

Reviewed

Julian 6/6/16

WR-35
Rev. 8/23/13

Page 1 of 4

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

API 47-017-06534 County Doddridge District Grant
Quad West Union 7.5' Pad Name Melody Pad Field/Pool Name ---
Farm name Melody Brown, et al Well Number Bradford Unit 1H
Operator (as registered with the OOG) Antero Resources Corporation
Address 1615 Wynkoop Street City Denver State CO Zip 80202

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4356589m Easting 520754m
Landing Point of Curve Northing 4356502.96m Easting 520187.44m
Bottom Hole Northing 4358266m Easting 519489m

Elevation (ft) 1135' 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 5/22/2014 Date drilling commenced 4/14/2016 Date drilling ceased 7/28/2016
Date completion activities began 10/21/2017 Date completion activities ceased 11/17/2017
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 31', 36', 45', 46' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 865', 1391', 1509' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 1821' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by: _____

07/20/2018

API 47-017 - 06534 Farm name Melody Brown, et al Well number Bradford Unit 1H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	40'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	546'	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"	14161'	New	23#, P-110	N/A	Y
Tubing		2-3/8"			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	N/A sx	15.6	1.18		0'	8 Hrs.
Surface	Class A	670 sx	15.6	1.19		0'	8 Hrs.
Coal							
Intermediate 1	Class A	937 sx	15.6	1.18		0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	950 sx (Load) 1151 sx (Tail)	14.50 (Load), 14.50 (Tail)	1.20 (Load), 1.84 (Tail)		-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 16200' MD, 7200' TVD (BHL), 6888' (Deepest Point Drilled) Loggers TD (ft) 16200' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

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Kick off depth (ft) 8611'

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 47-017-06534 Farm Name Melody Brown et al Well Number Bradford Unit 1H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	10/21/2017	13873	14041	60	Marcellus
2	10/21/2017	13674	13842	60	Marcellus
3	10/21/2017	13475	13643	60	Marcellus
4	10/22/2017	13276	13444	60	Marcellus
5	10/22/2017	13076	13244	60	Marcellus
6	10/22/2017	12877	13045	60	Marcellus
7	10/22/2017	12678	12846	60	Marcellus
8	10/22/2017	12479	12647	60	Marcellus
9	10/23/2017	12280	12448	60	Marcellus
10	10/23/2017	12081	12249	60	Marcellus
11	10/23/2017	11882	12050	60	Marcellus
12	10/23/2017	11683	11850	60	Marcellus
13	10/23/2017	11483	11651	60	Marcellus
14	10/24/2017	11284	11452	60	Marcellus
15	10/24/2017	11085	11253	60	Marcellus
16	10/24/2017	10886	11054	60	Marcellus
17	10/24/2017	10687	10855	60	Marcellus
18	10/24/2017	10488	10656	60	Marcellus
19	10/25/2017	10289	10456	60	Marcellus
20	10/25/2017	10089	10257	60	Marcellus
21	10/25/2017	9890	10058	60	Marcellus
22	10/25/2017	9691	9859	60	Marcellus
23	10/25/2017	9492	9660	60	Marcellus
24	10/25/2017	9293	9461	60	Marcellus
25	10/26/2017	9094	9262	60	Marcellus
26	10/26/2017	8895	9062	60	Marcellus
27	10/26/2017	8695	8863	60	Marcellus
28	10/26/2017	8496	8664	60	Marcellus
29	10/26/2017	8297	8465	60	Marcellus
30	10/27/2017	8098	8266	60	Marcellus
31	10/27/2017	7899	8067	60	Marcellus
32	10/27/2017	7700	7868	60	Marcellus
33	10/27/2017	7501	7669	60	Marcellus

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EXHIBIT 2

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	10/21/2017	78.4698	7712.57	5018	4756	412200	8660.024	N/A
2	10/21/2017	75	7829	4973	4200	411150	8388.667	N/A
3	10/21/2017	76	8519	5499	3955	411450	8283.905	N/A
4	10/22/2017	76.5	8720	6014	4001	411050	8281.905	N/A
5	10/22/2017	80.1237	8226.869	5899	4579	411200	8530	N/A
6	10/22/2017	80.318	8088.159	5465	4423	411540	7893	N/A
7	10/22/2017	80	8749	5166	4189	411500	7795	N/A
8	10/22/2017	80.8	8773	5322	4057	410500	7733.881	N/A
9	10/23/2017	78.5	8323	5459	3995	410950	7804.667	N/A
10	10/23/2017	78.5375	7713.048	5401	4396	409420	7860.452	N/A
11	10/23/2017	80.0694	7605.29	5970	4545	410470	7759	N/A
12	10/23/2017	78.3583	8510.435	5897	4380	409700	7686	N/A
13	10/23/2017	79.3744	8332.51	5572	3928	410000	7632	N/A
14	10/24/2017	78.9461	8608.96	5879	3922	409200	7683	N/A
15	10/24/2017	80.6314	7855.601	5678	4328	409260	7757	N/A
16	10/24/2017	80.2	7586.541	5797	4771	408740	7711	N/A
17	10/24/2017	80.361	7526.835	5911	4680	410500	7764	N/A
18	10/24/2017	79.3	8139	5598	4236	409800	7752.69	N/A
19	10/25/2017	80.3	7865	5753	4195	410200	7751.452	N/A
20	10/25/2017	79.8277	7882.232	5736	4558	409740	7702.214	N/A
21	10/25/2017	79.9685	8190.767	6432	4534	410900	7706	N/A
22	10/25/2017	79.9875	8047.76	6106	4665	410860	7667	N/A
23	10/25/2017	80.5	8199	5365	4143	411300	7716.571	N/A
24	10/25/2017	80.4	8458	5817	4015	411500	7743.762	N/A
25	10/26/2017	79.5	8314	5808	4171	411400	8148.119	N/A
26	10/26/2017	80.2988	8265.079	5769	5190	410220	7657.905	N/A
27	10/26/2017	79.5943	8478.955	5563	4711	410780	7647	N/A
28	10/26/2017	79.0926	8275.659	5501	4339	411500	7653	N/A
29	10/26/2017	76.6773	8271.192	6014	4277	409850	7620	N/A
30	10/27/2017	76.3036	8202.655	5992	3822	410200	7623	N/A
31	10/27/2017	78.0016	8449.475	6063	4173	410300	7611	N/A
32	10/27/2017	75.1651	8341.643	6195	4149	411100	7278	N/A
33	10/27/2017	76.9155	8157.394	6567	4054	422000	7181	N/A
	AVG =	79.0	8,189	5,767	4,321	13,138,480	250,501	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
Fresh Water	52'	N/A	N/A	N/A
Fresh Water	55'	N/A	N/A	N/A
Fresh Water	65'	N/A	N/A	N/A
Fresh Water	66'	N/A	N/A	N/A
Silt	0	100	0	100
Sandstone	100	300	100	300
Siltstone (tr coal)	300	420	300	420
Silty Sandstone	420	600	420	600
Sandy siltstone	600	780	600	780
Limestone	780	800	780	800
Sandy siltstone	800	880	800	880
Limey Siltstone	880	980	880	980
Sandy shale	980	1,300	980	1,300
Sandstone	1,300	1,420	1,300	1,420
Sandy shale	1,420	1,580	1,420	1,580
Silty Sandstone (tr coal)	1,580	1,780	1,580	1,780
Sandstone	1,780	1,840	1,780	1,840
Coal	1,840	2,020	1,840	2,020
Limey Siltstone	2,020	2,075	2,020	2,078
Big Lime	2,075	2,628	2,078	2,632
Gantz Sand	2,628	2,737	2,632	2,741
Fifty Foot Sandstone	2,737	2,843	2,741	2,847
Gordon	2,843	3,124	2,847	3,130
Fifth Sandstone	3,124	3,141	3,130	3,147
Bayard	3,141	3,952	3,147	4,004
Speechley	3,952	4,186	4,004	4,264
Baltown	4,186	4,688	4,264	4,817
Bradford	4,688	5,129	4,817	5,306
Benson	5,129	5,408	5,306	5,615
Alexander	5,408	5,578	5,615	5,803
Elk	5,578	6,083	5,803	6,356
Rhinestreet	6,083	6,457	6,356	6,468
Sycamore	6,447	6,620	6,791	7,046
Middlesex	6,620	6,751	7,046	7,283
Burkett	6,751	6,779	7,283	7,344
Tully	6,779	6,831	7,344	7,481
Marcellus	6,831	NA	7,481	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:	10/21/2017
Job End Date:	10/27/2017
State:	West Virginia
County:	Doddridge
API Number:	47-017-06534-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Bradford 1H
Latitude:	39.35842500
Longitude:	-80.75927500
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,869
Total Base Water Volume (gal):	11,089,177
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	Antero Resources	Carrier/Base Fluid	Water	7732-18-5	100.00000	87.02467	
Sand	U.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	12.76000	
HCL Acid (12.6%-17.5%)	U.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.40000		
			Hydrogen Chloride	7647-01-0	17.50000		
WFRA-405	U.S. Well Services, LLC	Friction Reducer	2-Propenoic acid, polymer with 2-propenamide	29003-06-9	30.00000		
			Hydrated light distillate (petroleum)	64742-47-8	30.00000		
LGC-15	U.S. Well Services, LLC	Gelling Agents	Guar Gum	9000-30-0	50.00000		
			Petroleum Distillates	64742-47-8	60.00000		
			Suspending agent (solid)	14808-60-7	3.00000	0.00060	
			Surfactant	68439-51-0	3.00000	0.00024	

(C)
 Bradford
 1H

Bioclear 2000	J.S. Well Services, LLC	Anti-Bacterial Agent					
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00401	
			Deionized Water	7732-18-5	28.00000	0.00229	
SI-1200s	J.S. Well Services, LLC	Scale Inhibitor					
			Proprietary Scale Inhibitor	Proprietary	10.00000	0.00130	
AI-303	J.S. Well Services, LLC	Acid Corrosion Inhibitors					
			Ethylene glycol	107-21-1	40.00000	0.00005	
			Cinnamaldehyde	104-55-2	20.00000	0.00002	
			Formic acid	64-18-6	20.00000	0.00002	
			Butyl cellosolve	111-76-2	20.00000	0.00002	
			Polyether	60828-78-6	10.00000	0.00001	
			Acetophenone, thiourea, formaldehyde polymer	68527-49-1	5.00000	0.00001	
AP One	J.S. Well Services, LLC	Gel Breakers					
			Ammonium Persulfate	7727-54-0	100.00000	0.00011	

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

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

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

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

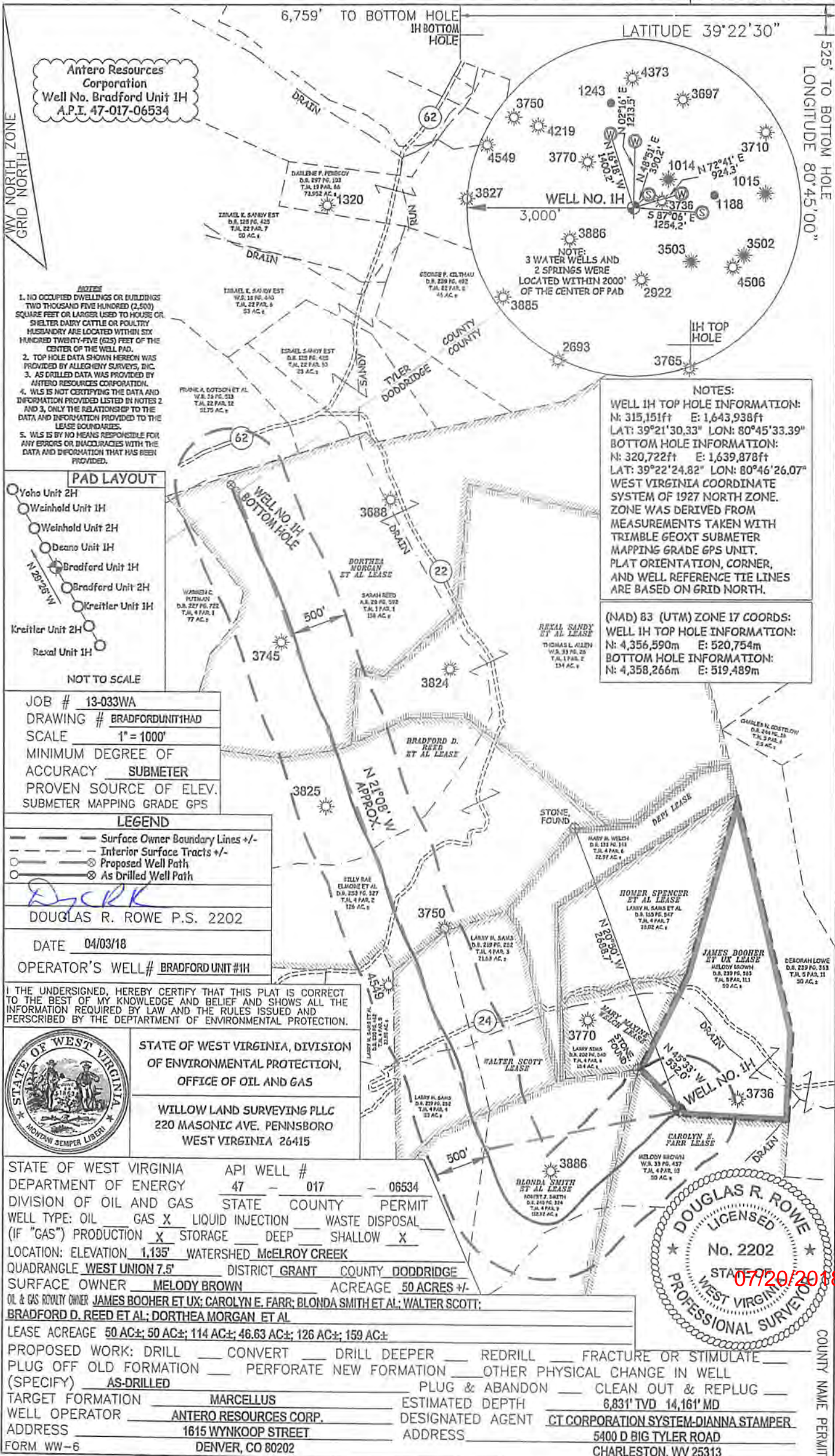
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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LATITUDE 39°22'30" 2,622'

525' TO BOTTOM HOLE
LONGITUDE 80°45'00"

6,037'
LONGITUDE 80°45'00"



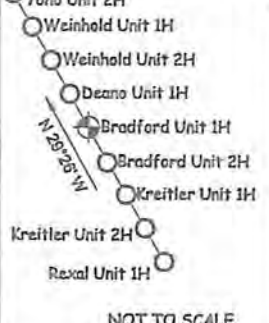
Antero Resources Corporation
Well No. Bradford Unit 1H
A.P.I. 47-017-06534

- NOTES**
1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.
 2. TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALLEGHENY SURVEYS, INC.
 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 INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.

NOTES:
WELL 1H TOP HOLE INFORMATION:
N: 315,151ft E: 1,643,938ft
LAT: 39°21'30.33" LON: 80°45'33.39"
BOTTOM HOLE INFORMATION:
N: 320,722ft E: 1,639,878ft
LAT: 39°22'24.82" LON: 80°46'26.07"
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:
WELL 1H TOP HOLE INFORMATION:
N: 4,356,590m E: 520,754m
BOTTOM HOLE INFORMATION:
N: 4,358,266m E: 519,489m

PAD LAYOUT



NOT TO SCALE

JOB # 13-033WA
DRAWING # BRADFORDUNIT1HAD
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

LEGEND

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

DRK
DOUGLAS R. ROWE P.S. 2202

DATE 04/03/18

OPERATOR'S WELL # BRADFORD UNIT #1H

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 PERSCRIBED 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

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY
DIVISION OF OIL AND GAS STATE COUNTY PERMIT
WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL
(IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X
LOCATION: ELEVATION 1,135' WATERSHED McELROY CREEK
QUADRANGLE WEST UNION 7.5' DISTRICT GRANT COUNTY DODDRIDGE
SURFACE OWNER MELODY BROWN ACREAGE 50 ACRES +/-
OIL & GAS ROYALTY OWNER JAMES BOOHER ET UX; CAROLYN E. FARR; BLONDA SMITH ET AL; WALTER SCOTT;
BRADFORD D. REED ET AL; DORTHEA MORGAN ET AL

LEASE ACREAGE 50 AC±; 50 AC±; 114 AC±; 46.63 AC±; 126 AC±; 159 AC±
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 6,831' TVD 14,161' MD
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT CT CORPORATION SYSTEM-DIANNA STAMPER
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD
FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313



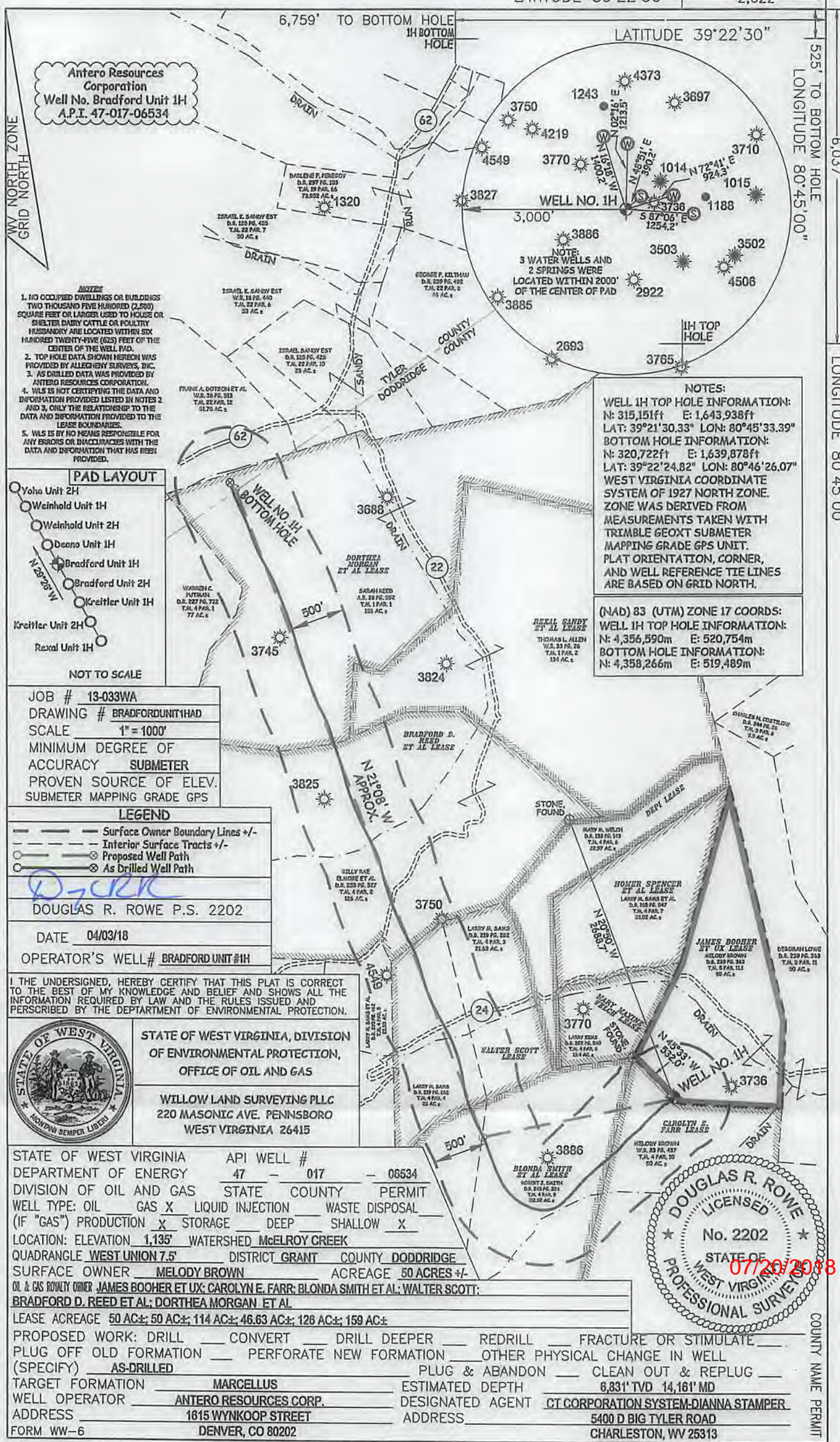
COUNTY NAME PERMIT

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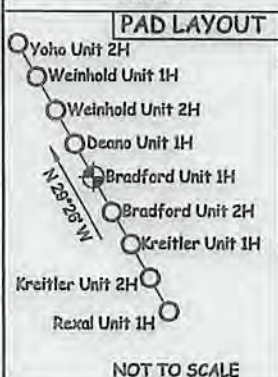


Antero Resources Corporation
Well No. Bradford Unit 1H
A.P.I. 47-017-06534

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JOB # 13-033WA
DRAWING # BRADFORDUNIT1HAD
SCALE 1" = 1000'
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PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

LEGEND

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

DOUGLAS R. ROWE P.S. 2202

DATE 04/03/18
OPERATOR'S WELL# BRADFORD UNIT #1H

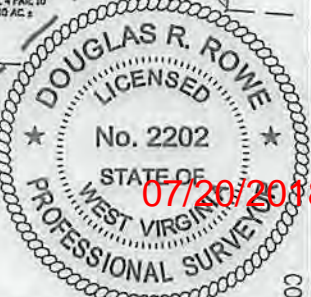
I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PERSCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



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

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY API WELL # 47 - 017 - 06534
DIVISION OF OIL AND GAS STATE COUNTY PERMIT
WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION ___ STORAGE ___ DEEP ___ SHALLOW X
LOCATION: ELEVATION 1,135' WATERSHED McELROY CREEK
QUADRANGLE WEST UNION 7.5' DISTRICT GRANT COUNTY DODDRIDGE
SURFACE OWNER MELODY BROWN ACREAGE 50 ACRES +/-
OIL & GAS ROYALTY OWNER JAMES BOOHER ET UX; CAROLYN E. FARR; BLONDA SMITH ET AL; WALTER SCOTT;
BRADFORD D. REED ET AL; DORTHEA MORGAN ET AL

LEASE ACREAGE 50 AC±; 50 AC±; 114 AC±; 46.63 AC±; 126 AC±; 159 AC±
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 8,831' TVD 14,161' MD
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT CT CORPORATION SYSTEM-DIANNA STAMPER
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD
FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313



COUNTY NAME PERMIT