

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

API 47-095-02799 County Tyler District Ellsworth
Quad Porter Falls 7.5' Pad Name Furbee Field/Pool Name -----
Farm name Antero Midstream LLC Well Number Crystal 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 4375452m Easting 518716m
Landing Point of Curve Northing 4375675.95m Easting 518661.48m
Bottom Hole Northing 4378547m Easting 517698m

Elevation (ft) 1223' 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

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Date permit issued 7/26/2022 Date drilling commenced 9/30/2022 Date drilling ceased 11/18/2022
Date completion activities began 2/19/2023 Date completion activities ceased 4/2/2023
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 880' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 959' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 431' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

APPROVED

Reviewed by: Smyly
8/10/23
09/22/2023

API 47-095-02799 Farm name Antero Midstream LLC Well number Crystal 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	28"	20"	125.5'	New	78.67#, X-60	N/A	Y
Surface	17-1/2"	13-3/8"	992'	New	54.5#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	3368'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4" /8-1/2"	5-1/2"	17806'	New	20#, P-110	N/A	Y
Tubing		2-3/8"	6898'		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	198 sx	15.6	1.18	233	0'	8 Hrs.
Surface	Class A	768 sx	15.6	1.20	921	0'	8 Hrs.
Coal							
Intermediate 1	Class A	1152 sx	15.6	1.20	1382	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	2660 sx (Tail)	13.5 (Lead), 15.2(Tail)	1.26 (Tail)	3351	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 17806' MD, 6901' TVD (BHL), 6920' TVD (Deepest Point Drilled) Loggers TD (ft) 17806' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6090'

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

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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

09/22/2023

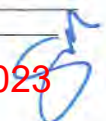


EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	2/19/2023	17681.7	17638.8	60	Marcellus
2	2/19/2023	17599.64052	17432.8431	60	Marcellus
3	2/19/2023	17397.08366	17230.2863	60	Marcellus
4	2/20/2023	17194.5268	17027.7294	60	Marcellus
5	2/20/2023	16991.96993	16825.1725	60	Marcellus
6	2/20/2023	16789.41307	16622.6157	60	Marcellus
7	2/20/2023	16586.85621	16420.0588	60	Marcellus
8	2/20/2023	16384.29935	16217.502	60	Marcellus
9	2/20/2023	16181.74248	16014.9451	60	Marcellus
10	2/21/2023	15979.18562	15812.3882	60	Marcellus
11	2/21/2023	15776.62876	15609.8314	60	Marcellus
12	2/21/2023	15574.0719	15407.2745	60	Marcellus
13	2/21/2023	15371.51503	15204.7176	60	Marcellus
14	2/21/2023	15168.95817	15002.1608	60	Marcellus
15	2/22/2023	14966.40131	14799.6039	60	Marcellus
16	2/22/2023	14763.84444	14597.0471	60	Marcellus
17	2/22/2023	14561.28758	14394.4902	60	Marcellus
18	2/22/2023	14358.73072	14191.9333	60	Marcellus
19	2/22/2023	14156.17386	13989.3765	60	Marcellus
20	2/22/2023	13953.61699	13786.8196	60	Marcellus
21	2/23/2023	13751.06013	13584.2627	60	Marcellus
22	2/23/2023	13548.50327	13381.7059	60	Marcellus
23	2/23/2023	13345.94641	13179.149	60	Marcellus
24	2/23/2023	13143.38954	12976.5922	60	Marcellus
25	2/23/2023	12940.83268	12774.0353	60	Marcellus
26	2/23/2023	12738.27582	12571.4784	60	Marcellus
27	2/24/2023	12535.71895	12368.9216	60	Marcellus
28	2/24/2023	12333.16209	12166.3647	60	Marcellus
29	2/24/2023	12130.60523	11963.8078	60	Marcellus
30	2/24/2023	11928.04837	11761.251	60	Marcellus
31	2/24/2023	11725.4915	11558.6941	60	Marcellus
32	2/25/2023	11522.93464	11356.1373	60	Marcellus
33	2/25/2023	11320.37778	11153.5804	60	Marcellus
34	2/25/2023	11117.82092	10951.0235	60	Marcellus
35	2/25/2023	10915.26405	10748.4667	60	Marcellus
36	2/25/2023	10712.70719	10545.9098	60	Marcellus
37	2/25/2023	10510.15033	10343.3529	60	Marcellus
38	2/25/2023	10307.59346	10140.7961	60	Marcellus
39	2/26/2023	10105.0366	9938.23922	60	Marcellus
40	2/26/2023	9902.479739	9735.68235	60	Marcellus
41	2/26/2023	9699.922876	9533.12549	60	Marcellus
42	2/26/2023	9497.366013	9330.56863	60	Marcellus
43	2/26/2023	9294.80915	9128.01176	60	Marcellus
44	2/26/2023	9092.252288	8925.4549	60	Marcellus
45	2/27/2023	8889.695425	8722.89804	60	Marcellus
46	2/27/2023	8687.138562	8520.34118	60	Marcellus
47	2/27/2023	8484.581699	8317.78431	60	Marcellus
48	2/27/2023	8282.024837	8115.22745	60	Marcellus
49	2/27/2023	8079.467974	7912.67059	60	Marcellus
50	2/27/2023	7876.911111	7710.11373	60	Marcellus
51	2/28/2023	7674.354248	7507.55686	60	Marcellus
52	2/28/2023	7471.797386	7305	60	Marcellus

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EXHIBIT 2

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	2/19/2023	70.2	7879	8412	4010	173470	200744	N/A
2	2/19/2023	85.53	8476	6592	4530	418100	302958	N/A
3	2/19/2023	90.87	8508	3529	4304	409130	302939	N/A
4	2/20/2023	87.40421	8506.513	3827.7	4417.56	411030	305666	N/A
5	2/20/2023	89.06	8560	4583	3944	412310	311728	N/A
6	2/20/2023	91.13	8771	5740	4006	407800	312813	N/A
7	2/20/2023	87.7	8645	5969	4015	411020	291109	N/A
8	2/20/2023	88.94	8556	5958	3876	409360	310942	N/A
9	2/20/2023	82.86	8427	4105	3647	408610	368690	N/A
10	2/21/2023	78.24	8631	3938	3654	416490	298735	N/A
11	2/21/2023	83.1	8319	6071	4064	409810	351350	N/A
12	2/21/2023	93.36	8548	5603	4139	412040	285978	N/A
13	2/21/2023	94.47	8413	5520	3650	400620	291193	N/A
14	2/21/2023	94.04	8511	5398	3920	405420	350453	N/A
15	2/22/2023	91.97	8414	3575	3646	411580	296010	N/A
16	2/22/2023	94.56	8561	5611	4136	410540	297998	N/A
17	2/22/2023	96.08	8666	5746	4092	408350	290365	N/A
18	2/22/2023	93.31	8705	5903	4082	403740	291432	N/A
19	2/22/2023	95.4707	8662.491	5683.86	4264.218	407380	294816	N/A
20	2/22/2023	93.5	8474	4990	3940	404670	290107	N/A
21	2/23/2023	93.19	8559	4837	4135	398640	286829	N/A
22	2/23/2023	97.43	8600	5663	3966	418860	312329	N/A
23	2/23/2023	97.75	8534	5480	3963	409480	296029	N/A
24	2/23/2023	97.49	8341	5153	4054	386020	276797	N/A
25	2/23/2023	96.58	8331	5224	4144	415010	311071	N/A
26	2/23/2023	95.25	8311	4754	4116	402110	285192	N/A
27	2/24/2023	97.34	8231	5012	4144	406200	288106	N/A
28	2/24/2023	93.62	8204	4003	4229	417500	297193	N/A
29	2/24/2023	96.23	8444	4322	3692	406910	291752	N/A
30	2/24/2023	94.52	8242	5756	3783	414580	295624	N/A
31	2/24/2023	96.63	8413	5921	3714	416140	309994	N/A
32	2/25/2023	96.89	8533	6048	4057	404270	294597	N/A
33	2/25/2023	96.64	8419	6055	3569	409150	289443	N/A
34	2/25/2023	97.7	8558	6249	4144	408140	291420	N/A
35	2/25/2023	97	8305	6174	5724	401040	292367	N/A
36	2/25/2023	98.19	8166	6354	4175	419650	292131	N/A
37	2/25/2023	98.7	8199	6681	3753	411860	291757	N/A
38	2/25/2023	96.51	8443	6969	3870	405620	294770	N/A
39	2/26/2023	97.41	8421	6939	4196	407060	289401	N/A
40	2/26/2023	97.44	8304	5941	4098	406300	286588	N/A
41	2/26/2023	98.87	8346	6038	3865	411300	292593	N/A
42	2/26/2023	99.16	8211	5797	4131	410130	296341	N/A
43	2/26/2023	98.83	8037	6112	3637	412170	294732	N/A
44	2/26/2023	98.36	7897	6033	3852	409790	294017	N/A
45	2/27/2023	98.68	7983	5909	3623	412360	293385	N/A
46	2/27/2023	98.33	7753	5724	4001	407150	290892	N/A
47	2/27/2023	99.23	7739	6102	3852	416260	298054	N/A
48	2/27/2023	99.19	7673	6179	3723	415720	289113	N/A
49	2/27/2023	97.29	7486	6054	3613	402720	283880	N/A
50	2/27/2023	98.01	7513	6216	3212	414680	292089	N/A
51	2/28/2023	99.06	7491	5086	3366	418800	289953	N/A
52	2/28/2023	98.81	7319	6736	3392	414070	285723	N/A
	AVERAGE	94.2	8,293	5,621	3,964	21,061,160	15,420,188	0

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EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD) From Surface	BOTTOM DEPTH (TVD) From Surface	TOP DEPTH (MD) From Surface	BOTTOM DEPTH (MD) From Surface
Shaly Siltstone, tr LS	90	274	90	274
Sandy Siltstone, Coal	274	334	274	334
Silty Sandstone	334	424	334	424
Shaly Siltstone, occ LS	424	634	424	634
Sandy Siltstone, occ LS	634	964	634	964
Shaly Siltstone, occ SS	964	1,024	964	1,024
Shaly Siltstone	1,024	1,434	1,024	1,434
Sandy Siltstone, occ Shale	1,434	1,524	1,434	1,524
Silty Sandstone, tr coal	1,524	1,614	1,524	1,614
Silty Sandstone, coal, tr shale	1,614	1,734	1,614	1,734
Silty Sandstone, occ shale	1,734	1,884	1,734	1,884
Shaly Sandstone, coal, occ slst	1,884	2,124	1,884	2,124
Silty Sandstone, coal, occ Shale	2,124	2,080	2,124	2,084
Big Lime	2,106	2,787	2,084	2,793
Fifty Foot Sandstone	2,787	2,998	2,767	3,005
Gordon	2,998	3,215	2,979	3,222
Fifth Sandstone	3,215	3,462	3,196	3,469
Bayard	3,462	3,912	3,443	3,918
Speechley	3,912	4,147	3,892	4,154
Balltown	4,147	4,548	4,128	4,558
Bradford	4,548	5,115	4,532	5,134
Benson	5,115	5,559	5,108	5,586
Alexander	5,559	6,692	5,560	6,793
Sycamore	6,549	6,666	6,613	6,767
Middlesex	6,666	6,767	6,767	6,956
Burkett	6,767	6,802	6,956	7,043
Tully	6,802	6,865	7,043	7,257
Marcellus	6,865	NA	7,257	NA

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LATITUDE 39°32'30"

9140'

LATITUDE 39°35'00"

705' TO BOTTOM HOLE

Antero Resources Corporation Well No. Crystal Unit 1H

AS DRILLED DATA: WELL 1H TOP HOLE INFORMATION: N: 377,159ft E: 1,638,283ft ... BOTTOM HOLE INFORMATION: N: 387,373ft E: 1,635,110ft ... WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE.

(NAD) 83 (UTM) ZONE 17 COORDS: WELL 1H TOP HOLE INFORMATION: N: 4,375,452m E: 518,716m ... BOTTOM HOLE INFORMATION: N: 4,378,547m E: 517,698m

(NAD) 27 (UTM) ZONE 17 COORDS: WELL 1H TOP HOLE INFORMATION: N: 14,354,412ft E: 1,701,773ft ... POINT OF ENTRY INFORMATION: N: 14,354,616ft E: 1,701,829ft ... BOTTOM HOLE INFORMATION: N: 14,364,568ft E: 1,698,432ft

NOTE: 1 WATER WELL WAS LOCATED WITHIN 2000' OF THE CENTER OF PAD

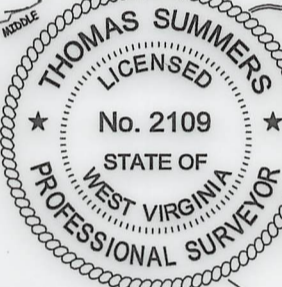
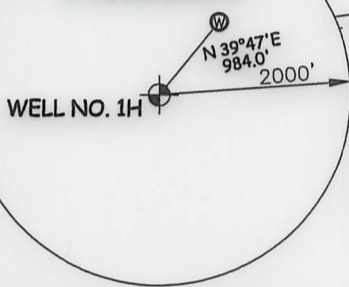


Table of Mineral Ownership listing names (e.g., Robert Clark, Clair Dawson) and well numbers (e.g., 07-16, 08-01) across various districts like Ellsworth and Green.

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.

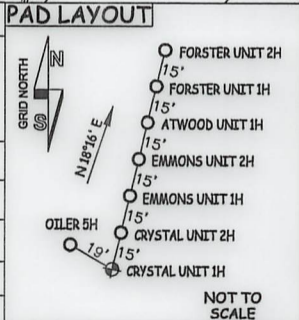


STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

WILLOW LAND SURVEYING PLLC 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

JOB # 20-014WA DRAWING # CRYSTAL1HAD SCALE 1" = 2000' MINIMUM DEGREE OF ACCURACY SUBMETER PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

LEGEND: Surface Owner Boundary Lines +/-, Interior Surface Tracts +/-, Proposed Well Path, As Drilled Well Path. Includes signature of Thomas Summers.



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.

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

DATE 05/11/23 OPERATOR'S WELL# CRYSTAL UNIT #1H

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___ 47 - 095 - 02799 (IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X STATE COUNTY PERMIT LOCATION: ELEVATION 1,223' -AS BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK QUADRANGLE PORTER FALLS 7.5' DISTRICT ELLSWORTH COUNTY TYLER SURFACE OWNER ANTERO MIDSTREAM LLC ACREAGE 50 ACRES +/-

OIL & GAS ROYALTY OWNER ELAINE L. OILER; JON MICHAEL DUMARS ET UX; ELSIE M. SNIVELY; LEASE ACREAGE 50 AC +/-; 47.5 AC +/-; 53.75 AC +/-; ROSALIE B. HENRY; WILLIAM EDWARD MIDCAP ET UX; MACK PERCY GAS WELL, LLC; DANNY M. MOORE; 60 AC +/-; 10 AC +/-; 163.13 AC +/-; 1.67 AC +/-; BRC APPALACHIAN MINERALS I LLC; PAUL R. KNIGHT ET UX; KAREN SUE CLARK; BESSIE L. MARTIN; 96.38 AC +/-; 33 AC +/-; 48.75 AC +/-; 28.46 AC +/-; WENDI M. MANION; ROBERT E. CLARK ET AL 1 AC +/-; 53.25 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 6,901' TVD 17,806' MD WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT KEVIN ELLIS ADDRESS 1615 WYNKOOP ST. ADDRESS 535 WHITE OAKS BLVD BRIDGEPORT, WV 26330

COUNTY NAME

PERMIT

4,821'

9,829'

1H BOTTOM HOLE

LONGITUDE 80°47'30"

LONGITUDE 80°45'00"

09/22/2023

LATITUDE 39°32'30"

9140'

LATITUDE 39°35'00"

705' TO BOTTOM HOLE

Antero Resources Corporation Well No. Crystal Unit 1H

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(NAD) 27 (UTM) ZONE 17 COORDS: WELL 1H TOP HOLE INFORMATION: N: 14,354,412ft E: 1,701,773ft ...

Table with 2 columns: MINERAL OWNERSHIP and Ellsworth District - Tyler County. Lists various owners and their well numbers (e.g., 07-16 John Bennett, 08-01 Karen Clark).

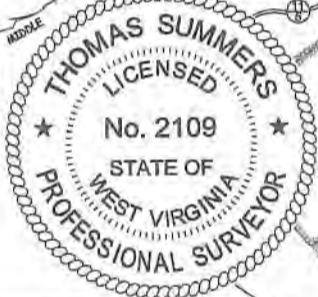
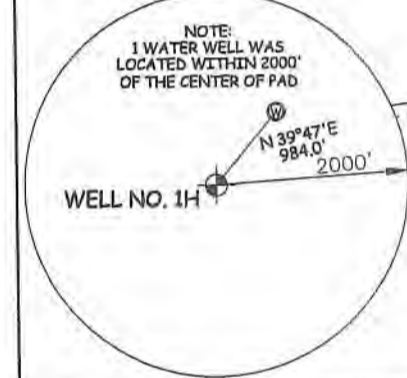
WV NORTH ZONE GRID NORTH

4,821'

9,829'

LONGITUDE 80°45'00"

LONGITUDE 80°47'30"



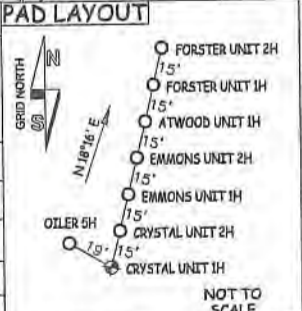
I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PERSCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



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

JOB # 20-014WA DRAWING # CRYSTAL1HAD SCALE 1" = 2000' MINIMUM DEGREE OF ACCURACY SUBMETER ...

LEGEND: Surface Owner Boundary Lines +/-, Interior Surface Tracts +/-, Proposed Well Path, As Drilled Well Path. THOMAS SUMMERS P.S. 2109 DATE 05/11/23 OPERATOR'S WELL# CRYSTAL UNIT #1H



NOTE: 1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER ... 5. WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.

WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL 47 095 02799 (IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X STATE COUNTY PERMIT LOCATION: ELEVATION 1,223' -AS BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK QUADRANGLE PORTER FALLS 7.5 DISTRICT ELLSWORTH COUNTY TYLER SURFACE OWNER ANTERO MIDSTREAM LLC ACREAGE 50 ACRES +/-

OIL & GAS ROYALTY OWNER ELAINE L. OILER; JON MICHAEL DUMARS ET UX; ELSIE M. SNIVELY; LEASE ACREAGE 50 AC +/- 47.0 AC +/- 095.0 AC +/- 02799.0 AC +/- ROSALIE B. HENRY; WILLIAM EDWARD MIDCAP ET UX; MACK PERCY GAS WELL, LLC; DANNY M. MOORE: 60 AC +/-; 10 AC +/-; 163.13 AC +/-; 1.67 AC +/-; BRC APPALACHIAN MINERALS I LLC; PAUL R. KNIGHT ET UX; KAREN SUE CLARK; BESSIE L. MARTIN: 96.38 AC +/-; 33 AC +/-; 48.75 AC +/-; 28.46 AC +/-; WENDI M. MANION; ROBERT E. CLARK ET AL: 1 AC +/-; 53.25 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 6,901' TVD 17,806' MD WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT KEVIN ELLIS ADDRESS 1615 WYNKOOP ST. ADDRESS 535 WHITE OAKS BLVD BRIDGEPORT, WV 26330

COUNTY NAME PERMIT

Handwritten signature/initials.

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	2/19/2023
Job End Date:	2/28/2023
State:	West Virginia
County:	Tyler
API Number:	47-095-02799-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Beech Run Crystal Unit 1H
Latitude:	39.52843000
Longitude:	-80.78240000
Datum:	WGS84
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,920
Total Base Water Volume (gal):	16,102,231
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	86.49351	Density = 8.50
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.13766	

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OPTIFLO-II DELAYED RELEASE BREAKER	Halliburton	Breaker					
				Listed Below			
HAI-501	Halliburton	Acid Corrosion Inhibitor					
				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			
Sand-Common White-100 Mesh, SSA-2	Halliburton	Proppant					
				Listed Below			
MC B-8614A	MultiChem	Biocide					
				Listed Below			
Chemstream StimSTREAM FR 2800	Chemstream, Inc.	Friction Reducer					
			RECEIVED Office of Oil and Gas JUN 23 2023 WV Department of Environmental Protection	Listed Below			
HYDROCHLORI C ACID, 22 BAUME	Halliburton	Solvent					
				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	13.30949	
			Hydrochloric acid	7647-01-0	30.00000	0.03878	

		Distillates, (petroleum), hydrotreated light	64742-47-8	25.00000	0.01323
		Guar gum	9000-30-0	100.00000	0.00600
		Alcohols, C11-14-iso, C-13-rich, ethoxylated	78330-21-9	5.00000	0.00265
		Glutaraldehyde	111-30-8	30.00000	0.00252
		Alkyl (C12-16) dimethylbenzyl ammonium chloride	68424-85-1	5.00000	0.00042
		Methanol	67-56-1	100.00000	0.00024
		Ammonium persulfate	7727-54-0	100.00000	0.00018
		Ethanol	64-17-5	1.00000	0.00008
		Mixture of dimer and trimer fatty acids of indefinite composition derived from tall oil	61790-12-3	30.00000	0.00007
		Modified thiourea polymer	Proprietary	30.00000	0.00007
		Oxylated phenolic resin	Proprietary	30.00000	0.00005
		Propargyl alcohol	107-19-7	5.00000	0.00001
		Ethoxylated alcohols	Proprietary	5.00000	0.00001
		Hexadecene	629-73-2	5.00000	0.00001
		C.I. pigment Orange 5	3468-63-1	1.00000	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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