

Reviewed
12/19/18

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

API 47 - 017 - 06796 County Doddridge District Central
Quad West Union 7.5' Pad Name Balli Pad Field/Pool Name ----
Farm name Jeffrey K. Jones Sr. et al Well Number California 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 4350343m Easting 513473m
Landing Point of Curve Northing 4350379.96m Easting 513170.12m
Bottom Hole Northing 4354496m Easting 511823m

Elevation (ft) 1135.5' 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 2/07/2017 Date drilling commenced 2/10/2017 Date drilling ceased 6/20/2017
Date completion activities began 9/23/2017 Date completion activities ceased 4/10/2018
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 107', 192' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 737' 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

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API 47-017 - 06796 Farm name Jeffrey K. Jones Sr. et al Well number California 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"	72'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	369'	New	54#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2586'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	21348'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6898'		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	100 sx	15.6	1.18	118	0'	8 Hrs.
Surface	Class A	375 sx	15.6	1.19	446	0'	8 Hrs.
Coal							
Intermediate 1	Class A	922 sx	15.6	1.18	1088	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	790sx (Lead) 2143 sx (Tail)	13.5(Load), 15.2 (Tail)	1.44 (Load), 1.87 (Tail)	5145	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 21348' MD, 6589' TVD (BHL), 6630' (Deepest Point Drilled)

Loggers TD (ft) 21348' MD

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Deepest formation penetrated Marcellus

Plug back to (ft) N/A

Plug back procedure N/A

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Kick off depth (ft) 6194'

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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

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PRODUCING FORMATION(S)	DEPTHS	
Marcellus	6559' (TOP) TVD	6940' (TOP) MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

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

OPEN FLOW Gas 19899.24 mcfpd Oil 122.84 bpd NGL --- bpd Water 528.03 bpd GAS MEASURED BY Estimated Orifice Pilot

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

***PLEASE SEE ATTACHED EXHIBIT 3**

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Please insert additional pages as applicable.

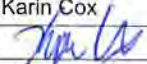
Drilling Contractor Frontier Drilling LLC
Address 207 Carlton Drive City Eighty Four State PA Zip 15330

Logging Company Allied Horizontal Wireline Services
Address 381 Colonial Manor Rd City North Huntington State PA Zip 15642

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

Stimulating Company CalFrac Well Services
Address 717 17th Street, Suite 1445 City Denver State CO Zip 80202

Please insert additional pages as applicable.

Completed by Karin Cox Telephone 303-357-6820
Signature  Title Permitting Agent Date 9/7/2018

API 47-017-06796 Farm Name Jeffrey K. Jones Sr. et al Well Number California Unit 1H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	9/23/2017	21169	0	48	Marcellus
2	2/3/2018	20966	21137	48	Marcellus
3	2/5/2018	20764	20935	48	Marcellus
4	2/5/2018	20561	20732	48	Marcellus
5	2/6/2018	20359	20530	48	Marcellus
6	2/6/2018	20156	20327	48	Marcellus
7	2/7/2018	19954	20125	48	Marcellus
8	2/7/2018	19751	19922	48	Marcellus
9	2/7/2018	19549	19720	48	Marcellus
10	2/8/2018	19346	19517	48	Marcellus
11	2/8/2018	19144	19314	48	Marcellus
12	2/8/2018	18941	19112	48	Marcellus
13	2/9/2018	18739	18909	48	Marcellus
14	2/9/2018	18536	18707	48	Marcellus
15	2/9/2018	18334	18504	48	Marcellus
16	2/10/2018	18131	18302	48	Marcellus
17	2/10/2018	17929	18099	48	Marcellus
18	2/10/2018	17726	17897	48	Marcellus
19	2/11/2018	17523	17694	48	Marcellus
20	2/11/2018	17321	17492	48	Marcellus
21	2/12/2018	17118	17289	48	Marcellus
22	2/12/2018	16916	17087	48	Marcellus
23	2/12/2018	16713	16884	48	Marcellus
24	2/13/2018	16511	16682	48	Marcellus
25	2/13/2018	16308	16479	48	Marcellus
26	2/13/2018	16106	16277	48	Marcellus
27	2/14/2018	15903	16074	48	Marcellus
28	2/14/2018	15701	15871	48	Marcellus
29	2/15/2018	15498	15669	48	Marcellus
30	2/16/2018	15296	15466	48	Marcellus
31	2/16/2018	15093	15264	48	Marcellus
32	2/16/2018	14891	15061	48	Marcellus
33	2/17/2018	14688	14859	48	Marcellus
34	2/17/2018	14486	14656	48	Marcellus
35	2/18/2018	14283	14454	48	Marcellus
36	2/18/2018	14080	14251	48	Marcellus
37	2/19/2018	13878	14049	48	Marcellus
38	2/19/2018	13675	13846	48	Marcellus
39	2/20/2018	13473	13644	48	Marcellus
40	2/20/2018	13270	13441	48	Marcellus
41	2/20/2018	13068	13239	48	Marcellus
42	2/21/2018	12865	13036	48	Marcellus
43	2/21/2018	12663	12834	48	Marcellus
44	2/21/2018	12460	12631	48	Marcellus
45	2/21/2018	12258	12428	48	Marcellus
46	2/22/2018	12055	12226	48	Marcellus
47	2/22/2018	11853	12023	48	Marcellus
48	2/22/2018	11650	11821	48	Marcellus
49	2/22/2018	11448	11618	48	Marcellus
50	2/23/2018	11245	11416	48	Marcellus
51	2/23/2018	11043	11213	48	Marcellus
52	2/25/2018	10840	11011	48	Marcellus
53	2/26/2018	10637	10808	48	Marcellus
54	2/26/2018	10435	10606	48	Marcellus
55	2/26/2018	10232	10403	48	Marcellus
56	2/27/2018	10030	10201	48	Marcellus
57	2/27/2018	9827	9998	48	Marcellus
58	2/27/2018	9625	9796	48	Marcellus
59	2/28/2018	9422	9593	48	Marcellus
60	2/28/2018	9220	9391	48	Marcellus
61	3/1/2018	9017	9188	48	Marcellus
62	3/1/2018	8815	8985	48	Marcellus
63	3/1/2018	8612	8783	48	Marcellus
64	3/2/2018	8410	8580	48	Marcellus
65	3/2/2018	8207	8378	48	Marcellus
66	3/2/2018	8005	8175	48	Marcellus
67	3/3/2018	7802	7973	48	Marcellus
68	3/3/2018	7599	7770	48	Marcellus
69	3/3/2018	7397	7568	48	Marcellus
70	3/4/2018	7194	7365	48	Marcellus
71	3/4/2018	6992	7163	48	Marcellus

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Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water other (units)	Amount of Nitrogen/other (units)
1	9/23/2017	57.8	7923	6231	3608	192050	9508	N/A
2	2/3/2018	68.1	8035	6772	4014	413700	8711	N/A
3	2/5/2018	73.3	7668	5131	4391	400350	8437	N/A
4	2/5/2018	72	7811	4338	4946	414000	8946	N/A
5	2/6/2018	68	7596	4228	4946	414200	10356	N/A
6	2/6/2018	72.8	7871	4549	4597	412950	8380	N/A
7	2/7/2018	72.4	7538	5792	5083	413450	8554	N/A
8	2/7/2018	73.7	7733	5371	4552	424450	8511	N/A
9	2/7/2018	72.8	7781	5597	3952	414300	8769	N/A
10	2/8/2018	71.4	7581	5352	3890	413700	8639	N/A
11	2/8/2018	72.4	7579	6038	3817	414650	8454	N/A
12	2/8/2018	74.6	7783	5773	4057	413150	8516	N/A
13	2/9/2018	72.8	7623	6024	4033	413800	8343	N/A
14	2/9/2018	72.8	7468	6083	3888	413700	8356	N/A
15	2/9/2018	74.5	7551	6011	4294	413200	8441	N/A
16	2/10/2018	74.1	7753	6315	4076	413600	8570	N/A
17	2/10/2018	72.1	7723	6391	3930	413700	8429	N/A
18	2/10/2018	73.7	7814	6453	4381	418400	8386	N/A
19	2/11/2018	73.3	7581	7020	4324	415000	11221	N/A
20	2/11/2018	73.8	7765	6149	5611	413500	8613	N/A
21	2/12/2018	72.2	7559	6144	4143	413500	8631	N/A
22	2/12/2018	75	7578	5968	4032	413650	8527	N/A
23	2/12/2018	74.3	7646	6021	4294	409050	8314	N/A
24	2/13/2018	72.6	7606	5789	4754	414550	8565	N/A
25	2/13/2018	72.3	7576	6037	4165	413050	11445	N/A
26	2/13/2018	80.4	7918	6088	4553	413100	8436	N/A
27	2/14/2018	76.5	7668	5376	5374	414000	8216	N/A
28	2/14/2018	77.6	7426	5855	5169	414150	8185	N/A
29	2/15/2018	80.7	7592	6154	5171	415050	8320	N/A
30	2/16/2018	78.6	7462	6143	5027	414100	8149	N/A
31	2/16/2018	77.1	7417	6169	5133	413950	8152	N/A
32	2/16/2018	80.4	7679	5984	4237	414000	8213	N/A
33	2/17/2018	78	7547	5849	5352	413650	8326	N/A
34	2/17/2018	77.9	7771	5942	5111	407650	8169	N/A
35	2/18/2018	80.3	8008	6056	5259	413250	8693	N/A
36	2/18/2018	76.5	7878	5876	4984	413000	8369	N/A
37	2/19/2018	77.7	7448	5898	5567	413750	8001	N/A
38	2/19/2018	79.4	7935	5741	5158	414000	8236	N/A
39	2/20/2018	80.4	7814	6370	4198	413250	8328	N/A
40	2/20/2018	77.9	7252	6051	4136	413750	8104	N/A
41	2/20/2018	79.7	7662	6489	3761	417300	8191	N/A
42	2/21/2018	79.6	7808	6359	4476	414150	8414	N/A
43	2/21/2018	78.1	7559	6998	3989	413700	8220	N/A
44	2/21/2018	72.9	7252	6873	4513	413600	12127	N/A
45	2/22/2018	80.9	7544	6520	4151	414100	8073	N/A
46	2/22/2018	77.5	7598	6397	4075	413700	8077	N/A
47	2/22/2018	75	7115	6283	4218	413500	8538	N/A
48	2/22/2018	75.2	7125	5782	4297	413200	8661	N/A
49	2/22/2018	79.7	7224	6026	4099	412800	8305	N/A
50	2/23/2018	74.4	7383	6140	4386	413450	7997	N/A
51	2/23/2018	78.8	7044	5927	5263	415800	8129	N/A
52	2/25/2018	80.3	7691	6255	3931	413700	8224	N/A
53	2/26/2018	78.3	7192	6577	4364	413300	8178	N/A
54	2/26/2018	78.8	6975	6106	4493	416000	8234	N/A
55	2/26/2018	79.9	7786	6295	4209	412700	8344	N/A
56	2/27/2018	78.7	6396	5244	6396	413400	8199	N/A
57	2/27/2018	74.3	6548	6009	5272	413250	8050	N/A
58	2/27/2018	78.5	7209	6799	3922	413650	7956	N/A
59	2/28/2018	75.2	7322	6291	4033	412900	7939	N/A
60	2/28/2018	78.8	6964	6124	5280	413100	7945	N/A
61	3/1/2018	80.5	6917	6495	4444	413100	8007	N/A
62	3/1/2018	76	6932	6355	4356	412800	7893	N/A
63	3/1/2018	79.5	6756	6160	4680	413600	8004	N/A
64	3/2/2018	80.3	6870	6004	5180	413400	7919	N/A
65	3/2/2018	73.8	6678	6579	5518	413050	7869	N/A
66	3/2/2018	77.9	6549	6199	4640	414250	7909	N/A
67	3/3/2018	77.7	6654	6322	5167	413600	8120	N/A
68	3/3/2018	80.3	6525	6294	4909	413450	7835	N/A
69	3/3/2018	80	6711	6091	5102	413200	7746	N/A
70	3/4/2018	79.8	6688	5782	5240	413500	7903	N/A
71	3/4/2018	80.5	6602	6393	4120	412950	7781	N/A
AVG=								
						29145.500	600.606	TOTAL

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EXHIBIT 2

API 47-017-06796 Farm Name Jeffrey K. Jones Sr. et al Well Number California Unit 1H				
EXHIBIT 3				
LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Freshwater	107'	N/A	107'	N/A
Freshwater	192'	N/A	192'	N/A
Siltstone/Sandstone	0	147	0	147
Sandstone	est. 147	205	est. 147	205
Sandstone/Siltstone/Shale	est. 205	327	est. 205	327
Sandstone/Shale/Trace Coal	est. 327	447	est. 327	447
Sandstone	est. 447	547	est. 447	547
Sandstone/Shale	est. 547	607	est. 547	607
Sandstone	est. 607	687	est. 607	687
Siltstone	est. 687	727	est. 687	727
Shale	est. 727	767	est. 727	767
Limestone	est. 767	787	est. 767	787
Siltstone	est. 787	907	est. 787	907
Shale	est. 907	1,147	est. 907	1,147
Shale/Tr Coal	est. 1147	1,167	est. 1147	1,167
Shale	est. 1167	1,207	est. 1167	1,207
Sandstone	est. 1207	1,227	est. 1207	1,227
Shale	est. 1227	1,245	est. 1227	1,245
Sandstone	est. 1245	1,307	est. 1245	1,307
Shale/Siltstone	est. 1307	1,367	est. 1307	1,367
Limestone	est. 1367	1,387	est. 1367	1,387
Sandstone	est. 1387	1,447	est. 1387	1,447
Siltstone	est. 1447	1,489	est. 1447	1,489
Sandstone/Shale/Siltstone	est. 1489	2,022	est. 1489	2,022
Big Lime	2,022	2,687	2,022	2,687
Fifty Foot Sandstone	2,687	2,738	2,687	2,738
Gordon	2,738	3,067	2,738	3,069
Fifth Sandstone	3,067	3,118	3,069	3,121
Bayard	3,118	3,733	3,121	3,748
Speechley	3,733	4,112	3,748	4,142
Balltown	4,112	4,528	4,142	4,573
Bradford	4,528	5,024	4,573	5,089
Benson	5,024	5,287	5,089	5,361
Alexander	5,287	6,212	5,361	6,336
Sycamore	6,212	6,376	6,336	6,546
Middlesex	6,376	6,496	6,546	6,753
Burkett	6,496	6,525	6,753	6,824
Tully	6,525	6,559	6,824	6,940
Marcellus	6,559	NA	6,940	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:	2/3/2018
Job End Date:	3/4/2018
State:	West Virginia
County:	Doddridge
API Number:	47-017-06796-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	California 1H
Latitude:	39.30134700
Longitude:	-80.84460700
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,590
Total Base Water Volume (gal):	26,341,686
Total Base Non Water Volume:	0



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Supplied by Operator	Base Fluid					
			Water	7732-18-5	70.00000	87.94908	
CI-9100G	CWS	Corrosion Inhibitor					
				Listed Below			

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DAP-103	CWS	Iron Control					
				Listed Below			
Calbreak 5501	CWS	Breaker					
				Listed Below			
Hydrochloric Acid	CWS	Clean Perforations					
				Listed Below			
DAP-902	CWS	Scale Inhibitor					
				Listed Below			
Sand (Proppant)	CWS	Propping Agent					
				Listed Below			
DWP-111	CWS	Gel Slurry					
				Listed Below			
SANIFRAC 8844	CWS	Biocide					
				Listed Below			
DWP-641	CWS	Friction Reducer					
				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	11.67121	
			Calcite	471-34-1	1.00000	0.08485	
			Hydrochloric acid	7647-01-0	37.00000	0.05178	
			Guar gum	9000-30-0	60.00000	0.03951	
			Distillates (petroleum), hydrotreated middle	64742-46-7	60.00000	0.03951	
			Illite	12173-60-3	1.00000	0.03183	
			Polymer	26100-47-0	45.00000	0.02772	
			Distillates (petroleum), hydrotreated light	64742-47-8	30.00000	0.01848	
			Biotite	1302-27-8	0.10000	0.01167	
			Goethite	1310-14-1	0.10000	0.01167	
			Apatite	64476-38-6	0.10000	0.01167	
			Ammonium Persulfate	64742-47-8	100.00000	0.01093	
			Ammonium chloride	12125-02-9	11.00000	0.00678	
			Polyethylene glycol mixture	25322-68-3	54.50000	0.00609	
			2-Propenoic acid, homopolymer, sodium salt	9003-04-7	40.00000	0.00600	
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			Ilmenite	98072-94-7	0.10000	0.00318	
			Sorbitan monooleate	1338-43-8	4.00000	0.00246	
			2,2-Dibromo-3-Nitrilopropionamide	10222-01-2	20.00000	0.00223	
			Vinylidene chloride-methyl acrylate copolymer	69418-26-4	20.00000	0.00219	
			Polyethylene glycol monooleate	9004-96-0	3.00000	0.00185	

			1,2-Propanediol	57-55-6	10.00000	0.00150	
			Sorbitol tetraoleate	61723-83-9	2.00000	0.00123	
			Oxirane, 2-methyl-, polymer with oxirane, monodecyl ether	37251-67-5	1.50000	0.00099	
			Amines, tallow alkyl, ethoxylated	61791-26-2	1.00000	0.00062	
			Citric acid	77-92-9	60.00000	0.00047	
			Sodium bromide	7647-15-6	4.00000	0.00045	
			Dibromoacetonitrile	3252-43-5	3.00000	0.00034	
			Alkyloxypolyethyleneoxy ethanol	84133-50-6	0.50000	0.00031	
			Acrylamide	79-06-1	0.10000	0.00006	
			Ethylene glycol	107-21-1	40.00000	0.00003	
			Ethoxylated alcohols	Proprietary	10.00000	0.00001	Proprietary CAS
			Diethylene glycol	111-46-6	1.00000	0.00001	
			Isopropanol	67-63-0	5.00000	0.00001	
			Diethylene glycol (mono) methyl ether	34590-94-8	20.00000	0.00001	
			Cinnamaldehyde	104-55-2	10.00000	0.00001	
			Formic Acid	64-18-6	10.00000	0.00001	
			Tar bases, quinolone derivs, benzyl chloride- quatenized	72480-70-7	10.00000	0.00001	
			Tar bases, quinolone derivs	68513-87-1	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)

RECEIVED
Office of Oil and Gas
SEP 10 2018
NY Department of
Environmental Protection

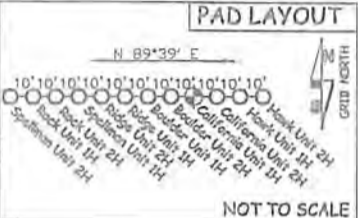
LATITUDE 39°20'00" 2,995'
 8,383' TO BOTTOM HOLE
 LATITUDE 39°22'30"

Antero Resources Corporation
 Well No. California Unit 1H
 47-017-06796

AS DRILLED DATA:
 WELL 1H TOP HOLE INFORMATION:
 N: 295,052ft E: 1,619,701ft
 LAT: 39°18'08.21" LON: 80°50'38.10"
 BOTTOM HOLE INFORMATION:
 N: 308,772ft E: 1,614,516ft
 LAT: 39°20'23.04" LON: 80°50'38.10"
 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: 4,350,343m E: 513,473m
 BOTTOM HOLE INFORMATION:
 N: 4,354,496m E: 511,823m

12/21/2018



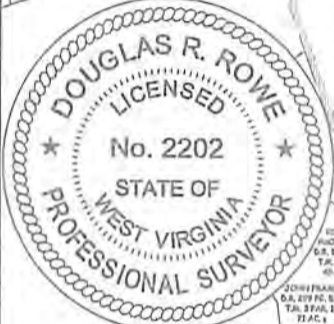
WV NORTH ZONE GRID NORTH

LONGITUDE 80°50'00"

12,845' TO BOTTOM HOLE

11,310'

LONGITUDE 80°50'00"



- NOTE
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.

JOB # 16-059WA
 DRAWING # CALIFORNIA1HAD
 SCALE 1" = 2000'
 MINIMUM DEGREE OF ACCURACY SUBMETER
 PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

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

LEGEND
 - - - - - Surface Owner Boundary Lines +/-
 - - - - - Interior Surface Tracts +/-
 - - - - - Existing Fence
 O As Drilled Well Path
 DOUGLAS R. ROWE P.S. 2202

DATE 07/17/18
 OPERATOR'S WELL# CALIFORNIA UNIT #1H
 API WELL # 47-017-06796
 STATE COUNTY PERMIT

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS
 WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL
 (IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X
 LOCATION: ELEVATION 1,135.5' AS BUILT WATERSHED HEADWATERS MIDDLE ISLAND CREEK
 QUADRANGLE WEST UNION 7.5' DISTRICT CENTRAL COUNTY DODDRIDGE
 SURFACE OWNER JEFFREY K. JONES SR. ET AL ACREAGE 77.32 ACRES +/-
 OIL & GAS ROYALTY OWNER DONALD L. PIGGOTT; NELL ALLEN; RICHARD F. MCCULLOUGH ET UX; LEASE ACREAGE 81 AC±; 176 AC±; 63.5 AC±;
 JOHN STANLER ET UX; CARROLL SHEPHERD; CARROLL E. SHEPHERD ET UX; RICHARD MCCULLOUGH; MICHAEL KEE SHEPHERD; RICHARD MCCULLOUGH; RICHARD MCCULLOUGH ET UX; 58 AC±; 17.18 AC±; 26 AC±; 15 AC±; 12.025 AC±; 29 AC±;
 EUGENE R. WALTON; KATHERINE MONTGOMERY; J.A. EXLINE ET UX; NATHAN GAIN ET AL; N.M. WELCH HEIRS 137 AC±; 26.13 AC±; 60 AC±; 278 AC±; 95 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 6,589' TVD 21,348' MD
 WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM
 ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD
 DENVER, CO 80202 CHARLESTON, WV 25313

COUNTY NAME

PERMIT

12/21/2018

RECEIVED
Office of Oil and Gas
SEP 10 2018
NY Department of
Environmental Protection

LATITUDE 39°20'00" 2,995'

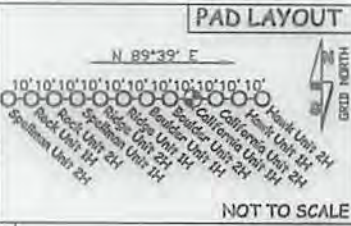
8,383' TO BOTTOM HOLE
LATITUDE 39°22'30"

LONGITUDE 80°50'00"
12,845' TO BOTTOM HOLE
LONGITUDE 80°50'00"

Antero Resources Corporation
Well No. California Unit 1H
47-017-06796

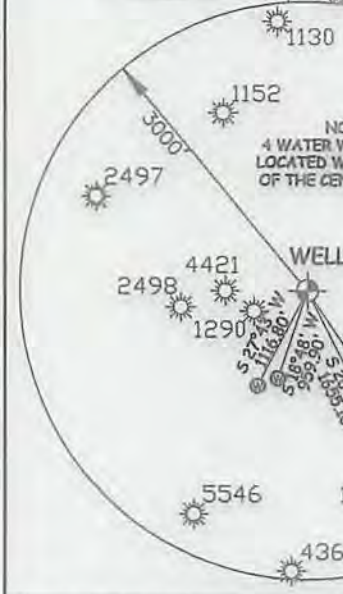
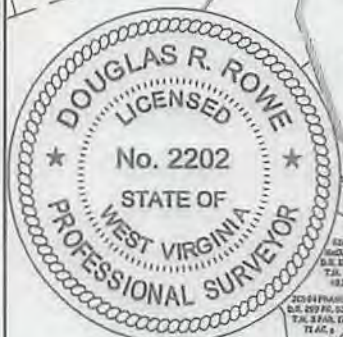
AS DRILLED DATA:
WELL 1H TOP HOLE INFORMATION:
N: 295,052ft E: 1,619,701ft
LAT: 39°18'08.21" LON: 80°50'38.10"
BOTTOM HOLE INFORMATION:
N: 308,772ft E: 1,614,516ft
LAT: 39°20'23.04" LON: 80°50'38.10"
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE 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: 4,350,343m E: 513,473m
BOTTOM HOLE INFORMATION:
N: 4,354,496m E: 511,823m



- NOTE
- 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 THIS 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.

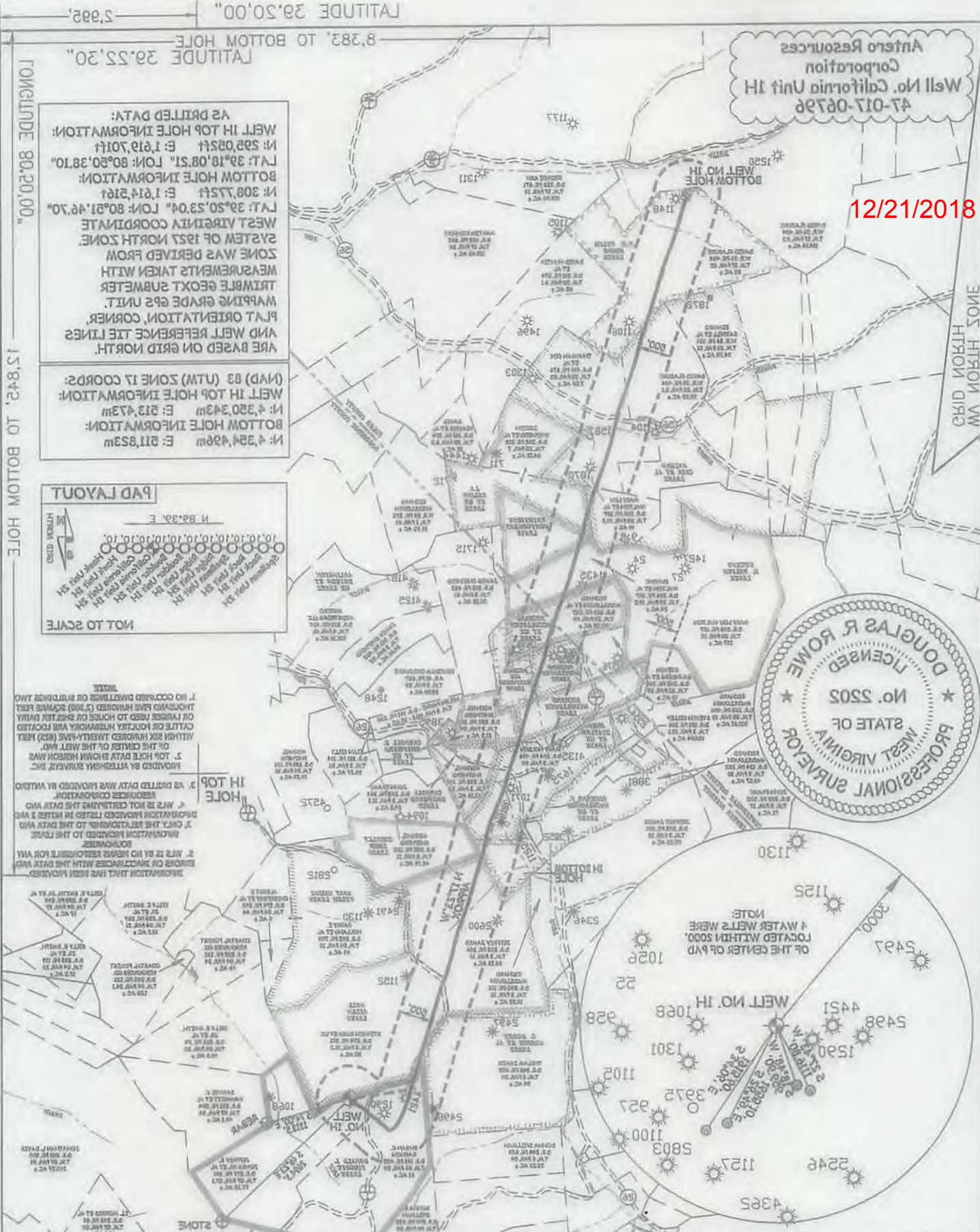
WV NORTH ZONE GRID NORTH



JOB # 16-059WA DRAWING # CALIFORNIA1HAD SCALE 1" = 2000' MINIMUM DEGREE OF ACCURACY SUBMETER PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS	STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS WILLOW LAND SURVEYING PLLC 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415	LEGEND --- Surface Owner Boundary Lines +/- --- Interior Surface Tracts +/- ○ Existing Fence ○ As Drilled Well Path DOUGLAS R. ROWE P.S. 2202 DATE 07/17/18 OPERATOR'S WELL# CALIFORNIA UNIT #1H API WELL # 47 - 017 - 06796 STATE COUNTY PERMIT
STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL (IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X LOCATION: ELEVATION 1,135.5' AS BUILT WATERSHED HEADWATERS MIDDLE ISLAND CREEK QUADRANGLE WEST UNION 7.5 DISTRICT CENTRAL COUNTY DODDRIDGE	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.	
SURFACE OWNER JEFFREY K. JONES SR. ET AL ACREAGE 77.32 ACRES +/- OIL & GAS ROYALTY OWNER DONALD L. PIGGOTT; NELL ALLEN; RICHARD F. MCCULLOUGH ET UX; LEASE ACREAGE 81 AC±; 176 AC±; 63.5 AC±; JOHN STAMPER ET UX; CARROLL SHEPHERD; CARROLL E. SHEPHERD ET UX; RICHARD MCCULLOUGH; MICHAEL JOE SHEPHERD; RICHARD MCCULLOUGH; RICHARD MCCULLOUGH ET UX; 58 AC±; 17.18 AC±; 26 AC±; 15 AC±; 12.025 AC±; 29 AC±; EUGENE R. WALTON; KATHERINE MONTGOMERY; J.A. EXLINE ET UX; NATHAN CAIN ET AL.; N.M. WELCH HEIRS 137 AC±; 26.13 AC±; 60 AC±; 278 AC±; 95 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 6,589' TVD 21,348' MD WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD DENVER, CO 80202 CHARLESTON, WV 25313	

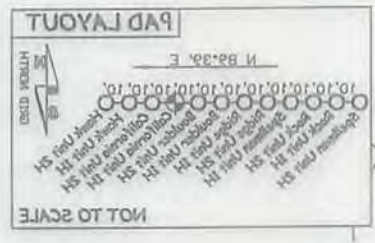
12/21/2018

Antero Resources Corporation
Well No. California Unit 1H
47-017-06296



AS DRILLED DATA:
WELL 1H TOP HOLE INFORMATION:
N: 295.0527ft E: 1.619701ft
LAT: 39°18'08.81" LON: 80°50'38.10"
BOTTOM HOLE INFORMATION:
N: 308.7727ft E: 1.614216ft
LAT: 39°20'23.04" LON: 80°51'46.70"
WEST VIRGINIA COORDINATE
SYSTEM OF 1927 NORTH ZONE
ZONE WAS DERIVED FROM
MEASUREMENTS TAKEN WITH
TRIANGLE GEODETIC SUBMETER
MAPPING GRADE GPS UNIT.
PLAT ORIENTATION, CORNER
AND WELL REFERENCE TIE LINES
ARE BASED ON GRID NORTH.

UTM ZONE 17 COORDS:
WELL 1H TOP HOLE INFORMATION:
N: 4,350,343m E: 513,473m
BOTTOM HOLE INFORMATION:
N: 4,354,456m E: 511,823m



NOTES:

1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FEET HUNDREDS (2000) FEET FROM THE CENTER OF THE WELL. NO CATTLE OR HORSES, HUSBANDRY AND LOCATED WITHIN ONE HUNDRED TWENTY-FIVE (25) FEET OF THE CENTER OF THE WELL.
2. TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ANTHONY SURVEYING, INC. AND WAS NOT CERTIFIED BY THE STATE OF WEST VIRGINIA.
3. ONLY THE INFORMATION PROVIDED TO THE STATE OF WEST VIRGINIA BY ANTHONY SURVEYING, INC. IS BEING USED FOR THIS SURVEY.
4. THIS SURVEY IS NOT TO BE USED FOR ANY OTHER PURPOSES WITHOUT THE WRITTEN CONSENT OF ANTERO RESOURCES CORPORATION.

<p>FORM WW-8</p> <p>DENVER, CO 80202</p> <p>ADDRESS 1615 WYNKOP STREET</p> <p>WELL OPERATOR ANTERO RESOURCES CORP.</p> <p>TARGET FORMATION MARCELLUS</p> <p>DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM</p> <p>ESTIMATED DEPTH 6589.7VD 21348. MD</p> <p>PLUG & ABANDON CLEAN OUT & REPLUG</p> <p>OTHER PHYSICAL CHANGE IN WELL</p> <p>PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE</p>	<p>CHARLESTON, WV 25313</p> <p>8400 D BIG TYLER ROAD</p> <p>ADDRESS</p> <p>DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM</p> <p>ESTIMATED DEPTH 6589.7VD 21348. MD</p> <p>PLUG & ABANDON CLEAN OUT & REPLUG</p> <p>OTHER PHYSICAL CHANGE IN WELL</p> <p>PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE</p>	<p>WEST VIRGINIA 26415</p> <p>WILLOW LAND SURVEYING P.L.C.</p> <p>OFFICE OF OIL AND GAS</p> <p>STATE OF ENVIRONMENTAL PROTECTION,</p> <p>STATE OF WEST VIRGINIA, DIVISION</p>	<p>STATE OF WEST VIRGINIA</p> <p>DEPARTMENT OF ENERGY</p> <p>DIVISION OF OIL AND GAS</p> <p>PROVEN SOURCE OF ENERGY</p> <p>PROVEN SOURCE OF OIL AND GAS</p> <p>ACCURACY SUBMETER</p> <p>MINIMUM DEGREE OF PROVEN SOURCE OF OIL AND GAS</p> <p>SCALE 1" = 200'</p> <p>DRAWING # CALORIMATHAD</p> <p>JOB # 16-050WA</p>
<p>DATE 07/17/18</p> <p>OPERATOR'S WELL # CALIFORNIA UNIT 1H</p> <p>STATE COUNTY PERMIT</p> <p>WATERSHED HEADWATERS MIDDLE ISLAND CREEK</p> <p>WASTE DISPOSAL SHALLOW X</p> <p>LIQUID INJECTION DEEP</p> <p>WELL TYPE: OIL GAS X</p> <p>PRODUCTION X STORAGE</p> <p>LOCATION: ELEVATION 1132.7 AS BUILT</p> <p>QUADRANGLE WEST UNION T.3</p> <p>SURFACE OWNER JEFFREY K. JONES SR. ET AL</p> <p>OIL & GAS ROYALTY OWNER DONALD L. PIGOTT; NEIL ALLEN; RICHARD F. MCCULLOUGH ET AL;</p> <p>PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE</p>	<p>DATE 07/17/18</p> <p>OPERATOR'S WELL # CALIFORNIA UNIT 1H</p> <p>STATE COUNTY PERMIT</p> <p>WATERSHED HEADWATERS MIDDLE ISLAND CREEK</p> <p>WASTE DISPOSAL SHALLOW X</p> <p>LIQUID INJECTION DEEP</p> <p>WELL TYPE: OIL GAS X</p> <p>PRODUCTION X STORAGE</p> <p>LOCATION: ELEVATION 1132.7 AS BUILT</p> <p>QUADRANGLE WEST UNION T.3</p> <p>SURFACE OWNER JEFFREY K. JONES SR. ET AL</p> <p>OIL & GAS ROYALTY OWNER DONALD L. PIGOTT; NEIL ALLEN; RICHARD F. MCCULLOUGH ET AL;</p> <p>PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE</p>	<p>WEST VIRGINIA 26415</p> <p>WILLOW LAND SURVEYING P.L.C.</p> <p>OFFICE OF OIL AND GAS</p> <p>STATE OF ENVIRONMENTAL PROTECTION,</p> <p>STATE OF WEST VIRGINIA, DIVISION</p>	<p>STATE OF WEST VIRGINIA</p> <p>DEPARTMENT OF ENERGY</p> <p>DIVISION OF OIL AND GAS</p> <p>PROVEN SOURCE OF ENERGY</p> <p>PROVEN SOURCE OF OIL AND GAS</p> <p>ACCURACY SUBMETER</p> <p>MINIMUM DEGREE OF PROVEN SOURCE OF OIL AND GAS</p> <p>SCALE 1" = 200'</p> <p>DRAWING # CALORIMATHAD</p> <p>JOB # 16-050WA</p>

LATITUDE 39.25'30" LONGITUDE 80.20'00"

LATITUDE 39.25'30" LONGITUDE 80.20'00"

LATITUDE 39.25'30" LONGITUDE 80.20'00"

LATITUDE 39.25'30" LONGITUDE 80.20'00"