

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

API 47 - 095 - 02641 County Tyler District Ellsworth
Quad Paden City 7.5' Pad Name Gamehenge Pad Field/Pool Name -----
Farm name Barbara Kay Turner Well Number Harpua 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 4373356.287m Easting 509795.454m
Landing Point of Curve Northing 4373452.31m Easting 509613.44m
Bottom Hole Northing 4377914.329m Easting 508090.540m

Elevation (ft) 1061' 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 8/20/2019 Date drilling commenced 11/21/2019 Date drilling ceased 1/19/2020
Date completion activities began 6/12/2020 Date completion activities ceased 7/20/2020
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

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Freshwater depth(s) ft 363' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1093' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 550' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

APPROVED

Reviewed by:
[Signature]
06/02/2023

API 47- 095 - 02641 Farm name Barbara Kay Turner Well number Harpua 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"	80'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	447'	New	54#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2584'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	22457'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6640'		4.7#, P-110		
Packer type and depth set		N/A					

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	204 sx	15.6	1.20	43	0'	8 Hrs.
Surface	Class A	398 sx	15.6	1.20	85	0'	8 Hrs.
Coal							
Intermediate 1	Class A	876 sx	15.6	1.20	186	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	798 sx (Lead) 3597 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.53 (Lead), 1.26 (Tail)	818	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 22506' MD, 6355' TVD (BHL), 6485' (Deepest Point Drilled) Loggers TD (ft) 22506' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 5714'

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 _____ RECEIVED Office of Oil and Gas

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____ APR 03 2023

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED N/A WV Department of Environmental Protection

06/02/2023 *JW*

API 47- 095 - 02641 Farm name Barbara Kay Turner Well number Harpua Unit 2H

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								

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Please insert additional pages as applicable.

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06/02/2023 *SM*

API 47- 095 - 02641 Farm name Barbara Kay Turner Well number Harpua Unit 2H

PRODUCING FORMATION(S)	DEPTHS	
<u>Marcellus</u>	<u>6414' (TOP)</u> TVD	<u>6683' (TOP)</u> 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 11463 mcfpd Oil 479 bpd NGL --- bpd Water 1 bpd GAS MEASURED BY Estimated Orifice Pilot

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

***PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

Drilling Contractor H & P Drilling
Address 912 N Eagle Valley Rd City Howard State PA Zip 16841

Logging Company Nine Energy Services
Address 6500 West Fwy City Fort Worth State TX Zip 76116

Cementing Company Halliburton Energy Services
Address 3000 W. Sam Houston Pkwy City Houston State TX Zip 76114

Stimulating Company Halliburton Energy Services
Address 3000 W. Sam Houston Pkwy City Houston State TX Zip 76114

Please insert additional pages as applicable.

Completed by Mallory Turco Telephone 303-357-7182
Signature Mallory Turco Title Permitting Manager Date 12/2/2022

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

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JM

API 47-095-02641 Farm Name Barbara Kay Turner Well Number Harpua Unit 2H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	6/8/2020	22389.8	22346.2	60	Marcellus
2	6/8/2020	22307.21645	22140.2987	60	Marcellus
3	6/9/2020	22104.51515	21937.5974	60	Marcellus
4	6/9/2020	21901.81385	21734.8961	60	Marcellus
5	6/9/2020	21699.11255	21532.1948	60	Marcellus
6	6/9/2020	21496.41126	21329.4935	60	Marcellus
7	6/10/2020	21293.70996	21126.7922	60	Marcellus
8	6/10/2020	21091.00866	20924.0909	60	Marcellus
9	6/10/2020	20888.30736	20721.3896	60	Marcellus
10	6/11/2020	20685.60606	20518.6883	60	Marcellus
11	6/11/2020	20482.90476	20315.987	60	Marcellus
12	6/11/2020	20280.20346	20113.2857	60	Marcellus
13	6/11/2020	20077.50216	19910.5844	60	Marcellus
14	6/11/2020	19874.80087	19707.8831	60	Marcellus
15	6/12/2020	19672.09957	19505.1818	60	Marcellus
16	6/12/2020	19469.39827	19302.4805	60	Marcellus
17	6/12/2020	19266.69697	19099.7792	60	Marcellus
18	6/12/2020	19063.99567	18897.0779	60	Marcellus
19	6/13/2020	18861.29437	18694.3766	60	Marcellus
20	6/13/2020	18658.59307	18491.6753	60	Marcellus
21	6/13/2020	18455.89177	18288.974	60	Marcellus
22	6/13/2020	18253.19048	18086.2727	60	Marcellus
23	6/13/2020	18050.48918	17883.5714	60	Marcellus
24	6/14/2020	17847.78788	17680.8701	60	Marcellus
25	6/14/2020	17645.08658	17478.1688	60	Marcellus
26	6/14/2020	17442.38528	17275.4675	60	Marcellus
27	6/14/2020	17239.68398	17072.7662	60	Marcellus
28	6/15/2020	17036.98268	16870.0649	60	Marcellus
29	6/15/2020	16834.28139	16667.3636	60	Marcellus
30	6/15/2020	16631.58009	16464.6623	60	Marcellus
31	6/16/2020	16428.87879	16261.961	60	Marcellus
32	6/16/2020	16226.17749	16059.2597	60	Marcellus
33	6/16/2020	16023.47619	15856.5584	60	Marcellus
34	6/16/2020	15820.77489	15653.8571	60	Marcellus
35	6/16/2020	15618.07359	15451.1558	60	Marcellus
36	6/17/2020	15415.37229	15248.4545	60	Marcellus
37	6/17/2020	15212.671	15045.7532	60	Marcellus
38	6/17/2020	15009.9697	14843.0519	60	Marcellus
39	6/17/2020	14807.2684	14640.3506	60	Marcellus
40	6/18/2020	14604.5671	14437.6494	60	Marcellus
41	6/18/2020	14401.8658	14234.9481	60	Marcellus
42	6/18/2020	14199.1645	14032.2468	60	Marcellus
43	6/18/2020	13996.4632	13829.5455	60	Marcellus
44	6/18/2020	13793.7619	13626.8442	60	Marcellus
45	6/19/2020	13591.06061	13424.1429	60	Marcellus
46	6/19/2020	13388.35931	13221.4416	60	Marcellus
47	6/19/2020	13185.65801	13018.7403	60	Marcellus
48	6/19/2020	12982.95671	12816.039	60	Marcellus
49	6/19/2020	12780.25541	12613.3377	60	Marcellus
50	6/20/2020	12577.55411	12410.6364	60	Marcellus
51	6/20/2020	12374.85281	12207.9351	60	Marcellus
52	6/20/2020	12172.15152	12005.2338	60	Marcellus
53	6/20/2020	11969.45022	11802.5325	60	Marcellus
54	6/20/2020	11766.74892	11599.8312	60	Marcellus
55	6/20/2020	11564.04762	11397.1299	60	Marcellus
56	6/21/2020	11361.34632	11194.4286	60	Marcellus
57	6/21/2020	11158.64502	10991.7273	60	Marcellus
58	6/22/2020	10955.94372	10789.026	60	Marcellus
59	6/22/2020	10753.24242	10586.3247	60	Marcellus
60	6/23/2020	10550.54113	10383.6234	60	Marcellus
61	6/23/2020	10347.83983	10180.9221	60	Marcellus
62	6/24/2020	10145.13853	9978.22078	60	Marcellus
63	6/24/2020	9942.437229	9775.51948	60	Marcellus
64	6/25/2020	9739.735931	9572.81818	60	Marcellus
65	6/26/2020	9537.034632	9370.11688	60	Marcellus
66	6/26/2020	9334.333333	9167.41558	60	Marcellus
67	6/27/2020	9131.632035	8964.71429	60	Marcellus
68	6/27/2020	8928.930736	8762.01299	60	Marcellus
69	6/27/2020	8726.229437	8559.31169	60	Marcellus
70	6/27/2020	8523.528139	8356.61039	60	Marcellus
71	6/28/2020	8320.82684	8153.90909	60	Marcellus
72	6/28/2020	8118.125541	7951.20779	60	Marcellus
73	6/28/2020	7915.424242	7748.50649	60	Marcellus
74	6/28/2020	7712.722944	7545.80519	60	Marcellus
75	6/29/2020	7510.021645	7343.1039	60	Marcellus
76	6/29/2020	7307.320346	7140.4026	60	Marcellus
77	6/29/2020	7104.619048	6937.7013	60	Marcellus
78	6/29/2020	6901.917749	6735	60	Marcellus

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API 47-095-02641 Farm Name Barber Kay Turner Well Number Harpua Unit 2H

EXHIBIT 2

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	6/8/2020	89.19	10084	6057	3448	184640	4893.5	N/A
2	6/8/2020	82.21	9283	4584	3977	265370	8493.286	N/A
3	6/9/2020	91.23	9946	4772	3673	268160	7377.214	N/A
4	6/9/2020	93.51	9857	4164	3257	270210	7446.119	N/A
5	6/9/2020	94.25	9797	4601	3490	268180	7298.619	N/A
6	6/9/2020	93.05	9970	4617	3574	268140	7288.643	N/A
7	6/10/2020	85.41	9384	5526	3830	266260	7417.167	N/A
8	6/10/2020	89.17	10135	3530	3894	267480	7404.048	N/A
9	6/10/2020	91.94	9891	5237	3794	267230	7432.286	N/A
10	6/11/2020	95.77	10033	4672	3583	268460	7303.857	N/A
11	6/11/2020	94.88	9970	4129	4006	263260	7269.286	N/A
12	6/11/2020	94.12	10056	4535	3639	263220	7198	N/A
13	6/11/2020	95.4	9655	5014	3951	266260	7320.714	N/A
14	6/11/2020	94.07	9796	4968	3776	267720	7207.738	N/A
15	6/12/2020	95.47	9874	4895	3770	264470	7188.333	N/A
16	6/12/2020	95.04	9864	4979	4020	264920	7195.667	N/A
17	6/12/2020	94.94	9580	4701	3808	261990	7147.405	N/A
18	6/12/2020	94.69	10094	5290	4075	265030	7220.69	N/A
19	6/13/2020	95.07	9633	5192	4164	262560	7174.381	N/A
20	6/13/2020	95.02	9812	4984	3842	263190	7173.595	N/A
21	6/13/2020	95.58	9780	5319	3851	266030	7234.19	N/A
22	6/13/2020	94.89	10003	3852	3543	264850	7201.929	N/A
23	6/13/2020	94.84	9463	4936	3981	263470	7141.81	N/A
24	6/14/2020	95.26	9818	5105	4237	262740	7122.024	N/A
25	6/14/2020	95.59	9598	5055	4167	264520	7162.81	N/A
26	6/14/2020	95.25	9878	4410	3998	264950	7143	N/A
27	6/14/2020	94.97	9411	5476	3980	265270	7395.31	N/A
28	6/15/2020	95.69	9655	4930	3965	264610	7527.952	N/A
29	6/15/2020	95.14	9215	5169	3981	264970	7109.5	N/A
30	6/15/2020	95.12	8996	5018	4188	266010	7237.024	N/A
31	6/16/2020	95.87	8697	4893	4139	264030	7047.905	N/A
32	6/16/2020	94.46	8820	4144	3960	264480	7170.167	N/A
33	6/16/2020	94.95	8961	5455	4024	264700	7073.595	N/A
34	6/16/2020	95.54	9035	4983	3773	266550	7078.857	N/A
35	6/16/2020	95.68	8899	5820	3952	266530	7029.595	N/A
36	6/17/2020	95.17	8961	4612	3794	266520	6998.976	N/A
37	6/17/2020	94.23	8581	3842	3888	265640	6993.881	N/A
38	6/17/2020	95.12	8908	4996	3986	265510	6956.286	N/A
39	6/17/2020	94.89	8672	4868	4027	265480	6971.714	N/A
40	6/18/2020	95.19	9000	5476	3922	264470	6992.071	N/A
41	6/18/2020	93.94	8644	4898	4099	264400	6950.095	N/A
42	6/18/2020	95.5	8861	4228	3937	265330	7060.595	N/A
43	6/18/2020	96.77	9116	4640	4030	263860	7059.833	N/A
44	6/18/2020	95.07	8980	4717	4032	265560	6896.714	N/A
45	6/19/2020	94.89	8858	4055	3982	264560	6921.476	N/A
46	6/19/2020	95.14	8861	4758	3994	264480	6871.762	N/A
47	6/19/2020	96.17	8907	5205	4131	264690	6895.262	N/A
48	6/19/2020	97.4	8875	3842	4197	266600	6904.857	N/A
49	6/19/2020	94.28	8478	4486	3558	266720	6898	N/A
50	6/20/2020	94.52	8467	4945	3839	265800	6898.929	N/A
51	6/20/2020	95.3	8411	4772	3942	265120	6900.429	N/A
52	6/20/2020	97.17	8379	4641	3905	265450	6966.833	N/A
53	6/20/2020	97.45	8378	4455	3702	266750	6924.214	N/A
54	6/20/2020	91.63	8019	5285	3689	265630	6978.262	N/A
55	6/20/2020	94.84	8084	5725	3965	263540	6830.738	N/A
56	6/21/2020	94.9	7837	4681	3998	263650	6844.476	N/A
57	6/21/2020	97.15	8111	3987	3904	265340	6816.833	N/A
58	6/22/2020	96.73	8705	4395	3561	264500	6838.714	N/A
59	6/22/2020	96.74	8084	4345	3923	267140	6779.31	N/A
60	6/23/2020	97.7	8654	4624	3809	264530	6829.452	N/A
61	6/23/2020	97.06	8865	4631	3944	263470	6911.571	N/A
62	6/24/2020	97.24	8507	4408	3655	263730	6793.833	N/A
63	6/24/2020	97.78	8681	4407	3944	266530	7117.548	N/A
64	6/25/2020	96.94	8534	4307	4024	265220	6840.095	N/A
65	6/26/2020	96.47	8329	3668	4637	264560	6748.524	N/A
66	6/26/2020	96.05	8155	5142	3773	264620	6717.595	N/A
67	6/27/2020	96.94	8161	3740	4076	265100	6664.69	N/A
68	6/27/2020	97.24	8316	4804	3974	265280	6679.714	N/A
69	6/27/2020	97.64	8068	5112	3791	263800	6692.619	N/A
70	6/27/2020	97.78	7671	4052	3694	263390	6970.762	N/A
71	6/28/2020	97.05	7769	4381	3723	266090	6649.262	N/A
72	6/28/2020	98.02	7600	4236	3818	265100	6709.762	N/A
73	6/28/2020	97.58	7766	4954		223210	6718.643	N/A
74	6/28/2020	96.22	7358	4929	3729	264350	6805.262	N/A
75	6/29/2020	97.07	7527	4389	3869	263640	6660.333	N/A
76	6/29/2020	97.45	7091	4410	4004	264170	6630.214	N/A
77	6/29/2020	98.24	7091	4506	3925	263820	6649.571	N/A
78	6/29/2020	96.2	7144	4465	3359	264070	6559.119	N/A
	AVG=	93.9	9,505	4,871	3,879	10,802,480	293,989	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
Silty Sandstone	75	175	75	175
Siltstone	175	275	175	275
Shaly Siltstone	275	335	275	335
Silty Shale	335	555	335	555
Silty Sandstone	555	575	555	575
Shale	575	955	575	955
Shaly Sandstone	955	1,035	955	1,035
Sandstone	1,035	1,215	1,035	1,215
Sandy Shale	1,215	1,255	1,215	1,255
Shaly Siltstone	1,255	1,315	1,255	1,315
Sandstone	1,315	1,435	1,315	1,435
Shaly Sandstone	1,435	1,515	1,435	1,515
Sandy Shale	1,515	1,533	1,515	N/A
Big Lime	1,548	2,117	1,554	2,162
Fifty Foot Sandstone	2,117	2,349	2,147	2,403
Gordon	2,349	2,653	2,388	2,719
Fifth Sandstone	2,653	2,748	2,704	2,817
Bayard	2,748	3,584	2,802	3,690
Speechley	3,584	3,724	3,675	3,835
Balltown	3,724	4,222	3,820	4,352
Bradford	4,222	4,530	4,337	4,674
Benson	4,530	4,903	4,659	5,062
Alexander	4,903	5,911	5,047	6,200
Sycamore	5,783	5,881	6,037	6,170
Middlesex	5,881	5,971	6,185	6,355
Burkett	5,971	5,992	6,370	6,414
Tully	5,992	6,010	6,429	6,481
Marcellus	6,010	NA	6,481	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.

Antero Resources
Well No. Harpua Unit 2H
 As-Drilled
 Antero Resources Corporation

8,923' to Bottom Hole

3,346' to Top Hole

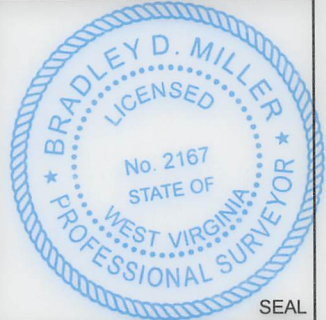
TOP HOLE LATITUDE 39 - 32 - 30
 BTM HOLE LATITUDE 39 - 35 - 00



- Wellhead Layout (NTS)**
- Maggie Unit 3H
47-095-02639
 - Maggie Unit 2H
47-095-02638
 - Maggie Unit 1H
47-095-02637
 - As-Drilled Well
Harpua Unit 2H
47-095-02641
 - Harpua Unit 1H
47-095-02636
 - Possum Unit 2H
47-095-02642
 - Possum Unit 1H
47-095-02640

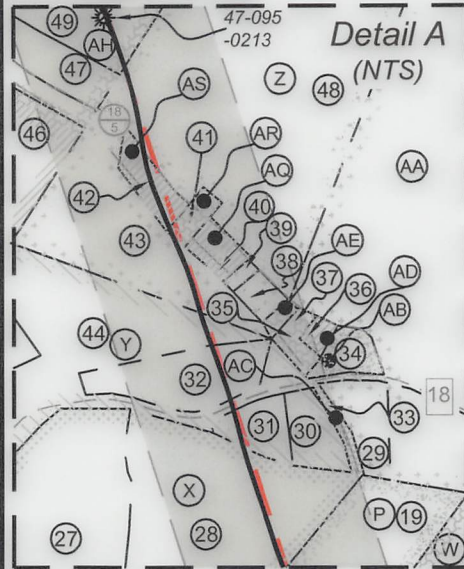
	Bearing	Dist.
L1	S 62°47' E	2,072.5'
L2	S 28°58' E	1,073.3'
L3	N 02°50' W	1,453.3'
L4	N 58°04' E	2,773.6'

Notes:
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
 Well No. Harpua Unit 2H Top Hole coordinates are
 N: 370,772.66' Latitude: 39°30'34.93"
 E: 1,608,894.79' Longitude: 80°53'10.42"
 Bottom Hole coordinates are
 N: 385,823.28' Latitude: 39°33'02.85"
 E: 1,603,549.39' Longitude: 80°54'21.62"
 UTM Zone 17, NAD 1983
 Top Hole Coordinates Bottom Hole Coordinates
 N: 4,373,356.287m N: 4,377,914.329m
 E: 509,795.454m E: 508,090.540m
 Plat orientation and corner and well references are based upon the grid north meridian.
 Well location references are based upon the magnetic meridian.



I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the rules issued and prescribed by the Department of Environmental Protection.

Bradley D. Miller, P.S. 2167



Note: 1 water wells and 2 springs were found within 2000' of proposed well. No occupied dwellings or buildings 2,500 square feet or larger used to house or shelter dairy cattle or poultry husbandry are located within 625' of the center of the well pad.



- Legend**
- Proposed gas well Monument, as noted
 - Existing Well, as noted
 - Digitized Well, as noted
 - Creek or Drain
 - Surface boundary (approx.)
 - Interior surface tracts (approx.)

Top Hole Coordinates, As-drilled data, and information was provided by Antero Resources Corporation. Allegany Surveys Inc. (ASI) is not certifying the data and information provided. ASI is not responsible for any errors or inaccuracies with the data and information that has been provided.

FILE NO: 34-54-E-16
 DRAWING NO: Harpua 2H Well Plat
 SCALE: 1" = 2000'
 MINIMUM DEGREE OF ACCURACY: Submeter
 PROVEN SOURCE OF ELEVATION: WVDOT, Harrisville, WV

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

DATE: March 29 20 23
 OPERATOR'S WELL NO. Harpua Unit 2H
 API WELL NO
 47 - 095 - 02641
 STATE COUNTY PERMIT

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

LOCATION: ELEVATION: As-Drilled 1,061' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Paden City 3,27; 0.86088;
 DISTRICT: Ellsworth/Lincoln Stanley M. & Irene E. Koterba; Sherry Sue Dietrich; Ronald L. Perine, et ux; 113.725; 64.18; 45;
 SURFACE OWNER: Barbara Kay Turner Pamela Oakley Whiting; Nancy Templer; Michael D. Reynolds; Bounty Minerals, LLC; 9.09; 2.14; 7.2, 0.62;
 ROYALTY OWNER: Linda L. Newbrough; Kenneth F. & Donna Blake; Michael E. & Lois J. Henthorn; Robert D. & Jessica J. Masters; Waco Oil & Gas, Inc.; Charles M. Ferrell; Kathryn L. Watkins; Diane W. Kestle; Jefferson Minerals, LLC; 74.169; 24.52; 7.148;
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled 10; 23.38688; 48.78;
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 22,506' MD 217.30; 20; 12.5; 46.43;
 109.48; 4.5; 285.00625;
 21.5; 33.25; 74.47; 64

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System
 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road
 Denver, CO 80202 Charleston, WV 25313



ID	TM/Par	Owner	Bk/Pg	Acres
1	15-19	David Mendenhall, et al	282/723	45.00
2	15-18	Barbara Kay Turner	398/670	26.18
3	14-26	Brenda K. Turner	398/670	26.34
4	14-27	Ridgetop Capital LP	372/299	64.96
5	14-24	Ridgetop Capital LP	372/299	124.76
6	14-25	Stanley M. Koterba, et al	331/32	126.05
7	14-25.2	Andrew B. & Angela M. Negie	489/577	3.00
8	14-25.1	Roy F. Gorrell	447/180	2.00
9	14-11	Larry R. Henthorn	270/363	21.50
10	9-61	Larry R. Henthorn	212/606	10.00
11	14-10	Sara A. Midcap	342/568	40.00
12	9-39	Board of Education of Tyler County	290/88	65.00
13	9-59	James F. & Phyllis Henthorn	190/311	46.13
14	9-40	Sara A. Midcap	168/3	16.83
15	9-31	Sara A. Midcap	168/3	74.00
16	9-25	Michael & Sherri Tuttle	319/341	24.52
17	9-24	Bob S. & Sue M. Adams	204/599	7.15
18	9-26	Mariyn Ankrom	WB 47/269	18.94
19	9-15	Heartwood Forestland Fund II LP	326/547	225.64
20	9-23	Raymond Chapman, et al	WB 45/271	22.31
21	9-15.1	Timothy & Marilyn S. Skinner	226/477	0.71
22	9-22	Shawn A. & Cathy A. Potts	291/219	0.98
23	9-15.2	Par Mar Realty Co.	534/407	3.091
24	9-15.3	Fred Midcap	351/7	44.00
25	9-16	Sara A. Midcap	181/278	96.78
26	9-14	Leroy Kent Morris	480/311	93.63
27	9-1	Linda L. Stemple	369/9	24.24
28	9-2	William & Margaret A. Garrett	284/41	22.19
29	9-5.1	John W. Starkey	255/571	2.55
30	9-3.1	Roger J. II & Stacey L. Morgan	340/764	2.34
31	9-3	Bridgette A. Morgan	341/289	2.16
32	9-44.1	Rodney L. & Brenda K. Morgan	297/137	5.30
33	9-64	Carol Morgan, et al	262/459	0.97
34	9-41	Roger J. Morgan II	327/31	1.40
35	9-41.1	Nancy M. Morgan	269/629	0.99
36	9-41.2	Rodney L. & Brenda K. Morgan	342/121	0.52
37	9-39	Nancy A. Morgan	157/512	0.42
38	9-37	William Bassett	WB 30/15	0.92
39	9-37.1	Dottie Marie Perine	WB 30/15	0.41
40	9-38	Charles O. Rice	157/293	1.31
41	9-33.1	Ronald L. & Dottie M. Perine	312/328	0.86
42	9-33.2	Leonard G. Cooper	328/885	3.27
43	9-33.3	David D. & Whitney C. Cooper	438/62	12.13
44	9-44	Diane Weaver Clark	WB 39/544	40.68
45	9-36	Diane Weaver Clark	WB 39/544	59.00
46	9-35	Mark E. Heintzman	246/532	19.75
47	9-32.1	Sandra M. Bassett	346/487	3.36
48	9-33	Jefferson Minerals, LLC	438/66	69.17
49	9-32	Tracy P. Carr	346/487	32.17
50	9-32.1	Sandra M. Bassett	WB 40/353	1.08
51	9-31.2	Ralph & Sylvia Harter	347/178	4.57
52	9-31.3	Ralph & Sylvia Harter	347/180	1.05
53	9-30	Ervin L. & Betty M. Bassett	309/391	19.57
54	9-31	Russell L. & Mary E. Myers	347/263	31.45
55	9-31.1	Russell L. & Mary E. Myers	340/654	38.04
56	9-21	Thomas K. Brotherton	23/310	64.00
57	9-19	Russell L. & Marry E. Myres	337/26	93.17
58	9-60	James F. & Phyllis Henthorn	190/311	36.47
59	9-57	Kenneth & Donna Blake	323/91	0.37
60	9-56	Jason Lee Henthorn	546/431	0.92
61	9-40.1	Board of Education of Tyler County	290/88	9.17
62	9-55	Michael E. & Lois Henthorn	319/327	1.02
63	9-56.1	Michael E. & Lois Henthorn	297/623	1.04
64	9-58	Beatrice Lee Henthorn	WB 31/242	0.37
65	9-54	Beatrice Lee Henthorn	WB 31/242	0.89
66	9-58.1	Robert D. & Jessica J. Masters	342/737	0.76
67	9-53	R&S Lumber Co.	318/200	5.49
68	9-52	Mark A. & Lisa D. Richmond	328/344	1.59
69	9-51	Robert L. & Toni R. Vancamp	444/541	0.68
70	9-48.1	Kirk Family Trust	511/167	0.70

ID	TM/Par	Owner	Bk/Pg	Acres
71	9-48.2	Kirk Family Trust	511/167	0.33
72	9-49	Claudia Jean Gray	WB 29/220	15.15
73	9-48.5	Kathleen Fluharty	291/212	0.93
74	9-48.4	Francis D. & Barbara A. Slider	290/347	3.64
75	9-47	Brian & Tricia Brinkmeier	328/887	1.01
76	9-50	Lloyd & Linda Waggoner	299/497	1.06
77	9-53.1	Jessie A. Thompson	346/698	1.67
78	9-45	Stanley Modesitt	332/70	0.35
79	9-46	Michael J. & Heather D. Mongold	510/509	0.86
80	9-41	Daniel J. & Sha M. Yoho	306/514	2.93
81	9-42	Michael D. & Martha K. Pierpoint	215/276	1.06
82	9-48.7	Kathleen Fluharty Baxter	332/216	0.55
83	9-43	Catherine L. Bennett	217/376	0.72
84	9-48.3	Larry R. Henthorn	290/166	0.32
85	9-48	Michael D. & Martha K. Pierpoint	332/514	2.82



	Lessor
A	Linda L. Newbrough
B	Jack Russell Folger, et ux
C	Naomi V. Beagle
D	Scott Denomme, et ux
E	Stanley M. & Irene E. Koterba
F	Sarah Valentour Nass
G	Kim M. & Larry M. Henthorn
H	Sarah A. Midcap
I	James F. Sr. & Phyllis M. Henthorn
J	James F. Sr. & Phyllis M. Henthorn
K	Larry R. Henthorn
L	Sarah A. Midcap
M	Michael P. & Sherri J. Tuttle
N	Roger Ankrom
O	Bobby S. & Sue Marie Adams
P	David E. Bowyer
Q	James W. Chapman
R	Waco Oil & Gas Inc.
S	Marilyn S. Parkinson
T	Nancy J. Squires
U	Sandra L. Baumgardner
V	Charles M. Ferrell
W	H3, LLC

	Lessor
X	Kathryn L. Watkins
Y	Diane W. Kestle
Z	Jefferson Minerals, LLC
AA	Pamela Oakley-Whiting
AB	Roger Morgan, et ux
AC	Cheryl Cumberledge
AD	Rodney Morgan, et ux
AE	Nancy Morgan
AF	Jean Cline
AG	Mark E. Heintzman
AH	Nancy Templeton
AI	Michael D. Reynolds
AJ	Timothy L. Vancamp
AK	Bounty Minerals, LLC
AL	Robert D. & Jessica J. Masters
AM	Beatrice Lee Henthorn
AN	Michael E. & Lois J. Henthorn
AO	Jason L. & Patty J. Henthorn
AP	Kenneth F. & Donna Blake
AQ	Sherry Sue Dietrich
AR	Ronald L. Perine, et ux
AS	Sherry Sue Dietrich

FILE NO: 34-54-E-16
DRAWING NO: Harpua 2H Well Plat
SCALE: 1" = 2000'
MINIMUM DEGREE OF ACCURACY: Submeter
PROVEN SOURCE OF ELEVATION: WVDOT, Harrisville, WV

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

DATE: March 29 20 23
OPERATOR'S WELL NO. Harpua Unit 2H
API WELL NO
47 - 095 - 02641
STATE COUNTY PERMIT

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

LOCATION: ELEVATION: As-Drilled 1,061' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Paden City
DISTRICT: Ellsworth/Lincoln COUNTY: Lincoln
SURFACE OWNER: Barbara Kay Turner ACREAGE: 26.18
ROYALTY OWNER: Linda L. Newbrough; Kenneth F. & Donna Blake; Michael E. & Lois J. Henthorn; Robert D. & Jessica J. Masters; Larry M. & Kim M. Henthorn; Sarah Valentour Nass; Naomi V. Beagle; Jack Russell Folger, et ux LEASE NO: _____ ACREAGE: 21.5, 33.25, 74.47, 64

PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 6,355' TVD
22,506' MD

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System
ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road
Denver, CO 80202 Charleston, WV 25313

8,923' to Bottom Hole

3,346' to Top Hole

TOP HOLE LATITUDE 39 - 32 - 30
BTM HOLE LATITUDE 39 - 35 - 00

LONGITUDE 80 - 52 - 30

11,592' to Top Hole

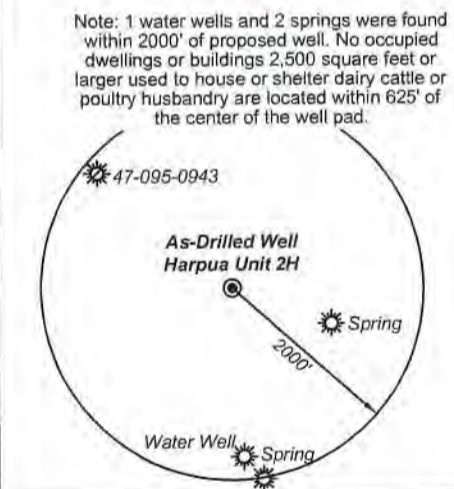
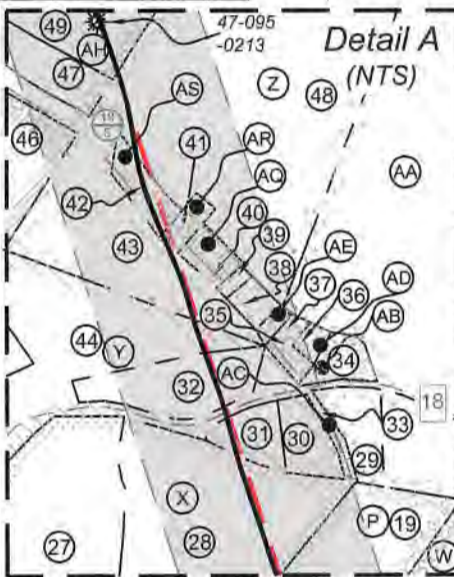
11,716' to Bottom Hole

Antero Resources Well No. Harpua Unit 2H As-Drilled Antero Resources Corporation



Wellhead Layout (NTS)

Maggie Unit 3H	47-095-02639
Maggie Unit 2H	47-095-02638
Maggie Unit 1H	47-095-02637
As-Drilled Well Harpua Unit 2H	47-095-02641
Harpua Unit 1H	47-095-02636
Possum Unit 2H	47-095-02642
Possum Unit 1H	47-095-02640



	Bearing	Dist.
L1	S 62°47' E	2,072.5'
L2	S 28°58' E	1,073.3'
L3	N 02°50' W	1,453.3'
L4	N 58°04' E	2,773.6'

Notes:
West Virginia Coordinate System of 1927, North Zone
based upon Differential GPS Measurements.
Well No. Harpua Unit 2H Top Hole coordinates are
N: 370,772.66' Latitude: 39°30'34.93"
E: 1,608,894.79' Longitude: 80°53'10.42"
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N: 385,823.28' Latitude: 39°33'02.85"
E: 1,603,549.39' Longitude: 80°54'21.62"
UTM Zone 17, NAD 1983
Top Hole Coordinates Bottom Hole Coordinates
N: 4,373,356.287m N: 4,377,914.329m
E: 509,795.454m E: 508,090.540m
Plat orientation and corner and well references are based upon the grid north meridian.
Well location references are based upon the magnetic meridian.



I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the rules issued and prescribed by the Department of Environmental Protection.

Bradley D. Miller, P.S. 2167

Legend

	Proposed gas well Monument, as noted
	Existing Well, as noted
	Digitized Well, as noted
	Creek or Drain
	Surface boundary (approx.)
	Interior surface tracts (approx.)

Top Hole Coordinates, As-drilled data, and information was provided by Antero Resources Corporation. Allegany Surveys Inc. (ASI) is not certifying the data and information provided. ASI is not responsible for any errors or inaccuracies with the data and information that has been provided.

FILE NO: 34-54-E-16
DRAWING NO: Harpua 2H Well Plat
SCALE: 1" = 2000'
MINIMUM DEGREE OF ACCURACY: Submeter
PROVEN SOURCE OF ELEVATION: WVDOT, Harrisville, WV

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

DATE: March 29 20 23
OPERATOR'S WELL NO. Harpua Unit 2H
API WELL NO
47 - 095 - 02641
STATE COUNTY PERMIT

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

LOCATION: ELEVATION: As-Drilled 1,061' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Paden City 3,27; 0 88088; 113,725; 64,19; 45; 82,24375; 0,97; 5,082; 10,2338668; 48,76; 217,30; 20; 12,5; 46,43; 109,48; 4,5; 285,00625; 21,5; 33,25; 74,47, 64

DISTRICT: Ellsworth/Lincoln COUNTY: 08/02/2023

SURFACE OWNER: Barbara Kay Turner ACREAGE: 26.18

ROYALTY OWNER: Lindsa L. Newbrough, Kenneth E. & Donna Blake, Michael E. & Lois J. Henhorn, Robert D. & Justica J. Massere, Larry M. & Kim M. Henhorn, Sarah Valentine Nass, Naomi V. Baegle, Jack Russell Folger, et ux. LEASE NO: ACREAGE: 21,5; 33,25; 74,47, 64

PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled 6,355' TVD
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 22,506' MD

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System
ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road
Denver, CO 80202 Charleston, WV 25313

Antero Resources
Well No. Harpua Unit 2H
As-Drilled
Antero Resources Corporation



ID	TM/Par	Owner	Bk/Pg	Acres
1	15-19	David Mendenhall, et al	282/723	45.00
2	15-18	Barbara Kay Turner	398/670	26.18
3	14-26	Brenda K. Turner	398/670	26.34
4	14-27	Ridgetop Capital LP	372/299	64.96
5	14-24	Ridgetop Capital LP	372/299	124.76
6	14-25	Stanley M. Koterba, et al	331/32	128.05
7	14-25.2	Andrew B. & Angela M. Negie	489/577	3.00
8	14-25.1	Roy F. Gorrell	447/180	2.00
9	14-11	Larry R. Henthorn	270/363	21.50
10	9-61	Larry R. Henthorn	212/606	10.00
11	14-10	Sara A. Midcap	342/568	40.00
12	9-39	Board of Education of Tyler County	290/88	65.00
13	9-59	James F. & Phyllis Henthorn	190/311	46.13
14	9-40	Sara A. Midcap	168/3	16.83
15	9-31	Sara A. Midcap	168/3	74.00
16	9-25	Michael & Sherri Tuttle	319/341	24.52
17	9-24	Bob S. & Sue M. Adams	204/599	7.15
18	9-26	Mariyn Ankrom	WB 47/269	18.94
19	9-15	Heartwood Forestland Fund II LP	326/547	225.64
20	9-23	Raymond Chapman, et al	WB 45/271	22.31
21	9-15.1	Timothy & Marilyn S. Skinner	226/477	0.71
22	9-22	Shawn A. & Cathy A. Potts	291/219	0.98
23	9-15.2	Par Mar Realty Co.	534/407	3.091
24	9-15.3	Fred Midcap	351/7	44.00
25	9-16	Sara A. Midcap	181/278	96.78
26	9-14	Leroy Kent Morris	480/311	93.63
27	9-1	Linda L. Stemple	369/9	24.24
28	9-2	William & Margaret A. Garrett	284/41	22.19
29	9-5.1	John W. Starkey	255/571	2.55
30	9-3.1	Roger J. II & Stacey L. Morgan	340/764	2.34
31	9-3	Bridgette A. Morgan	341/289	2.16
32	9-44.1	Rodney L. & Brenda K. Morgan	297/137	5.30
33	9-64	Carol Morgan, et al	262/459	0.97
34	9-41	Roger J. Morgan II	327/31	1.40
35	9-41.1	Nancy M. Morgan	269/629	0.99
36	9-41.2	Rodney L. & Brenda K. Morgan	342/121	0.52
37	9-39	Nancy A. Morgan	157/512	0.42
38	9-37	William Bassett	WB 30/15	0.92
39	9-37.1	Dottie Marie Perine	WB 30/15	0.41
40	9-38	Charles O. Rice	157/293	1.31
41	9-33.1	Ronald L. & Dottie M. Perine	312/328	0.86
42	9-33.2	Leonard G. Cooper	328/885	3.27
43	9-33.3	David D. & Whitney C. Cooper	438/62	12.13
44	9-44	Diane Weaver Clark	WB 39/544	40.68
45	9-36	Diane Weaver Clark	WB 39/544	59.00
46	9-35	Mark E. Heintzman	246/532	19.75
47	9-32.1	Sandra M. Bassett	346/487	3.36
48	9-33	Jefferson Minerals, LLC	438/66	69.17
49	9-32	Tracy P. Carr	346/487	32.17
50	9-32.1	Sandra M. Bassett	WB 40/353	1.08
51	9-31.2	Ralph & Sylvia Harter	347/178	4.57
52	9-31.3	Ralph & Sylvia Harter	347/180	1.05
53	9-30	Ervin L. & Betty M. Bassett	309/391	19.57
54	9-31	Russell L. & Mary E. Myers	347/263	31.45
55	9-31.1	Russell L. & Mary E. Myers	340/654	38.04
56	9-21	Thomas K. Brotherton	23/310	64.00
57	9-19	Russell L. & Marry E. Myres	337/26	93.17
58	9-60	James F. & Phyllis Henthorn	190/311	36.47
59	9-57	Kenneth & Donna Blake	323/91	0.37
60	9-56	Jason Lee Henthorn	546/431	0.92
61	9-40.1	Board of Education of Tyler County	290/88	9.17
62	9-55	Michael E. & Lois Henthorn	319/327	1.02
63	9-56.1	Michael E. & Lois Henthorn	297/623	1.04
64	9-58	Beatrice Lee Henthorn	WB 31/242	0.37
65	9-54	Beatrice Lee Henthorn	WB 31/242	0.89
66	9-58.1	Robert D. & Jessica J. Masters	342/737	0.76
67	9-53	R&S Lumber Co.	318/200	5.49
68	9-52	Mark A. & Lisa D. Richmond	328/344	1.59
69	9-51	Robert L. & Toni R. Vancamp	444/541	0.68
70	9-48.1	Kirk Family Trust	511/167	0.70

ID	TM/Par	Owner	Bk/Pg	Acres
71	9-48.2	Kirk Family Trust	511/167	0.33
72	9-49	Claudia Jean Gray	WB 29/220	15.15
73	9-48.5	Kathleen Fluharty	291/212	0.93
74	9-48.4	Francis D. & Barbara A. Slider	290/347	3.64
75	9-47	Brian & Tricia Brinkmeier	328/887	1.01
76	9-50	Lloyd & Linda Waggoner	299/497	1.06
77	9-53.1	Jessie A. Thompson	346/698	1.67
78	9-45	Stanley Modesitt	332/70	0.35
79	9-46	Michael J. & Heather D. Mongold	510/509	0.86
80	9-41	Daniel J. & Sha M. Yoho	306/514	2.93
81	9-42	Michael D. & Martha K. Pierpoint	215/276	1.06
82	9-48.7	Kathleen Fluharty Baxter	332/216	0.55
83	9-43	Catherine L. Bennett	217/376	0.72
84	9-48.3	Larry R. Henthorn	290/166	0.32
85	9-48	Michael D. & Martha K. Pierpoint	332/514	2.82



	Lessor
A	Linda L. Newbrough
B	Jack Russell Folger, et ux
C	Naomi V. Beagle
D	Scott Denomme, et ux
E	Stanley M. & Irene E. Koterba
F	Sarah Valentour Nass
G	Kim M. & Larry M. Henthorn
H	Sarah A. Midcap
I	James F. Sr. & Phyllis M. Henthorn
J	James F. Sr. & Phyllis M. Henthorn
K	Larry R. Henthorn
L	Sarah A. Midcap
M	Michael P. & Sherri J. Tuttle
N	Roger Ankrom
O	Bobby S. & Sue Marie Adams
P	David E. Bowyer
Q	James W. Chapman
R	Waco Oil & Gas Inc.
S	Marylin S. Parkinson
T	Nancy J. Squires
U	Stanley L. Baumgardner
V	Charles M. Ferrell
W	H3, LLC

	Lessor
X	Kathryn L. Watkins
Y	Diane W. Kestle
Z	Jefferson Minerals, LLC
AA	Pamela Oakley-Whiting
AB	Roger Morgan, et ux
AC	Cheryl Cumberledge
AD	Rodney Morgan, et ux
AE	Nancy Morgan
AF	Jean Cline
AG	Mark E. Heintzman
AH	Nancy Templeton
AI	Michael D. Reynolds
AJ	Timothy L. Vancamp
AK	Bounty Minerals, LLC
AL	Robert D. & Jessica J. Masters
AM	Beatrice Lee Henthorn
AN	Michael E. & Lois J. Henthorn
AO	Jason L. & Patty J. Henthorn
AP	Kenneth F. & Donna Blake
AQ	Sherry Sue Dietrich
AR	Ronald L. Perine, et ux
AS	Sherry Sue Dietrich

FILE NO: 34-54-E-16
 DRAWING NO: Harpua 2H Well Plat
 SCALE: 1" = 2000'
 MINIMUM DEGREE OF ACCURACY:
 Submeter
 PROVEN SOURCE OF ELEVATION:
 WVDOT, Harrisville, WV

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

DATE: March 29 20 23
 OPERATOR'S WELL NO. Harpua Unit 2H
 API WELL NO
 47 - 095 - 02641
 STATE COUNTY PERMIT

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

LOCATION: ELEVATION: As-Drilled 1,061' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Paden City 3.27, 0.86088; 113.725; 64.18; 45;
 DISTRICT: Ellsworth/Lincoln COUNTY: 06/02/2023
 SURFACE OWNER: Barbara Kay Turner
 ROYALTY OWNER: LEASE NO: ACREAGE: 26.18
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 22,506' MD 6,355' TVD

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System
 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road
 Denver, CO 80202 Charleston, WV 25313

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	6/8/2020
Job End Date:	6/29/2020
State:	West Virginia
County:	Tyler
API Number:	47-095-02641-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Harpua Unit 2H
Latitude:	39.50971000
Longitude:	-80.88623000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,481
Total Base Water Volume (gal):	24,145,996
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
Produced Water	Halliburton	Base Fluid					
			Water	7732-18-5	100.00000	86.48778	Density = 8.50
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.16519	

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HYDROCHLORIC ACID, 22 BAUME	Halliburton	Solvent					
				Listed Below			
Legend LD-2990	MultiChem	Friction Reducer					
				Listed Below			
SAND-COMMON WHITE 40/70	Halliburton	Proppant					
				Listed Below			
Sand-Common White-100 Mesh, SSA-2	Halliburton	Proppant					
				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			
MC B-8614	Halliburton	Biocide					
				Listed Below			
OPTIFLO-II DELAYED RELEASE BREAKER	Halliburton	Breaker					
				Listed Below			
Accelerate LX-15	Halliburton	Friction Reducer					
				Listed Below			

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Legend LD-2555	MultiChem	Additive					
				Listed Below			
HAI-501	Halliburton	Acid Corrosion Inhibitor					
				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	13.32509	
			Hydrochloric acid	7647-01-0	30.00000	0.03823	
			Complex Amine Compound	Proprietary	60.00000	0.01761	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01337	
			Complex Amine Compound	Proprietary	60.00000	0.00914	
			Guar gum	9000-30-0	100.00000	0.00378	
			Glutaraldehyde	111-30-8	30.00000	0.00243	
			Sobitan, mono-9-octadecenoate, (Z)	1338-43-8	5.00000	0.00223	
			Surfactant	Proprietary	5.00000	0.00147	
			Polyethoxylated fatty amine salt	61791-26-2	30.00000	0.00087	
			Surfactant	Proprietary	5.00000	0.00076	
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00041	
			Methanol	67-56-1	100.00000	0.00032	
			Ethoxylated alcohols	Proprietary	5.00000	0.00031	
			Organic chloride compound	Proprietary	1.00000	0.00029	
			Alkoxylated polyhydric alcohol	Proprietary	1.00000	0.00029	
			Alkoxylated polyhydric alcohol	Proprietary	1.00000	0.00015	

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			Ethoxylated alcohols	Proprietary	1.00000	0.00015
			Organic chloridie compound	Proprietary	1.00000	0.00015
			Ammonium persulfate	7727-54-0	100.00000	0.00010
			Ethanol	64-17-5	1.00000	0.00008
			Modified thiourea polymer	Proprietary	30.00000	0.00007
			Mixture of dimer and trimer fatty acids of indefinite composition derived from tall oil	61790-12-3	30.00000	0.00007
			Oxylated phenolic resin	Proprietary	30.00000	0.00003
			Acrylamide	79-06-1	0.10000	0.00002
			Organic salt #1	Proprietary	0.10000	0.00002
			Hexadecene	629-73-2	5.00000	0.00001
			Propargyl alcohol	107-19-7	5.00000	0.00001
			Phosphoric acid	7664-38-2	0.10000	0.00001
			Formaldehyde	50-00-0	0.01000	0.00000
			Sodium hydroxide	1310-73-2	0.01000	0.00000
			Organic salt #2	Proprietary	0.01000	0.00000
			Organic salt #1	Proprietary	0.01000	0.00000
			Sodium glycolate	2836-32-0	0.01000	0.00000
			Nitrated acetate salt	Proprietary	0.01000	0.00000
			Organic salt #3	Proprietary	0.01000	0.00000
			Nitrated acetate salt	Proprietary	0.01000	0.00000
			Sodium glycollate	2836-32-0	0.01000	0.00000
			Organic salt #2	Proprietary	0.01000	0.00000
			C.I. pigment Orange 5	3468-63-1	1.00000	0.00000
			Ethylene oxide	75-21-8	0.01000	0.00000

* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water

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

*** If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

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

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

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