Antero Resources
1615 Wynkoop Street
Denver, CO 80202
Office 303.357.7310
Fax 303.357.7315

January 13, 2020

West Virginia Department of Environmental Protection
Office of Oil and Gas
601 57th Street
Charleston, WV 25304

To Whom It May Concern:

Please find enclosed the Well Operator's Report of Well Work, Form WR-35 (including As-Drilled Survey Plat, Directional Survey and FracFocus report), Discharge Monitoring Report Form WR-34 and corresponding logs for the following wells:

- Hayhurst Unit 1H—Black Forest Pad (API # 47-085-10376)
- Hayhurst Unit 2H—Black Forest Pad (API # 47-085-10377)
- Everly Unit 1H—Black Forest Pad (API # 47-085-10378)

If you have any questions, please feel free to contact me at (303)-357-7223.

Sincerely,

Megan Griffith
Permitting Agent
Antero Resources Corporation

Enclosures

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

API 47 - 085 - 10376 County Ritchie District Clay
Quad Ellenboro 7.5' Pad Name Black Forest Pad Field/Pool Name -----
Farm name Michael Gail Underwood et al Well Number Hayhurst 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 4351131m Easting 497575m
Landing Point of Curve Northing 497522.12m Easting 4349806.67m
Bottom Hole Northing 4348175m Easting 498112m

Elevation (ft) 1083' 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 1/25/2019 Date drilling commenced 1/8/2019 Date drilling ceased 4/5/2019
Date completion activities began 6/20/2019 Date completion activities ceased 8/19/2019
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 97', 319' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1507' 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:

API 47- 085 - 10376 Farm name Michael Gail Underwood et al Well number Hayhurst 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"	95'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	455'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2658'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	15476'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6571'		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	204 sx	15.6	1.18	120	0'	8 Hrs.
Surface	Class A	395 sx	15.6	1.18	826	0'	8 Hrs.
Coal							
Intermediate 1	Class A	915 sx	15.6	1.18	1181	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	675 sx (Lead) 1735 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.53 (Lead), 1.83 (Tail)		~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 15544' MD, 6288' TVD (BHL), 6290' (Deepest Point Drilled) Loggers TD (ft) 15544' MD

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

Plug back procedure N/A

Kick off depth (ft) 6100'

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- 085 - 10376 Farm name Michael Gail Underwood et al Well number Hayhurst Unit 1H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)

*PLEASE SEE ATTACHED EXHIBIT 1

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)

*PLEASE SEE ATTACHED EXHIBIT 2

Please insert additional pages as applicable.

WR-35
Rev. 8/23/13

API 47- 085 - 10376 Farm name Michael Gail Underwood et al Well number Hayhurst Unit 1H

PRODUCING FORMATION(S)	DEPTHS	
Marcellus	6204' (TOP) TVD	6648 (TOP) MD

Please insert additional pages as applicable.

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

SHUT-IN PRESSURE Surface 2800 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 6267 mcfpd Oil 66 bpd NGL --- bpd Water 1 bpd GAS MEASURED BY ☐ Estimated ■ Orifice ☐ Pilot

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

***PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

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

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

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

Stimulating Company Baker Hughes
Address 837 Philippi Pike City Clarksburg State WV Zip 26301

Please insert additional pages as applicable.

Completed by Megan Griffith Telephone 303-357-7223
Signature _____ Title Permitting Agent Date 1/13/2020

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

API 47-085-10376 Farm Name Michael Gail Underwood et al Well Number Hayhurst Unit 1H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	7/1/2019	15368		60	Marcellus
2	7/2/2019	15285.567	15120.402	60	Marcellus
3	7/3/2019	15084.969	14919.804	60	Marcellus
4	7/4/2019	14884.371	14719.206	60	Marcellus
5	7/12/2019	14683.773	14518.608	60	Marcellus
6	7/13/2019	14483.175	14318.01	60	Marcellus
7	7/13/2019	14282.577	14117.412	60	Marcellus
8	7/14/2019	14081.979	13916.814	60	Marcellus
9	7/14/2019	13881.381	13716.216	60	Marcellus
10	7/14/2019	13680.783	13515.618	60	Marcellus
11	7/15/2019	13480.185	13315.02	60	Marcellus
12	7/15/2019	13279.587	13114.422	60	Marcellus
13	7/15/2019	13078.989	12913.824	60	Marcellus
14	7/16/2019	12878.391	12713.226	60	Marcellus
15	7/16/2019	12677.793	12512.628	60	Marcellus
16	7/17/2019	12477.195	12312.03	60	Marcellus
17	7/18/2019	12276.597	12111.432	60	Marcellus
18	7/18/2019	12075.999	11910.834	60	Marcellus
19	7/19/2019	11875.401	11710.236	60	Marcellus
20	7/20/2019	11674.803	11509.638	60	Marcellus
21	7/20/2019	11474.205	11309.04	60	Marcellus
22	7/20/2019	11273.607	11108.442	60	Marcellus
23	7/21/2019	11073.009	10907.844	60	Marcellus
24	7/22/2019	10872.411	10707.246	60	Marcellus
25	7/22/2019	10671.813	10506.648	60	Marcellus
26	7/23/2019	10471.215	10306.05	60	Marcellus
27	7/23/2019	10270.617	10105.452	60	Marcellus
28	7/24/2019	10070.019	9904.854	60	Marcellus
29	7/24/2019	9869.421	9704.256	60	Marcellus
30	7/25/2019	9668.823	9503.658	60	Marcellus
31	7/26/2019	9468.225	9303.06	60	Marcellus
32	7/26/2019	9267.627	9102.462	60	Marcellus
33	7/27/2019	9067.029	8901.864	60	Marcellus
34	7/28/2019	8866.431	8701.266	60	Marcellus
35	7/28/2019	8665.833	8500.668	60	Marcellus
36	7/29/2019	8465.235	8300.07	60	Marcellus
37	7/29/2019	8264.637	8099.472	60	Marcellus
38	7/30/2019	8064.039	7898.874	60	Marcellus
39	7/30/2019	7863.441	7698.276	60	Marcellus
40	7/30/2019	7662.843	7497.678	60	Marcellus
41	7/31/2019	7462.245	7297.08	60	Marcellus
42	7/31/2019	7261.647	7096.482	60	Marcellus
43	7/31/2019	7061.049	6895.884	60	Marcellus
44	8/1/2019	6860.451	6695.286	60	Marcellus

API 47-085-10376 **Farm Name** Michael Gail Underwood et al **Well Number** Hayhurst Unit 1H

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	7/1/2019	40.79643	8354.318	5980	5720	2200		N/A
2	7/2/2019	77.8405	7594.976	6400	4385	435050	9681.036	N/A
3	7/3/2019	79.05661	7701.733	8847	3248	496600	10345.92	N/A
4	7/4/2019	70.48067	7701.756	5653	9000	457700	11316.96	N/A
5	7/12/2019	74.94937	7677.676	6556	5372	499700	10410.74	N/A
6	7/13/2019	76.54163	7672.209	6392	4510	454950	9406.9	N/A
7	7/13/2019	74.07683	7452.89	5632	5129	497250	13295.34	N/A
8	7/14/2019	75.79703	7265.724	5811	4436	498450	10552.25	N/A
9	7/14/2019	77.24054	7159.701	5940	3780	498610	10186.26	N/A
10	7/14/2019	78.28976	7105.807	5865	3917	498800	10237.63	N/A
11	7/15/2019	77.06186	7009.823	6066	3480	500750	10086.56	N/A
12	7/15/2019	73.88021	7032.257	6625	3456	497510	10090.2	N/A
13	7/15/2019	75.50218	6967.477	6879	3360	499500	10093.46	N/A
14	7/16/2019	75.34671	6868.22	6228	3867	490060	11676.61	N/A
15	7/16/2019	74.99785	7112.293	6200	3072	497060	10054.4	N/A
16	7/17/2019	70.78927	7346.889	6000	4640	496990	13165.52	N/A
17	7/18/2019	73.80355	7243.212	5735	3046	502650	9577.87	N/A
18	7/18/2019	73.52435	6668.39	6166	3265	497150	10067.05	N/A
19	7/19/2019	66.13834	6815.904	5373	4520	490750	12050.54	N/A
20	7/20/2019	75.69304	7431.046	53.5	3269	496780	10084.46	N/A
21	7/20/2019	71.8049	7050.283	5350	3617	497730	9957.78	N/A
22	7/20/2019	68.28867	7025.251	5607	2924	498500	10130.26	N/A
23	7/21/2019	76.03374	7020.236	5437	4457	497520	9982.81	N/A
24	7/22/2019	70.38761	6737.471	5329	4023	497280	11059.88	N/A
25	7/22/2019	72.12098	6947.128	5494	5261	505495	11730.86	N/A
26	7/23/2019	75.49888	6904.531	5344	3583	497160	9909.23	N/A
27	7/23/2019	75.1422	6699.891	5798	3592	502600	9967.79	N/A
28	7/24/2019	76.38049	6778.05	5899	3255	497320	9857.41	N/A
29	7/24/2019	76.35011	6598.53	5737	4231	497550	9869.76	N/A
30	7/25/2019	78.7346	6950.875	4985	3304	498100	10109.31	N/A
31	7/26/2019	75.79486	6714.121	5500	5200	490945	11168.42	N/A
32	7/26/2019	73.22698	6760.949	5632	2729	498250	9864.01	N/A
33	7/27/2019	77.02635	6914.735	5148	3629	499000	10105.51	N/A
34	7/28/2019	70.39846	7319.42	5278	3845	498800	12017.37	N/A
35	7/28/2019	76.10876	6634.688	6304	3193	499300	9946.43	N/A
36	7/29/2019	78.11504	6249.237	5824	2937	498250	9726.57	N/A
37	7/29/2019	76.40993	6487.275	6703	3094	498500	9950.2	N/A
38	7/30/2019	77.2556	6263.452	7236	3178	498650	9956.14	N/A
39	7/30/2019	80.25173	6402.426	6515	2938	497300	9791.61	N/A
40	7/30/2019	81.5259	6444.697	6489	2984	498150	9762.68	N/A
41	7/31/2019	79.1051	6201.366	6615	3514	499000	9845.49	N/A
42	7/31/2019	79.22311	6172.679	6539	3071	499300	9768.28	N/A
43	7/31/2019	82.22557	6267.919	6392	3439	495510	9823.59	N/A
44	8/1/2019	76.53634	6046.594	7157	2925	451070	10691.93	N/A
	AVG	**74.7**	**6,949**	**5,925**	**3,873**	**21,219,790**	**447,373**	TOTAL

API 47-085-10376 Farm Name Michael Gail Underwood et al Well Number Hayhurst Unit 1H				
EXHIBIT 3				
LITHOLOGY/ FORMATION	**TOP DEPTH (TVD) From Surface**	**BOTTOM DEPTH (TVD) From Surface**	**TOP DEPTH (MD) From Surface**	**BOTTOM DEPTH (MD) From Surface**
Silty Sandstone	75	115	75	115
Sandy shale	115	295	115	295
Sandstone	295	355	295	355
Silty Sandstone tr shale	355	465	355	465
Sandy siltstone tr limestone	465	535	465	535
silty, limy shale	535	685	535	685
Sandy siltstone	685	935	685	935
sandy siltstone tr coal	935	1,075	935	1,075
Silty shale	1,075	1,255	1,075	1,255
Silty sandstone	1,255	1,435	1,255	1,435
silty shale tr coal	1,435	1,645	1,435	1,645
shaly sandstone tr coal	1,645	1,795	1,645	1,795
Shale w coal interbeds	1,795	1,872	1,795	1,926
Big Lime	1,887	2,941	1,901	3,031
Fifty Foot Sandstone	2,941	3,059	3,006	3,155
Gordon	3,059	3,206	3,130	3,310
Fifth Sandstone	3,206	3,470	3,285	3,588
Bayard	3,470	4,036	3,563	4,183
Speechley	4,036	4,255	4,158	4,414
Balltown	4,255	4,624	4,389	4,798
Bradford	4,624	4,870	4,773	5,057
Benson	4,870	5,181	5,032	5,386
Alexander	5,181	6,108	5,361	6,415
Sycamore	5,998	6,083	6,273	6,390
Middlesex	6,083	6,181	6,390	6,579
Burkett	6,181	6,204	6,579	6,648
Marcellus	6,204	NA	6,648	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.

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	7/1/2019
Job End Date:	8/1/2019
State:	West Virginia
County:	Ritchie
API Number:	47-085-10376-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Hayhurst Unit 1H
Latitude:	39.31158000
Longitude:	-81.02376800
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,290
Total Base Water Volume (gal):	19,386,494
Total Base Non Water Volume:	0

FracFocus Chemical Disclosure Registry

GROUNDWATER PROTECTION COUNCIL

Oil & Gas

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	88.00681	
CalGel 4000	CWS	Gel Slurry					
				Listed Below			

Hydrochloric Acid	CWS	Clean Perforations					
				Listed Below			
SaniFrac 8844	CWS	Biocide					
				Listed Below			
DAP-103	CWS	Iron Control					
				Listed Below			
Sand (Proppant)	CWS	Propping Agent					
				Listed Below			
DAP-902	CWS	Scale Inhibitor					
				Listed Below			
Calbreak 5501	CWS	Breaker					
				Listed Below			
CI-9100G	CWS	Corrosion Inhibitor					
				Listed Below			
DWP-641	CWS	Friction Reducer					
				Listed Below			
Other Chemical (s)	Listed Above	See Trade Name (s) List					

				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	11.57866	
			Hydrochloric acid	7647-01-0	37.00000	0.08303	
			Calcite	471-34-1	1.00000	0.07759	
			Guar gum	9000-30-0	60.00000	0.05157	
			Distillates (petroleum), hydrotreated middle	64742-46-7	60.00000	0.05157	
			Illite	12173-60-3	1.00000	0.03815	
			Polymer	26100-47-0	45.00000	0.02578	
			Distillates (petroleum), hydrotreated light	64742-47-8	30.00000	0.01718	
			Apatite	64476-38-6	0.10000	0.01157	
			Biotite	1302-27-8	0.10000	0.01157	
			Goethite	1310-14-1	0.10000	0.01157	
			Polyethylene glycol mixture	25322-68-3	54.50000	0.00691	
			Ammonium chloride	12125-02-9	11.00000	0.00630	
			Quaternary ammonium compounds, bis (hydrogenated tallow alkyl)dimethyl, salts with bentonite	68953-58-2	5.00000	0.00430	
			Ilmenite	98072-94-7	0.10000	0.00382	
			2,2-Dibromo-3-Nitrilopropionamide	10222-01-2	20.00000	0.00254	
			Sorbitan monooleate	1338-43-8	4.00000	0.00229	
			Polyethylene glycol monooleate	9004-96-0	3.00000	0.00172	
			Ammonium Persulfate	7727-54-0	100.00000	0.00162	
			Oxirane, 2-methyl-, polymer with oxirane, monodecyl ether	37251-67-5	1.50000	0.00129	
			Sorbitol tetraoleate	61723-83-9	2.00000	0.00115	
			Citric acid	77-92-9	60.00000	0.00076	

			Amines, tallow alkyl, ethoxylated	61791-26-2	1.00000	0.00057	
			Sodium bromide	7647-15-6	4.00000	0.00051	
			Dibromoacetonitrile	3252-43-5	3.00000	0.00038	
			Vinylidene chloride-methyl acrylate copolymer	25038-72-6	20.00000	0.00032	
			Alkyloxypolyethyleneoxy ethanol	84133-50-6	0.50000	0.00029	
			Acrylamide	79-06-1	0.10000	0.00006	
			Ethylene Glycol	107-21-1	40.00000	0.00005	
			Diethylene glycol, monomethyl ether	34590-94-8	20.00000	0.00002	
			Tar bases, quinolone derivs, benzyl chloride-quatenized	72480-70-7	10.00000	0.00001	
			Cinnamaldehyde	104-55-2	10.00000	0.00001	
			Formic acid	64-18-6	10.00000	0.00001	
			Isopropyl alcohol	67-63-0	5.00000	0.00001	
			Ethoxylated Alcohols	68131-39-5	10.00000	0.00001	
			Organic Acid Salts	9003-04-7			Proprietary Additive Concentration
			Glycol	57-55-6			Proprietary Additive Concentration

* 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)

WR-34
Page 1 of 3
Rev. 10-10

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Discharge Monitoring Report
Oil and Gas General Permit

Company Name: Antero Resources Corporation
API No: 47-085-10376 County: Ritchie
District: Clay Well No: Hayhurst Unit 1H
Farm Name: Michael Gail Underwood et al
Discharge Date/s From:(MMDDYY) 08/23/19 To: (MMDDYY) 09/22/19
Discharge Times. From: 0:00 To: 24:00
Total Volume to be Disposed from this facility (gallons): 1,323,336
Disposal Option(s) Utilized (write volumes in gallons):

(1) Land Application: (Include a topographical map of the Area.)
(2) UIC: 354,970 Permit No. 3400923821, 3400923823, 3400923824, 3416729731, 3410523185, 3410523268
(3) Offsite Disposal: Site Location:
(4) Reuse: 968,365 Alternate Permit Number:
(5) Centralized Facility: Permit No.
(6) Other method: (Include an explanation)

Follow Instructions below to determine your treatment category:
Optional Pretreatment test: n/a Cl- mg/l n/a DO mg/l

1. Do you have permission to use expedited treatment from the Director or his representative? (Y/N) n/a If yes, who? and place a four (4) on line 7. If not go to line 2
2. Was Frac Fluid or flowback put into the pit? (Y/N) n/a If yes, go to line 5. If not, go to line 3.
3. Do you have a chloride value pretreatment (see above)? (Y/N) n/a If yes, go to line 4 If not, go to line 5.
4. Is the Chloride level less than 5000 mg/l? (Y/N) n/a If yes, then enter a one (1) on line 7.
5. Do you have a pretreatment value for DO? (See above) (Y/N) n/a If yes, go to line 6 If not, enter a three (3) in line 7.
6. Is the DO level greater than 2.5 mg/l?(Y/N) n/a If yes, enter a two (2) on line 7. If not, enter a three (3) on line 7.
7. n/a is the category of your pit. Use the Appropriate section.
8. Comments on Pit condition: n/a No pit on site.

Name of Principal Exec. Officer: Gretchen Kohler
Title of Officer: Senior Environmental and Regulatory Manager
Date Completed: 10/30/19

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature of a Principal Exec. Officer or Authorized agent.

Category 1
Sampling Results
API No : _____

Parameter	Predischarge Limits	Predischarge Reported	Discharge Limits	Discharge Reported	Units
pH	6-10		6-10		S.U
Settling Time	5		N/A	N/A	Days
Fe	6		6		mg/l
D.O.	2.5		2.5		mg/l
Settleable Sol.	0.5		0.5		mg/l
Cl	5,000		5,000		mg/l
Oil	Trace		Trace		Obs.
TOC**			Monitor		mg/l
Oil and Grease			Monitor		mg/l
Total Al***			Monitor		mg/l
TSS			Monitor		mg/l
Total Mn	Monitor		Monitor		mg/l
Volume			Monitor		Gal
Flow			Monitor		Gal/min
Disposal Area			Monitor		Acres

*** Al is only reported if the pH is above 9.0

Category 2
Sampling Results
API No : _____

Parameter	Predischarge Limits	Predischarge Reported	Discharge Limits	Discharge Reported	Units
pH	6-10		6-10		S.U
Settling Time	10		N/A	N/A	Days
Fe	6		6		mg/l
D.O.	2.5		2.5		mg/l
Settleable Sol.	0.5		0.5		mg/l
Cl*	12,500		12,500		mg/l
Oil	Trace		Trace		Obs.
TOC**			Monitor		mg/l
Oil and Grease			Monitor		mg/l
Total Al***			Monitor		mg/l
TSS			Monitor		mg/l
Total Mn	Monitor		Monitor		mg/l
Volume			Monitor		Gal
Flow			Monitor		Gal/min
Disposal Area			Monitor		Acres

* Can be 25,000 with inspector's approval,

(Inspector's signature): _____ Date: _____

** Include a description of your aeration technique. Aeration Code: _____

*** Al is only reported if the pH is above 9.0

Category 3
Sampling Results
API No : _____

Parameter	Predischarge Limits	Predischarge Reported	Discharge Limits	Discharge Reported	Units
pH	6-10		6-10		S.U
Settling Time	20		N/A	N/A	Days
Fe	6		6		mg/l
D.O.	2.5		2.5		mg/l
Settleable Sol.	0.5		0.5		mg/l
Cl*	12,500		12,500		mg/l
Oil	Trace		Trace		Obs.
TOC**			Monitor		mg/l
Oil and Grease			Monitor		mg/l
Total Al***			Monitor		mg/l
TSS			Monitor		mg/l
Total Mn	Monitor		Monitor		mg/l
Volume			Monitor		Gal
Flow			Monitor		Gal/min
Disposal Area			Monitor		Acres

* Can be 25,000 with inspector's approval,

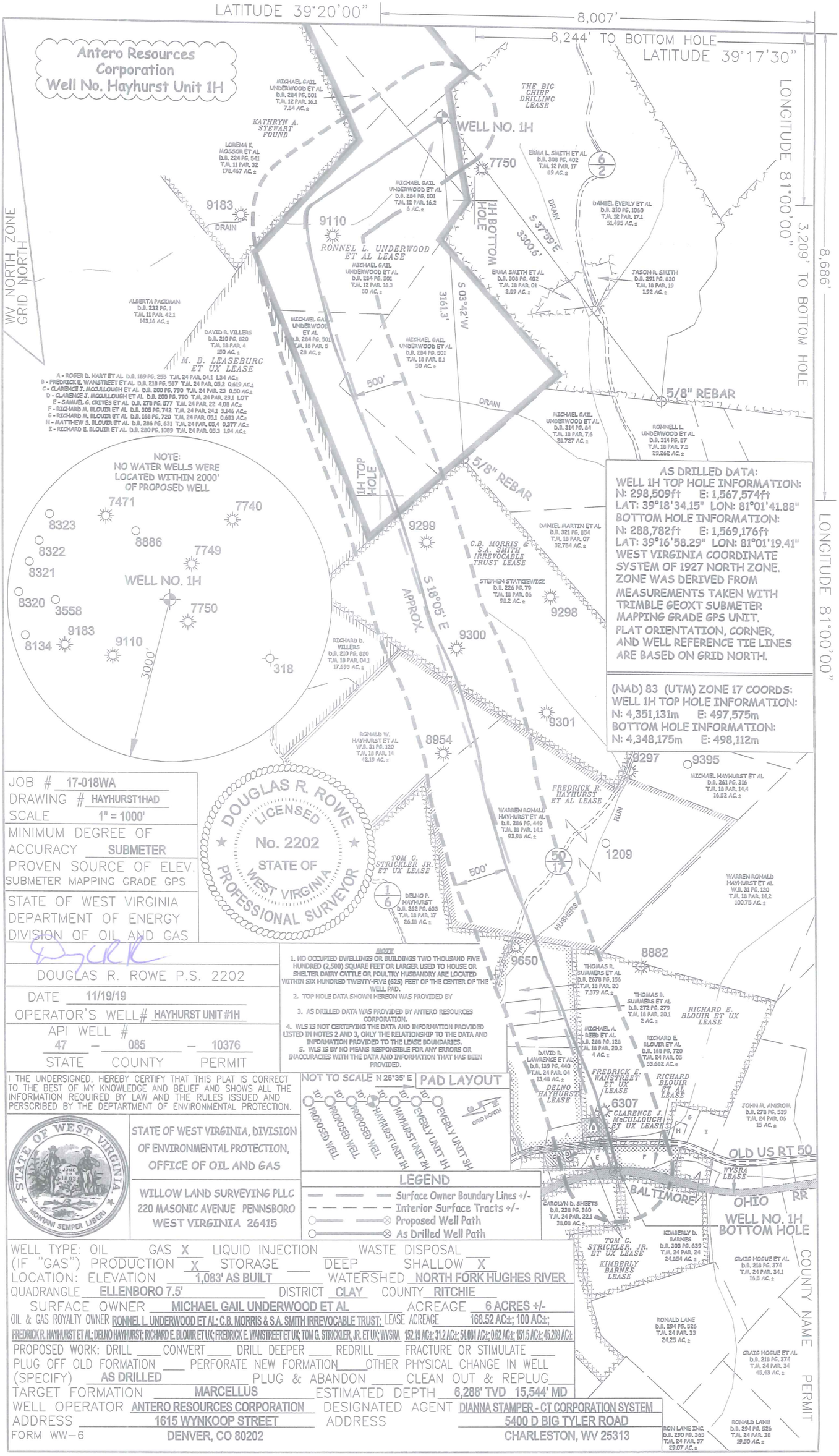
(Inspector's signature): _____ Date: _____
** Include a description of your aeration technique. Aeration Code: _____
*** Al is only reported if the pH is above 9.0.

Category 4
Sampling Results
API No: _____

Parameter	Predischarge Limits	Predischarge Reported	Discharge Limits	Discharge Reported	Units
pH	6-10		6-10		S.U
Settling Time	1		N/A	N/A	Days
Fe	Monitor		Monitor		mg/l
D.O.	Monitor		Monitor		mg/l
Settleable Sol.	Monitor		Monitor		mg/l
Cl*	12,500		12,500		mg/l
Oil	Trace		Trace		Obs.
TOC**			Monitor		mg/l
Oil and Grease			Monitor		mg/l
TSS			Monitor		mg/l
Total Mn	Monitor		Monitor		mg/l
Volume			Monitor		Gal
Flow			Monitor		Gal/min
Activated Carbon (0.175)			N/A	N/A	lb/Bl
Date Site Reclaimed	N/A	N/A			10 days from dis.
Disposal Area			Monitor		Acres

* Can be 25,000 with inspector's approval,

(Inspector's signature): _____ Date: _____


Antero Resources Corporation
Well No. Hayhurst Unit 1H
LATITUDE 39°20'00"
8,007'
6,244' TO BOTTOM HOLE
LATITUDE 39°17'30"
LONGITUDE 81°00'00"
3,209' TO BOTTOM HOLE
8,686'
LONGITUDE 81°00'00"
WV NORTH ZONE GRID NORTH
WELL NO. 1H
1H BOTTOM HOLE
1H TOP HOLE
S 37°39'E 3300.6'
S 03°42'W 3161.3'
S 18°05' E APPROX.
500'
3000'
DRAIN
RUN
HUSHERS
5/8" REBAR
NOTE: NO WATER WELLS WERE LOCATED WITHIN 2000' OF PROPOSED WELL
AS DRILLED DATA:
WELL 1H TOP HOLE INFORMATION:
N: 298,509ft E: 1,567,574ft
LAT: 39°18'34.15" LON: 81°01'41.88"
BOTTOM HOLE INFORMATION:
N: 288,782ft E: 1,569,176ft
LAT: 39°16'58.29" LON: 81°01'19.41"
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: 4,351,131m E: 497,575m
BOTTOM HOLE INFORMATION:
N: 4,348,175m E: 498,112m
MICHAEL GAIL UNDERWOOD ET AL D.B. 284 PG. 501 T.M. 12 PAR. 16.1 7.24 AC.±
KATHRYN A. STEWART FOUND
LORENA K. MOSSOR ET AL D.B. 224 PG. 541 T.M. 11 PAR. 32 178.467 AC.±
THE BIG CHIEF DRILLING LEASE
EMMA L. SMITH ET AL D.B. 309 PG. 402 T.M. 12 PAR. 17 69 AC.±
DANIEL EVENLY ET AL D.B. 310 PG. 1060 T.M. 12 PAR. 17.1 51.495 AC.±
JASON R. SMITH D.B. 291 PG. 830 T.M. 18 PAR. 19 1.92 AC.±
RONNEL L. UNDERWOOD ET AL LEASE
ALBERTA PACKMAN D.B. 232 PG. 1 T.M. 11 PAR. 42.1 143.16 AC.±
DAVID R. VILLERS D.B. 210 PG. 820 T.M. 18 PAR. 4 150 AC.±
M. B. LEASEBURG ET UX
A - ROGER D. HART ET AL D.B. 169 PG. 259 T.M. 24 PAR. 04.1 1.34 AC.±
B - FREDRICK E. WANSTREET ET AL D.B. 218 PG. 587 T.M. 24 PAR. 05.2 0.613 AC.±
C - CLARENCE J. MCCULLOUGH ET AL D.B. 200 PG. 790 T.M. 24 PAR. 23 0.50 AC.±
D - CLARENCE J. MCCULLOUGH ET AL D.B. 200 PG. 790 T.M. 24 PAR. 23.1 LOT
E - SAMUEL G. CRITES ET AL D.B. 278 PG. 577 T.M. 24 PAR. 22 4.08 AC.±
F - RICHARD M. BLOUIR ET AL D.B. 305 PG. 742 T.M. 24 PAR. 24.1 3.146 AC.±
G - RICHARD M. BLOUIR ET AL D.B. 168 PG. 720 T.M. 24 PAR. 05.1 0.683 AC.±
H - MATTHEW S. BLOUIR ET AL D.B. 286 PG. 631 T.M. 24 PAR. 05.4 0.377 AC.±
I - RICHARD E. BLOUIR ET AL D.B. 280 PG. 1089 T.M. 24 PAR. 05.3 1.94 AC.±
MICHAEL GAIL UNDERWOOD ET AL D.B. 284 PG. 501 T.M. 12 PAR. 16.2 6 AC.±
MICHAEL GAIL UNDERWOOD ET AL D.B. 284 PG. 501 T.M. 12 PAR. 16.3 50 AC.±
MICHAEL GAIL UNDERWOOD ET AL D.B. 284 PG. 501 T.M. 18 PAR. 5 28 AC.±
MICHAEL GAIL UNDERWOOD ET AL D.B. 284 PG. 501 T.M. 18 PAR. 5.1 50 AC.±
MICHAEL GAIL UNDERWOOD ET AL D.B. 314 PG. 84 T.M. 18 PAR. 7.6 29.727 AC.±
RONNELL L. UNDERWOOD ET AL D.B. 314 PG. 87 T.M. 18 PAR. 7.5 29.262 AC.±
DANIEL MARTIN ET AL D.B. 321 PG. 854 T.M. 18 PAR. 07 32.784 AC.±
C.B. MORRIS & S.A. SMITH IRREVOCABLE TRUST LEASE
STEPHEN STATKIEWICZ D.B. 226 PG. 79 T.M. 18 PAR. 06 50.2 AC.±
RICHARD D. VILLERS D.B. 210 PG. 820 T.M. 18 PAR. 04.1 17.693 AC.±
RONALD W. HAYHURST ET AL W.B. 31 PG. 120 T.M. 18 PAR. 14 42.19 AC.±
MICHAEL HAYHURST ET AL D.B. 261 PG. 316 T.M. 18 PAR. 14.4 16.52 AC.±
FREDRICK R. HAYHURST ET AL LEASE
WARREN RONALD HAYHURST ET AL D.B. 286 PG. 449 T.M. 18 PAR. 14.1 93.99 AC.±
WARREN RONALD HAYHURST ET AL W.B. 31 PG. 120 T.M. 18 PAR. 14.2 100.75 AC.±
TOM G. STRICKLER JR. ET UX LEASE
DELNO P. HAYHURST D.B. 282 PG. 533 T.M. 18 PAR. 17 26.18 AC.±
THOMAS R. SUMMERS ET AL D.B. 267B PG. 155 T.M. 18 PAR. 20 7.379 AC.±
THOMAS B. SUMMERS ET AL D.B. 272 PG. 279 T.M. 18 PAR. 20.1 2 AC.±
RICHARD E. BLOUIR ET UX LEASE
MICHAEL A. REED ET AL D.B. 288 PG. 128 T.M. 18 PAR. 20.2 4 AC.±
RICHARD E. BLOUIR ET AL D.B. 168 PG. 720 T.M. 24 PAR. 05 53.582 AC.±
DAVID R. LAWRENCE ET AL D.B. 139 PG. 440 T.M. 24 PAR. 04 13.48 AC.±
FREDRICK E. WANSTREET ET UX LEASE
RICHARD BLOUIR ET AL LEASE
DELNO HAYHURST LEASE
CLARENCE J. MCCULLOUGH ET UX LEASE
JOHN M. ANGROM D.B. 278 PG. 529 T.M. 24 PAR. 06 15 AC.±
OLD US RT 50
WVSRA LEASE
BALTIMORE OHIO RR
CAROLYN D. SHEETS D.B. 238 PG. 360 T.M. 24 PAR. 22.1 38.09 AC.±
KIMBERLY D. BARNES D.B. 303 PG. 639 T.M. 24 PAR. 24 24.854 AC.±
KIMBERLY BARNES LEASE
CRAIG HOGUE ET AL D.B. 218 PG. 374 T.M. 24 PAR. 34.1 16.5 AC.±
RONALD LANE D.B. 294 PG. 526 T.M. 24 PAR. 33 24.25 AC.±
CRAIG HOGUE ET AL D.B. 218 PG. 374 T.M. 24 PAR. 34 45.43 AC.±
RON LANE INC. D.B. 290 PG. 365 T.M. 24 PAR. 37 29.07 AC.±
RONALD LANE D.B. 218 PG. 374 T.M. 24 PAR. 36 19.50 AC.±
COUNTY NAME PERMIT
PAD LAYOUT
NOT TO SCALE N 26°35' E
PROPOSED WELL
PROPOSED WELL
PROPOSED WELL
HAYHURST UNIT 1H
HAYHURST UNIT 2H
EVERLY UNIT 1H
EVERLY UNIT 3H
GRID NORTH
LEGEND
Surface Owner Boundary Lines +/-
Interior Surface Tracts +/-
Proposed Well Path
As Drilled Well Path
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
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.
DOUGLAS R. ROWE LICENSED No. 2202 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR
JOB # 17-018WA
DRAWING # HAYHURST1HAD
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
DOUGLAS R. ROWE P.S. 2202
DATE 11/19/19
OPERATOR'S WELL# HAYHURST UNIT #1H
API WELL # 47 – 085 – 10376
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 PERSCRIBED BY THE DEPTARTMENT OF ENVIRONMENTAL PROTECTION.
STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WILLOW LAND SURVEYING PLLC 220 MASONIC AVENUE PENNSBORO WEST VIRGINIA 26415
WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
LOCATION: ELEVATION 1,083' AS BUILT WATERSHED NORTH FORK HUGHES RIVER
QUADRANGLE ELLENBORO 7.5' DISTRICT CLAY COUNTY RITCHIE
SURFACE OWNER MICHAEL GAIL UNDERWOOD ET AL ACREAGE 6 ACRES +/-
OIL & GAS ROYALTY OWNER RONNEL L. UNDERWOOD ET AL; C.B. MORRIS & S.A. SMITH IRREVOCABLE TRUST; LEASE ACREAGE 168.52 AC±; 100 AC±;
FREDRICK R. HAYHURST ET AL; DELNO HAYHURST; RICHARD E. BLOUIR ET UX; FREDRICK E. WANSTREET ET UX; TOM G. STRICKLER, JR. ET UX; WVSRA 132.19 AC±; 31.2 AC±; 54.081 AC±; 0.62 AC±; 151.5 AC±; 45.208 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 6,288' TVD 15,544' MD
WELL OPERATOR ANTERO RESOURCES CORPORATION DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD
FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313