

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

API 47 - 095 - 02812 County Tyler District Meade
Quad TH: Bens Run BH: Middlebourne Pad Name Wrigley Field/Pool Name -----
Farm name Shirley J. Wells & Suise Cunningham Well Number Little 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 4363519.900m Easting 499400.084m
Landing Point of Curve Northing 4363147.84m Easting 500099.6m
Bottom Hole Northing 4359940.009m Easting 501253.957m

Elevation (ft) 937' 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 8/30/2022 Date drilling commenced 12/12/2022 Date drilling ceased 2/5/2023
Date completion activities began 4/5/2022 Date completion activities ceased 5/28/2023
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

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Office of Oil and Gas
AUG 21 2023

Freshwater depth(s) ft 397' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1436, 1847' Void(s) encountered (Y/N) depths No
Coal depth(s) ft N/A Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by:

APPROVED
[Signature]
02/09/2024
12-15-23

API 47-095 - 02812 Farm name Shirley J. Wells & Suisse Cunningham Well number Little 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	28"	20"	130'	New	91.59#, J-55	N/A	Y
Surface	17-1/2"	13-3/8"	624'	New	54.5#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	3457'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	18239'	New	23#, P-110-ICY	N/A	Y
Tubing		2-3/8"	6604'		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	202 sx	15.6	1.18	238	0'	8 Hrs.
Surface	Class A	555 sx	15.8	1.16	644	0'	8 Hrs.
Coal							
Intermediate 1	Class A	1180 sx	15.8	1.16	1369	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	2765 sx (Lead)	15.2	1.28 (Lead)	3539	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 18239' MD, 6192' TVD (BHL), 6192' (Deepest Point Drilled) Loggers TD (ft) 18239' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6007'

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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 Office of Oil and Gas
 AUG 21 2023

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____
 WV Department of Environmental Protection

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED N/A

02/09/2024

API 47-095-02812 Farm name Shirley J. Wells & Suise Cunningham Well number Little Unit 2H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus</u>	<u>6061' (TOP)</u> TVD	<u>6734' (TOP)</u> MD
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump
SHUT-IN PRESSURE Surface 1876 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 12134 mcfpd Oil 202 bpd NGL --- bpd Water 1079 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 ₂ S, ETC)
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***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

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AUG 21 2023

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

WV Department of
Environmental Protection

Please insert additional pages as applicable.

Completed by Carly Marvel Telephone 303-357-7373
Signature Carly Marvel Title Permitting Agent Date 8/1/2023

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

02/09/2024
[Signature]

Antero Resources
Well No. Little 2H
As-Drilled

Antero Resources Corporation



As-Drilled Well No. Little Unit 2H

Little Unit 2H

Capped Rebar

2" Pipe

47-095-0617

47-095-0489

47-095-02073

Approx. S 18°33' E

BTM Hole 7.5' Spot

500' Buffer

Proposed As-Drilled

Top Hole 7.5' Spot

Little Unit 2H Bottom Hole

7,709' to Bottom Hole

2,016' to Top Hole
TOP HOLE LATITUDE 39 - 27 - 30
BTM HOLE LATITUDE 39 - 25 - 00

Notes
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements. Well No. Little Unit 2H Top Hole coordinates are N: 339,065.03' Latitude: 39°25'16.06" E: 1,574,243.38' Longitude: 81°00'25.70" Bottom Hole coordinates are N: 327,215.86' Latitude: 39°23'19.93" E: 1,580,130.76' Longitude: 80°59'08.19" UTM Zone 17, NAD 1983
 Top Hole Coordinates Bottom Hole Coordinates
 N: 4,363,519.900m N: 4,359,940.009m
 E: 499,400.084m E: 501,253.957m
 Plat orientation and corner and well references are based upon the grid north meridian. Well location references are based upon the magnetic meridian.

TOP HOLE LONGITUDE 81 - 00 - 00
 BTM HOLE LONGITUDE 80 - 57 - 30

10,125' to Bottom Hole
 13,551' to Top Hole

Top Hole Coordinates, As-drilled data, and information was provided by Antero Resources Corporation. Allegheny 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.

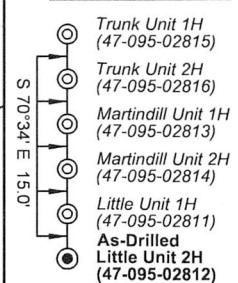
I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the rules issued and prescribed by the Department of Environmental Protection.

Bradley D. Miller, P.S. 2167

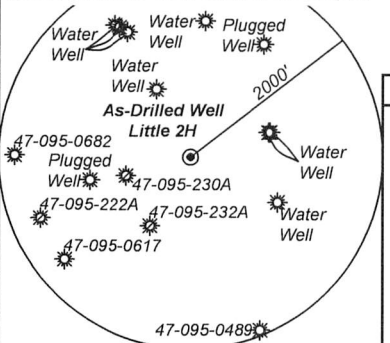


Little Unit 2H As-Drilled POE Coordinates
 West Virginia Coordinate System of 1927, North Zone
 N: 338,084.05'
 E: 1,576,483.05'
 Latitude: 39°25'06.74"
 Longitude: 80°59'56.95"
 UTM Zone 17, NAD 1983
 N: 4,363,232.446m
 E: 500,087.389m

Wellhead Layout (NTS)



Note: 8 water wells 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.



	Bearing	Dist.
L1	S 78°02' E	2,465.6'
L2	S 05°16' W	1,452.2'
L3	N 19°16' W	1,795.6'
L4	N 56°28' E	1,732.9'

- Legend**
- As-Drilled gas well
 - ⊗ Monument, as noted
 - ☀ Existing Well, as noted
 - ☀ Digitized Well, as noted
 - Creek or Drain
 - Road
 - Surface boundary (approx.)
 - Interior surface tracts (approx.)
 - County Line

FILE NO: 125-54-M-22
 DRAWING NO: Little Unit 2H As-Drilled
 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: August 17 2023
 OPERATOR'S WELL NO. Little Unit 2H
 API WELL NO
 47 - 095 - 02812
 STATE COUNTY PERMIT

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

LOCATION: ELEVATION: As-Built: 937' WATERSHED: Outlet Middle Island Creek QUADRANGLE: TH:Bens Run BH:Middlebourne
 DISTRICT: Meade COUNTY: Tyler
 SURFACE OWNER: Shirley J. Wells & Suise Cunningham Scott L. & Bernadine Jackson; John E. Grimes, Jr., et ux; Diane Whitehill; Steven L. & Jeral A. McGowan; David C. Henderson; Antero Minerals, LLC; Ronald Grimes, et ux; Shirley Smith; Thereasa L. Wilson; Vickie Gorrell, et al; Shirley Ann Smith; Greenbrier Royalty Fund II, LLC; Mary C. Robinson Living Trust; Harry E. West, Jr. LEASE NO: ACREAGE: 53.85 8.47; 228.798; 2.821; 50; 26.38; 42.81; 61.3875; 71.18
 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: 6,192' TVD 18,239' MD

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Kevin Ellis
 ADDRESS: 1615 Wynkoop Street ADDRESS: 535 White Oaks Blvd.
 Denver, CO 80202 Bridgeport, WV 26330



ID	TM/Par	Owner	Bk/Pg	Acres
1	7-2	Shirley J. Wells & Susie Cunningham	W41/317	53.85
2	7-3	Harry E., Jr. & Noreen M. West	328/530	88.00
3	7-8	John Wells	428/412	52.39
4	7-4	Marcia A. Hill	506/479	74.50
5	7-23	David Henderson & Sharley Shortridge	W47/263	16.07
6	7-9	Russell G. & Ruth M. Smith Family Trust	541/608	66.85
7	7-9.1	Russell E. & Janice Smith	332/234	1.65
8	7-13	Russell E. & Janice Smith	328/867	6.00
9	7-13.1	Russell E. & Janice Smith	328/867	2.60
10	7-19	Darlene Henderson	W47/263	122.83
11	7-24	Ronald Wayne & Frances A. Grimes	335/304	50.00
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13	7-24.2	Lloyd C. & Charlene R. Adams	216/258	0.82
14	7-15	Elizabeth Gorrell	321/360	242.50
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Submeter
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OIL AND GAS DIVISION



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Denver, CO 80202 Bridgeport, WV 26330

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2,016' to Top Hole
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Well No. Little 2H
As-Drilled
Antero Resources Corporation



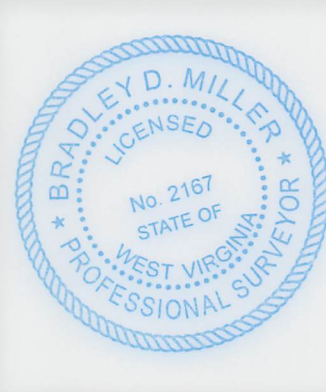
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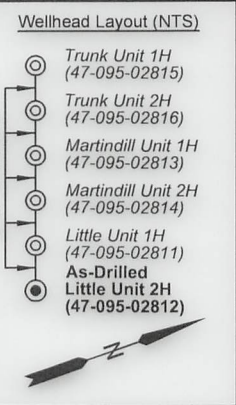
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I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the rules issued and prescribed by the Department of Environmental Protection.

Bradley D. Miller
Bradley D. Miller, P.S. 2167

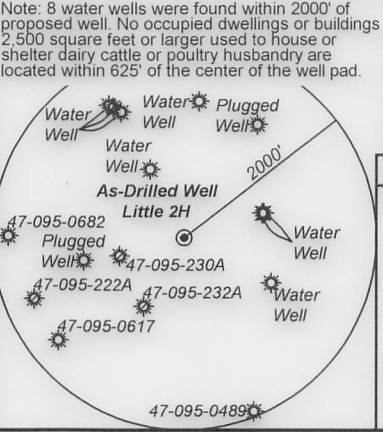


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02/09/2024

API 47-095-02812 Farm Name Shirley J. Wells & Suise Cunningham Well Number Little Unit 2H

Exhibit 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	4/5/2023	18121.3	18077.3	60	Marcellus
2	4/6/2023	18039.70089	17873.7054	60	Marcellus
3	4/6/2023	17838.10625	17672.1107	60	Marcellus
4	4/6/2023	17636.51161	17470.5161	60	Marcellus
5	4/6/2023	17434.91696	17268.9214	60	Marcellus
6	4/6/2023	17233.32232	17067.3268	60	Marcellus
7	4/7/2023	17031.72768	16865.7321	60	Marcellus
8	4/7/2023	16830.13304	16664.1375	60	Marcellus
9	4/7/2023	16628.53839	16462.5429	60	Marcellus
10	4/7/2023	16426.94375	16260.9482	60	Marcellus
11	4/7/2023	16225.34911	16059.3536	60	Marcellus
12	4/8/2023	16023.75446	15857.7589	60	Marcellus
13	4/8/2023	15822.15982	15656.1643	60	Marcellus
14	4/8/2023	15620.56518	15454.5696	60	Marcellus
15	4/8/2023	15418.97054	15252.975	60	Marcellus
16	4/8/2023	15217.37589	15051.3804	60	Marcellus
17	4/8/2023	15015.78125	14849.7857	60	Marcellus
18	4/8/2023	14814.18661	14648.1911	60	Marcellus
19	4/9/2023	14612.59196	14446.5964	60	Marcellus
20	4/9/2023	14410.99732	14245.0018	60	Marcellus
21	4/9/2023	14209.40268	14043.4071	60	Marcellus
22	4/9/2023	14007.80804	13841.8125	60	Marcellus
23	4/9/2023	13806.21339	13640.2179	60	Marcellus
24	4/9/2023	13604.61875	13438.6232	60	Marcellus
25	4/10/2023	13403.02411	13237.0286	60	Marcellus
26	4/10/2023	13201.42946	13035.4339	60	Marcellus
27	4/10/2023	12999.83482	12833.8393	60	Marcellus
28	4/10/2023	12798.24018	12632.2446	60	Marcellus
29	4/10/2023	12596.64554	12430.65	60	Marcellus
30	4/11/2023	12395.05089	12229.0554	60	Marcellus
31	4/11/2023	12193.45625	12027.4607	60	Marcellus
32	4/11/2023	11991.86161	11825.8661	60	Marcellus
33	4/11/2023	11790.26696	11624.2714	60	Marcellus
34	4/11/2023	11588.67232	11422.6768	60	Marcellus
35	4/12/2023	11387.07768	11221.0821	60	Marcellus
36	4/12/2023	11185.48304	11019.4875	60	Marcellus
37	4/12/2023	10983.88839	10817.8929	60	Marcellus
38	4/12/2023	10782.29375	10616.2982	60	Marcellus
39	4/12/2023	10580.69911	10414.7036	60	Marcellus
40	4/12/2023	10379.10446	10213.1089	60	Marcellus
41	4/13/2023	10177.50982	10011.5143	60	Marcellus
42	4/13/2023	9975.915179	9809.91964	60	Marcellus
43	4/13/2023	9774.320536	9608.325	60	Marcellus
44	4/13/2023	9572.725893	9406.73036	60	Marcellus
45	4/13/2023	9371.13125	9205.13571	60	Marcellus
46	4/13/2023	9169.536607	9003.54107	60	Marcellus
47	4/13/2023	8967.941964	8801.94643	60	Marcellus
48	4/14/2023	8766.347321	8600.35179	60	Marcellus
49	4/14/2023	8564.752679	8398.75714	60	Marcellus
50	4/14/2023	8363.158036	8197.1625	60	Marcellus
51	4/14/2023	8161.563393	7995.56786	60	Marcellus
52	4/14/2023	7959.96875	7793.97321	60	Marcellus
53	4/15/2023	7758.374107	7592.37857	60	Marcellus
54	4/15/2023	7556.779464	7390.78393	60	Marcellus
55	4/15/2023	7355.184821	7189.18929	60	Marcellus
56	4/15/2023	7153.590179	6987.59464	60	Marcellus
57	4/15/2023	6951.995536	6786	60	Marcellus

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API 47-095-02812 Farm Name Shirley J. Wells & Sulse Cunningham Well Number Little 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	4/5/2023	90.1	9415	8508	3730	171180	5779.78571	N/A
2	4/6/2023	94.3	9836	5378	4130	417970	8004.74738	N/A
3	4/6/2023	97.7	10020.42	5589.73	3828.581	400750	8010.62619	N/A
4	4/6/2023	97.4	10083.49	3779.7	3738	399920	6893.27286	N/A
5	4/6/2023	97.2	10028.9	7036.59	3320.232	411330	7178.42333	N/A
6	4/6/2023	96.5	10100	6107	3749	405540	6983.23571	N/A
7	4/7/2023	97.4	9994	6212	3932	407940	7253.13167	N/A
8	4/7/2023	96.9	9729	5526	3796	415960	7166.9819	N/A
9	4/7/2023	97.7	9985	5687	3353	414300	7019.7569	N/A
10	4/7/2023	95.6	9592	5721	3994	414210	7101.06643	N/A
11	4/7/2023	97.1	10019	6743	4097	411670	7305.62714	N/A
12	4/8/2023	98.1	9947	5610	3998	408960	6869.8931	N/A
13	4/8/2023	98.2	10034	5298	3615	406590	6865.83524	N/A
14	4/8/2023	95.5	9640	3988	3810	402810	6910.50857	N/A
15	4/8/2023	96.8	9901	5348	3819	411660	6876.16	N/A
16	4/8/2023	96.2	9704	4917	3661	413000	7025.54167	N/A
17	4/8/2023	97.8	9749	4862	3490	398250	6882.31452	N/A
18	4/8/2023	97.1	9674	5065	3907	412090	6875.55214	N/A
19	4/9/2023	97.2	9602	6061	4150	398630	6856.31238	N/A
20	4/9/2023	97.2	9841	5442	3782	398660	6867.36143	N/A
21	4/9/2023	96.9	9450	4585	4437	416480	6861	N/A
22	4/9/2023	96.8	9433	5311	4309	412860	6910.57667	N/A
23	4/9/2023	96.3	9335	5156	4330	418950	6859.43595	N/A
24	4/9/2023	97.1	9212	5960	4411	410520	6862.85048	N/A
25	4/10/2023	97.3	9613	5577	3767	405800	6818.17167	N/A
26	4/10/2023	96.9	9397	5461	3845	413100	7012.28476	N/A
27	4/10/2023	90.4	8546	5377	3757	411480	6966.96	N/A
28	4/10/2023	97.4	8915	5205	3789	415080	6955.64786	N/A
29	4/10/2023	98.1	8748	5611	3632	412530	6919.65071	N/A
30	4/11/2023	97.2	8731	5760	4026	401640	6743.41048	N/A
31	4/11/2023	97.2	8491	5335	3880	413080	6947.94571	N/A
32	4/11/2023	97.0	8449	4789	4107	410830	6816.1319	N/A
33	4/11/2023	97.4	8592	5248	3966	411900	6937.18238	N/A
34	4/11/2023	95.7	8333	3476	3380	416970	6967.735	N/A
35	4/12/2023	98.8	8634	3516	3575	414040	6890.72167	N/A
36	4/12/2023	98.7	8798	5129	4006	412350	6963.44452	N/A
37	4/12/2023	98.6	9050	4436	3717	408779	6901.97452	N/A
38	4/12/2023	95.6	8825	4364	3632	411630	6802.41381	N/A
39	4/12/2023	96.8	8920	4056	3671	415120	6993.98619	N/A
40	4/12/2023	97.8	8710	5379	3643	412130	6960.69476	N/A
41	4/13/2023	95.5	8501	5278	3982	412580	7244.48476	N/A
42	4/13/2023	98.9	8769	5611	3601	406280	6802.56905	N/A
43	4/13/2023	97.3	8547	5464	3605	402930	6903.09429	N/A
44	4/13/2023	97.4	8386	3884	3620	395080	6844.14262	N/A
45	4/13/2023	96.8	8310	5081	3794	413270	6979.57286	N/A
46	4/13/2023	98.4	8395	5765	4003	407100	6800.0281	N/A
47	4/13/2023	98.8	8167	5113	3421	406630	6647.56214	N/A
48	4/14/2023	98.7	7839	3761	3761	411000	6669.8319	N/A
49	4/14/2023	97.8	7890	5326	3799	414310	6765.91286	N/A
50	4/14/2023	97.0	7826	3036	3739	409090	7146.22024	N/A
51	4/14/2023	98.2	7750	5683	3615	408280	7163.06643	N/A
52	4/14/2023	93.6	7445	5649	3556	418180	7118.16238	N/A
53	4/15/2023	94.0	7379	5139	3497	416540	7176.26476	N/A
54	4/15/2023	99.6	7595	4743	4017	415790	7346.46095	N/A
55	4/15/2023	97.6	7406	5313	3701	398300	7260.09524	N/A
56	4/15/2023	98.3	7409	5244	3688	414320	7344.00833	N/A
57	4/15/2023	98.1	7178	4920	3187	412910	7324.73167	N/A
	AVERAGE	97	8,945	5,221	3,796	23,129,279	398,355	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	120	220	120	220
Sandy Siltstone	220	420	220	420
Sandstone, tr Siltstone	420	720	420	720
Sandy Siltstone	570	770	570	770
Sandstone	720	770	720	770
Sandstone, com LS	770	820	770	820
Silty Sandstone	820	870	820	870
Sandy Siltstone	870	1,070	870	1,070
Sandstone, rr Siltstone	1,070	1,370	1,070	1,370
Silty Sandstone, tr imb pyr	1,370	1,420	1,370	1,420
Silty Sandstone, com coal	1,420	1,570	1,420	1,570
Sandstone	1,570	1,620	1,570	1,620
Silty Sandstone	1,620	1,670	1,620	1,670
Sandstone, tr Coal	1,670	1,720	1,670	1,720
Silty Sandstone	1,720	1,747	1,720	1,803
Big Lime	1,777	2,516	1,803	2,650
Fifty Foot Sandstone	2,516	2,602	2,620	2,744
Gordon	2,602	2,805	2,714	2,968
Fifth Sandstone	2,805	3,178	2,938	3,385
Bayard	3,178	3,761	3,355	4,024
Speechley	3,761	4,065	3,994	4,356
Balltown	4,065	4,388	4,326	4,702
Bradford	4,388	4,680	4,672	5,021
Benson	4,680	4,995	4,991	5,362
Alexander	4,995	5,988	5,332	6,551
Sycamore	5,862	5,958	6,367	6,521
Middlesex	5,958	6,039	6,521	6,682
Burkett	6,039	6,058	6,682	6,727
Tully	6,058	6,061	6,727	6,734
Marcellus	6,061	N/A	6,734	N/A

*Please note Antero determines formation tops based on mud logs that are only run on one well on a multi-well pad. The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/5/2023
Job End Date:	4/15/2023
State:	West Virginia
County:	Tyler
API Number:	47-095-02812-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Wrigley Little 2H
Latitude:	39.42112800
Longitude:	-80.00713900
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,190
Total Base Water Volume (gal):	17,408,567
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	86.72843	Density = 8.80
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.15203	

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MC B-8614A	MultiChem	Biocide					
				Listed Below			
HAI-501	Halliburton	Acid Corrosion Inhibitor					
				Listed Below			
Chemstream StimSTREAM FR 2800	Chemstream, Inc.	Friction Reducer					
				Listed Below			
OPTIFLO-II DELAYED RELEASE BREAKER	Halliburton	Breaker					
				Listed Below			
Excelerate LX-15	Halliburton	Friction Reducer					
				Listed Below			
Sand-Common White-100 Mesh, SSA-2	Halliburton	Proppant					
				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			
HYDROCHLORIC ACID, 22 BAUME	Halliburton	Solvent					
				Listed Below			

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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	13.09418	
			Hydrochloric acid	7647-01-0	30.00000	0.03766	
			Complex Amine Compound	Proprietary	60.00000	0.01851	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.00926	
			Guar gum	9000-30-0	100.00000	0.00477	
			Glutaraldehyde	111-30-8	30.00000	0.00239	
			Distillates, (petroleum), hydrotreated light	64742-47-8	25.00000	0.00197	
			Surfactant	Proprietary	5.00000	0.00154	
			Sorbitan, mono-9-octadecenoate, (Z)	1338-43-8	5.00000	0.00154	
			Alkyl (C12-16) dimethylbenzyl ammonium chloride	68424-85-1	5.00000	0.00040	
			Alcohols, C11-14-iso, C-13-rich, ethoxylated	78330-21-9	5.00000	0.00039	
			Ethoxylated alcohols	Proprietary	5.00000	0.00032	
			Organic chloride compound	Proprietary	1.00000	0.00031	
			Alkoxyated polyhydric alcohol	Proprietary	1.00000	0.00031	
			Methanol	67-56-1	100.00000	0.00024	
			Ammonium persulfate	7727-54-0	100.00000	0.00014	
			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	0.00004	
			Hexadecene	629-73-2	5.00000	0.00001	
			Propargyl alcohol	107-19-7	5.00000	0.00001	
			Sodium hydroxide	1310-73-2	0.01000	0.00000	

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			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 #2	Proprietary	0.01000	0.00000	
			Acrylamide	79-06-1	0.01000	0.00000	
			Formaldehyde	50-00-0	0.01000	0.00000	
			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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