.10000	0.00355	
			Sorbitan monooleate	1338-43-8	4.00000	0.00321	
			Ilmenite	98072-94-7	0.10000	0.00275	
			Polyethylene glycol monooleate	9004-96-0	3.00000	0.00241	
			2,2-Dibromo-3-Nitrilopropionamide	10222-01-2		0.00233	
			Sorbitol tetraoleate	61723-83-9	2.00000	0.00161	
			1,2-Propanediol	57-55-6	10.00000	0.00154	
			Quaternary ammonium compounds, bis (hydrogenated tallow alkyl)dimethyl, salts with bentonite	68953-58-2	5.00000	0.00143	
			Amines, tallow alkyl, ethoxylated	61791-26-2	1.00000	0.00080	

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			Sodium bromide	7647-15-6	4.00000	0.00047	
			Citric acid	77-92-9	60.00000	0.00046	
			Oxirane, 2-methyl-, polymer with oxirane, monodecyl ether	37251-67-5	1.50000	0.00043	
			Ammonium Persulfate	7727-54-0	100.00000	0.00042	
			Alcohols, C12-14, ethoxylated	84133-50-6	0.50000	0.00040	
			Dibromoacetonitrile	3252-43-5	3.00000	0.00035	
			Vinylidene chloride-methyl acrylate copolymer	25038-72-6	30.00000	0.00009	
			Acrylamide	79-06-1	0.10000	0.00008	
			Methanol	67-56-1	60.00000	0.00003	
			Fatty acids, tall-oil	61790-12-3	30.00000	0.00002	
			Alcohols, C14-15, ethoxylated	68951-67-7	30.00000	0.00002	
			Hydrated magnesium silicate	14807-96-6	1.00000	0.00002	
			Modified thiourea polymer	68527-49-1	30.00000	0.00002	
			Alkenes, C>10 a-	64743-02-8	5.00000	0.00001	
			Propargyl Alcohol	107-19-7	10.00000	0.00001	
			Sodium chloride	7647-14-5	1.00000	0.00001	
			Formaldehyde	50-00-0	0.10000	0.00001	
			Poly(tetrafluoroethylene)	9002-84-0	1.00000	0.00001	

* 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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LATITUDE 39°15'00"

11,323'

5,344' TO BOTTOM HOLE

LATITUDE 39°15'00"

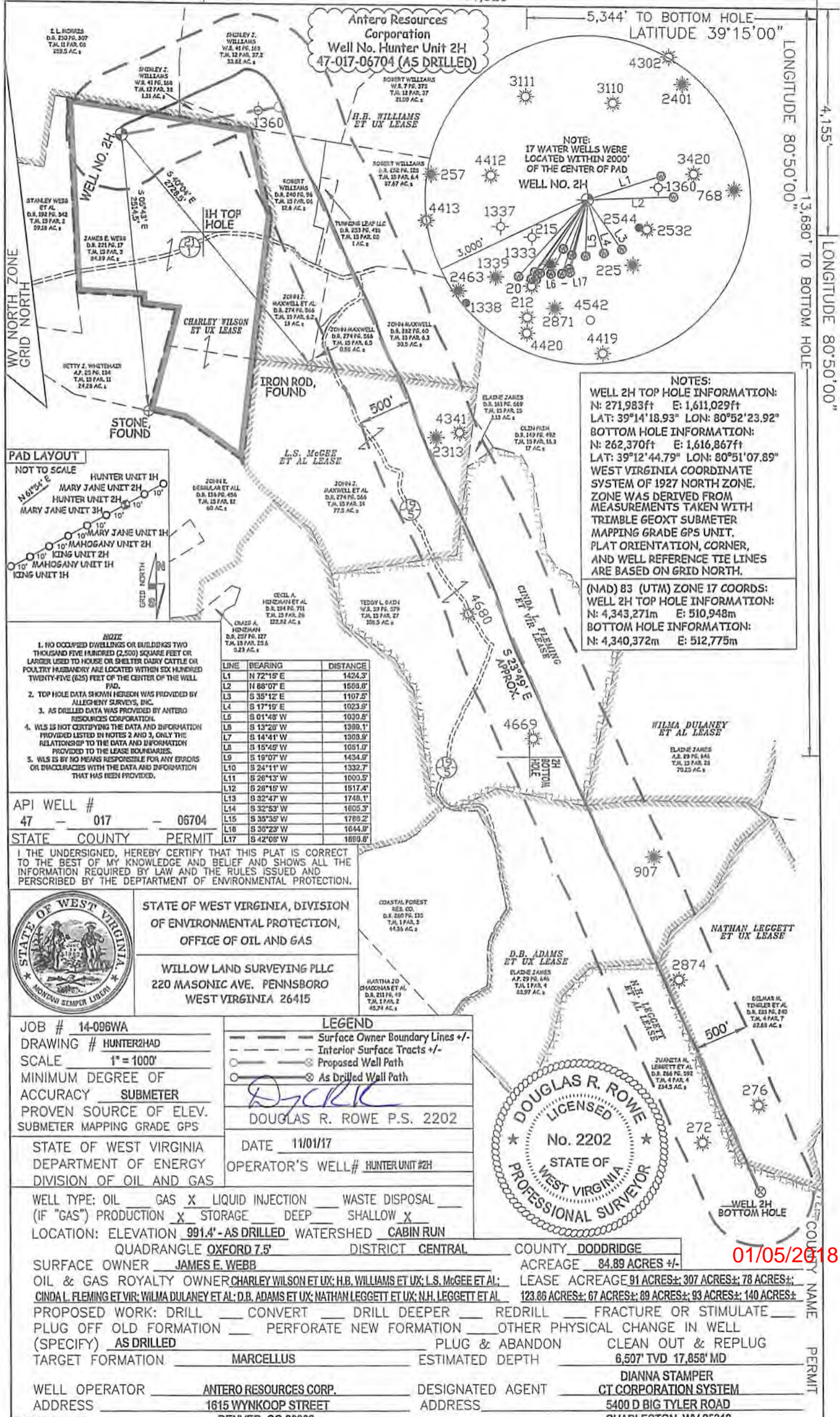
LONGITUDE 80°50'00"

4,155'

LONGITUDE 80°50'00"

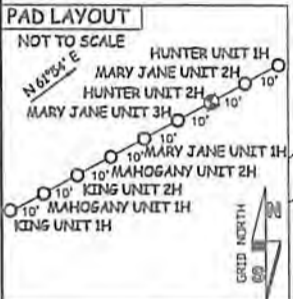
COUNTY NAME PERMIT

Antero Resources Corporation
Well No. Hunter Unit 2H
47-017-06704 (AS DRILLED)



NOTES:
 WELL 2H TOP HOLE INFORMATION:
 N: 271,983ft E: 1,611,029ft
 LAT: 39°14'18.93" LON: 80°52'23.92"
 BOTTOM HOLE INFORMATION:
 N: 262,370ft E: 1,616,867ft
 LAT: 39°12'44.79" LON: 80°51'07.89"
 WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:
 WELL 2H TOP HOLE INFORMATION:
 N: 4,343,271m E: 510,948m
 BOTTOM HOLE INFORMATION:
 N: 4,340,372m E: 512,775m



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

LINE	BEARING	DISTANCE
L1	N 72°15' E	1424.3'
L2	N 88°07' E	1588.8'
L3	S 35°12' E	1107.5'
L4	S 17°19' E	1023.9'
L5	S 01°48' W	1030.8'
L6	S 13°28' W	1388.1'
L7	S 14°41' W	1308.9'
L8	S 15°45' W	1051.0'
L9	S 19°07' W	1434.9'
L10	S 24°11' W	1332.7'
L11	S 26°13' W	1000.5'
L12	S 28°15' W	1517.4'
L13	S 32°47' W	1748.1'
L14	S 32°53' W	1605.3'
L15	S 35°35' W	1788.2'
L16	S 35°23' W	1644.8'
L17	S 42°08' W	1888.8'

API WELL #
 47 - 017 - 06704

STATE COUNTY PERMIT
 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 PERSIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

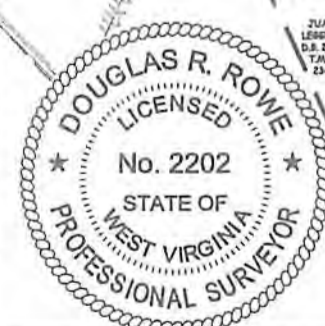


STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
 WILLOW LAND SURVEYING PLLC
 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

JOB # 14-096WA
 DRAWING # HUNTER2HAD
 SCALE 1" = 1000'
 MINIMUM DEGREE OF ACCURACY SUBMETER
 PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS
 STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

LEGEND
 - - - Surface Owner Boundary Lines +/-
 - - - Interior Surface Tracts +/-
 - - - Proposed Well Path
 O As Drilled Well Path

DOUGLAS R. ROWE P.S. 2202
 DATE 11/01/17
 OPERATOR'S WELL# HUNTER UNIT #2H



WELL TYPE: OIL ___ GAS LIQUID INJECTION ___ WASTE DISPOSAL ___
 (IF "GAS") PRODUCTION STORAGE ___ DEEP ___ SHALLOW
 LOCATION: ELEVATION 991.4' - AS DRILLED WATERSHED CABIN RUN
 QUADRANGLE OXFORD 7.5' DISTRICT CENTRAL COUNTY DODDRIDGE
 SURFACE OWNER JAMES E. WEBB ACREAGE 84.89 ACRES +/-
 OIL & GAS ROYALTY OWNER CHARLEY WILSON ET UX; H.B. WILLIAMS ET UX; L.S. MCGEE ET AL; CINDA L. FLEMING ET VIR; WILMA DULANEY ET AL; D.B. ADAMS ET UX; NATHAN LEGGETT ET UX; N.H. LEGGETT ET AL
 LEASE ACREAGE 91 ACRES±; 307 ACRES±; 78 ACRES±; 123.86 ACRES±; 67 ACRES±; 69 ACRES±; 93 ACRES±; 140 ACRES±
 PROPOSED WORK: DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___
 PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) AS DRILLED PLUG & ABANDON CLEAN OUT & REPLUG
 TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,507' TVD 17,858' MD
 WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER
 ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD
 FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

01/05/2018

