

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

API 47 - 095 - 02599 County Tyler District Meade  
Quad Middlebourne 7.5' Pad Name Sine Field/Pool Name -----  
Farm name James Sine ET AL Well Number Garmin 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 4362856m Easting 503700m  
Landing Point of Curve Northing 4363102m Easting 504195m  
Bottom Hole Northing 4367651m Easting 502829m

Elevation (ft) 799' 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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FEB 17 2023  
WV Department of  
Environmental Protection

Date permit issued 3/27/2019 Date drilling commenced 1/22/2020 Date drilling ceased 5/17/2020  
Date completion activities began 9/6/2020 Date completion activities ceased 10/9/2020  
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

Freshwater depth(s) ft 42' Open mine(s) (Y/N) depths No  
Salt water depth(s) ft 1269, 1274' Void(s) encountered (Y/N) depths No  
Coal depth(s) ft 154, 278' Cavern(s) encountered (Y/N) depths No  
Is coal being mined in area (Y/N) No

Reviewed by:  
**APPROVED**  
*Steve McLean*  
**06/02/2023**  
*3/27/23*

API 47-095 - 02599 Farm name James Sine ET AL Well number Garmin 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"	110'	New	94#, H-40	N/A	Y
Surface	13-3/8"	13-3/8"	404'	New	54.5#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2742'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	22798'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6624'		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 <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	Class A	284 sx	15.6	1.20	341	0'	8 Hrs.
Surface	Class A	350 sx	15.8	1.17	410	0'	8 Hrs.
Coal							
Intermediate 1	Class A	938 sx	15.8	1.17	1097	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	4080 sx (Tail)	13.5 (Lead), 15.2(Tail)	1.17 (Tail)	4774	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 22798' MD, 6059' TVD (BHL), 6117' (Deepest Point Drilled) Loggers TD (ft) 22798' MD  
 Deepest formation penetrated Marcellus Plug back to (ft) N/A  
 Plug back procedure N/A

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Kick off depth (ft) 5649'

Check all wireline logs run  caliper  density  deviated/directional  induction  neutron  resistivity  gamma ray  temperature  sonic

WV Department of Environmental Protection

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

06/02/2023  
SM  
3/17/23



API 47- 095 - 02599 Farm name James Sine ET AL Well number Garmin Unit 2H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>			
		TVD		MD
<u>Marcellus</u>	<u>6053' (TOP)</u>		<u>6924' (TOP)</u>	
_____	_____		_____	
_____	_____		_____	
_____	_____		_____	

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 2101 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 6277 mcfpd Oil 373 bpd NGL --- bpd Water 450 bpd GAS MEASURED BY  Estimated  Orifice  Pilot

<u>LITHOLOGY/ FORMATION</u>	<u>TOP</u>		<u>BOTTOM</u>		<u>DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H<sub>2</sub>S, ETC)</u>
	<u>DEPTH IN FT NAME TVD</u>	<u>DEPTH IN FT TVD</u>	<u>DEPTH IN FT MD</u>	<u>DEPTH IN FT MD</u>	
<b>*PLEASE SEE ATTACHED EXHIBIT 3</b>					

					RECEIVED
					Office of Oil and Gas
					FEB 17 2023
					WV Department of Environmental Protection

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 KLX Energy Services  
Address 1415 Louisiana Street City Houston State TX Zip 77002

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

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

Please insert additional pages as applicable.

Completed by Carly Marvel Telephone 303-357-7373  
Signature Carly Marvel Title Permitting Agent Date 2/3/2023

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

06/02/2023  
3/27/23



LATITUDE 39°25'00"

11,449'

LATITUDE 39°30'00"

559' LONGITUDE 80°55'00"

15,171' TO BOTTOM HOLE

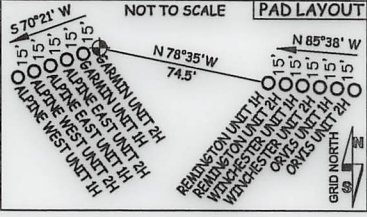
2H TOP HOLE

2,527' TO BOTTOM HOLE

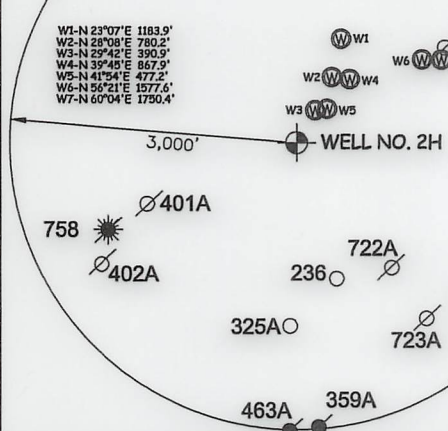
NOTE: NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.

AS DRILLED DATA: WELL 2H TOP HOLE INFORMATION: N: 336,649ft E: 1,588,317ft LAT: 39°24'54.48" LON: 80°57'25.89" BOTTOM HOLE INFORMATION: N: 352,432ft E: 1,585,722ft LAT: 39°27'30.05" LON: 80°58'02.22" 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 2H TOP HOLE INFORMATION: N: 4,362,856m E: 503,700m BOTTOM HOLE INFORMATION: N: 4,367,651m E: 502,829m



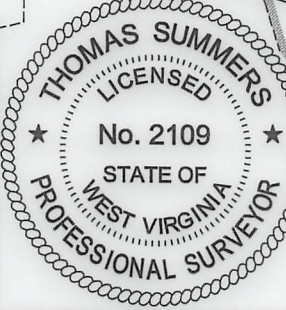
NOTE: 7 WATER WELLS WERE LOCATED WITHIN 2000' OF CENTER OF PAD



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 # 17-004WA, DRAWING # GARMIN2H830AD, SCALE 1" = 2000', 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

LEGEND: Surface Owner Boundary Lines +/-, Interior Surface Tracts +/-, Proposed Well Path, As Drilled Well Path. THOMAS SUMMERS P.S. 2109, DATE 01/19/21, OPERATOR'S WELL# GARMIN UNIT #2H

WELL 2H POINT OF ENTRY INFORMATION: N: 337,710ft E: 1,590,717ft LAT: 39°25'05.35" LON: 80°56'55.52" (NAD) 83 (UTM) ZONE 17 COORDS: N: 4,363,191m E: 504,426m

WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL 47 095 02599 (IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X STATE COUNTY PERMIT LOCATION: ELEVATION 799' - AS BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK QUADRANGLE MIDDLEBOURNE 7.5' DISTRICT MEADE COUNTY TYLER SURFACE OWNER JAMES SINE ET AL ACREAGE 32.395 ACRES +/- LEASE ACREAGE 54.74 AC+; 140 AC+; 16.96 AC+; OIL & GAS ROYALTY OWNER JAMES SINE ET UX; ROBERT S. CARSE ET UX; DAVID L. STEVENS ET UX; MAXINE GUMM; JAMES M. UTT; STEVEN L. TICE; DAVID L. STEVENS ET UX; ALLIANCE PETROLEUM CORP.; AMY B. PARIS; ERIC T. ANDERSON; CHARLOTTE M. ADAMS; JEFFEREY D. GORRELL; GOLDEN EAGLE RESOURCES, II LLC; EDWIN EARNEST WEBER JR. ET UX; JOSHUA BOTKINS 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 6,059' TVD 22,798' MD WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD DENVER, CO 80202 CHARLESTON, WV 25313

Antero Resources Corporation Well No. Garmin Unit 2H

A - SURFACE - RAYMOND L. MOORE D.B. 285 PG. 310 T.M. 08 PAR. 29.11.10 AC. ± A - LEASE - RAYMOND L. MOORE ET UX B - SURFACE - DESTRY B. NELSON ET AL D.B. 347 PG. 643 T.M. 08 PAR. 28.11.236 AC. ± B - LEASE - DAVID E. BOWYER C1, C2, C3 - SURFACE - DONALD R. ROBINSON ET AL D.B. 294 PG. 713 T.M. 08 PAR. 28.8.914 AC. ± C1 - LEASE - LILLIAN LEE EDDY C2 - LEASE - DONALD E. ROBINSON ET UX C3 - LEASE - EARL G. GLENDENNING

AMY B. PARIS LEASE T.M. 08 PAR. 15 72.9 AC. ±

ALLIANCE PETROLEUM CORP. LEASE JOHN STEVENS W.B. 15 PG. 452 T.M. 05 PAR. 28 5.38 AC. ± JOHN STEVENS LIFE W.B. 15 PG. 452 T.M. 05 PAR. 27 97.09 AC. ±

JAMES C. HICKMAN ET AL D.B. 210 PG. 310 T.M. 05 PAR. 29 26.52 AC. ±

DAVID I. STEVENS ET AL LEASE DAVID W. JUDGE D.B. 302 PG. 599 T.M. 08 PAR. 03 16.56 AC. ±

RODNEY L. HAYES ET AL D.B. 316 PG. 487 T.M. 08 PAR. 14 54.94 AC. ±

TSAR-WY LLC LEASE CHARLA M. WALLACE ET AL D.B. 343 PG. 658 T.M. 08 PAR. 24 100 AC. ±

WILLIAM S. DENSON ET AL D.B. 336 PG. 626 T.M. 08 PAR. 31 41 AC. ±

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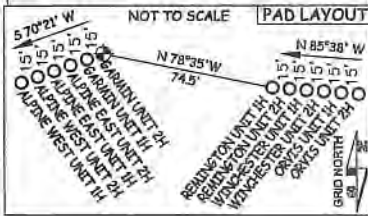
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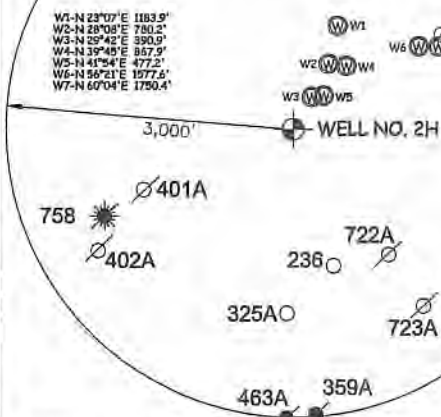
Antero Resources Corporation  
Well No. Garmin Unit 2H

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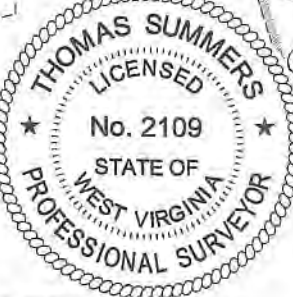


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STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

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



JOB # 17-004WA  
DRAWING # GARMIN2H30AD  
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

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N: 4,363,191m E: 504,426m

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

DATE 01/19/21  
OPERATOR'S WELL# GARMIN UNIT #2H

WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL 47 095 02599  
(IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X STATE COUNTY PERMIT  
LOCATION: ELEVATION 799' - AS BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK COUNTY TYLER  
QUADRANGLE MIDDLEBOURNE 7.5' DISTRICT MEADE COUNTY TYLER  
SURFACE OWNER JAMES SINE ET AL ACREAGE 32.395 ACRES +/-  
OIL & GAS ROYALTY OWNER JAMES SINE ET UX; ROBERT S. CARSE ET UX; DAVID L. STEVENS ET UX; LEASE ACREAGE 54.74 AC±; 140 AC±; 16.96 AC±;  
MAXINE GUMM; JAMES M. UTT; STEVEN L. TICE; DAVID L. STEVENS ET UX; ALLIANCE PETROLEUM CORP.; AMY B. PARIS; ERIC T. ANDERSON; 66 AC±; 204.88 AC±; 26.52 AC±; 97.08 AC±; 40 AC±; 98 AC±; 53.33 AC±;  
CHARLOTTE M. ADAMS; JEFFEREY D. GORRELL; GOLDEN EAGLE RESOURCES, II LLC; EDWIN EARNEST WEBER JR. ET UX; JOSHUA BOTKINS 165.25 AC±; 5.87 AC±; 5.132 AC±; 100.5 AC±; 96 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 6,059' TVD 22,798' MD  
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM  
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD  
FORM WW-6 DENVER, CO 80202 ADDRESS CHARLESTON, WV 25313

5/1/23



**Exhibit 1**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	9/6/2020	22678	22633	60	Marcellus
2	9/7/2020	22594.55128	22429.3077	60	Marcellus
3	9/7/2020	22393.85897	22228.6154	60	Marcellus
4	9/7/2020	22193.16667	22027.9231	60	Marcellus
5	9/8/2020	21992.47436	21827.2308	60	Marcellus
6	9/8/2020	21791.78205	21626.5385	60	Marcellus
7	9/8/2020	21591.08974	21425.8462	60	Marcellus
8	9/9/2020	21390.39744	21225.1538	60	Marcellus
9	9/9/2020	21189.70513	21024.4615	60	Marcellus
10	9/9/2020	20989.01282	20823.7692	60	Marcellus
11	9/10/2020	20788.32051	20623.0769	60	Marcellus
12	9/10/2020	20587.62821	20422.3846	60	Marcellus
13	9/10/2020	20386.9359	20221.6923	60	Marcellus
14	9/11/2020	20186.24359	20021	60	Marcellus
15	9/11/2020	19985.55128	19820.3077	60	Marcellus
16	9/11/2020	19784.85897	19619.6154	60	Marcellus
17	9/11/2020	19584.16667	19418.9231	60	Marcellus
18	9/12/2020	19383.47436	19218.2308	60	Marcellus
19	9/12/2020	19182.78205	19017.5385	60	Marcellus
20	9/12/2020	18982.08974	18816.8462	60	Marcellus
21	9/12/2020	18781.39744	18616.1538	60	Marcellus
22	9/13/2020	18580.70513	18415.4615	60	Marcellus
23	9/13/2020	18380.01282	18214.7692	60	Marcellus
24	9/13/2020	18179.32051	18014.0769	60	Marcellus
25	9/14/2020	17978.62821	17813.3846	60	Marcellus
26	9/14/2020	17777.9359	17612.6923	60	Marcellus
27	9/14/2020	17577.24359	17412	60	Marcellus
28	9/14/2020	17376.55128	17211.3077	60	Marcellus
29	9/15/2020	17175.85897	17010.6154	60	Marcellus
30	9/15/2020	16975.16667	16809.9231	60	Marcellus
31	9/15/2020	16774.47436	16609.2308	60	Marcellus
32	9/15/2020	16573.78205	16408.5385	60	Marcellus
33	9/16/2020	16373.08974	16207.8462	60	Marcellus
34	9/16/2020	16172.39744	16007.1538	60	Marcellus
35	9/16/2020	15971.70513	15806.4615	60	Marcellus
36	9/17/2020	15771.01282	15605.7692	60	Marcellus
37	9/17/2020	15570.32051	15405.0769	60	Marcellus
38	9/17/2020	15369.62821	15204.3846	60	Marcellus
39	9/18/2020	15168.9359	15003.6923	60	Marcellus
40	9/18/2020	14968.24359	14803	60	Marcellus
41	9/18/2020	14767.55128	14602.3077	60	Marcellus
42	9/19/2020	14566.85897	14401.6154	60	Marcellus
43	9/19/2020	14366.16667	14200.9231	60	Marcellus
44	9/19/2020	14165.47436	14000.2308	60	Marcellus
45	9/20/2020	13964.78205	13799.5385	60	Marcellus
46	9/20/2020	13764.08974	13598.8462	60	Marcellus
47	9/21/2020	13563.39744	13398.1538	60	Marcellus
48	9/21/2020	13362.70513	13197.4615	60	Marcellus
49	9/21/2020	13162.01282	12996.7692	60	Marcellus
50	9/22/2020	12961.32051	12796.0769	60	Marcellus
51	9/22/2020	12760.62821	12595.3846	60	Marcellus
52	9/22/2020	12559.9359	12394.6923	60	Marcellus
53	9/23/2020	12359.24359	12194	60	Marcellus
54	9/23/2020	12158.55128	11993.3077	60	Marcellus
55	9/24/2020	11957.85897	11792.6154	60	Marcellus
56	9/24/2020	11757.16667	11591.9231	60	Marcellus
57	9/24/2020	11556.47436	11391.2308	60	Marcellus
58	9/24/2020	11355.78205	11190.5385	60	Marcellus
59	9/25/2020	11155.08974	10989.8462	60	Marcellus
60	9/25/2020	10954.39744	10789.1538	60	Marcellus
61	9/25/2020	10753.70513	10588.4615	60	Marcellus
62	9/26/2020	10553.01282	10387.7692	60	Marcellus
63	9/26/2020	10352.32051	10187.0769	60	Marcellus
64	9/26/2020	10151.62821	9986.38462	60	Marcellus
65	9/26/2020	9950.935897	9785.69231	60	Marcellus
66	9/27/2020	9750.24359	9585	60	Marcellus
67	9/27/2020	9549.551282	9384.30769	60	Marcellus
68	9/27/2020	9348.858974	9183.61538	60	Marcellus
69	9/28/2020	9148.166667	8982.92308	60	Marcellus
70	9/28/2020	8947.474359	8782.23077	60	Marcellus
71	9/28/2020	8746.782051	8581.53846	60	Marcellus
72	9/29/2020	8546.089744	8380.84615	60	Marcellus
73	9/29/2020	8345.397436	8180.15385	60	Marcellus
74	9/29/2020	8144.705128	7979.46154	60	Marcellus
75	9/29/2020	7944.012821	7778.76923	60	Marcellus
76	9/30/2020	7743.320513	7578.07692	60	Marcellus
77	9/30/2020	7542.628205	7377.38462	60	Marcellus
78	9/30/2020	7341.935897	7176.69231	60	Marcellus
79	9/30/2020	7141.24359	6976	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 (bbbls)	Amount of Nitrogen/ other (units)
1	9/6/2020	82.55	9819	7176	3948.41	189770	5834.905	N/A
2	9/7/2020	91.22	9905	5311	3591.62	420580	8448	N/A
3	9/7/2020	92.41	9910	5411	3032.88	416290	8335.143	N/A
4	9/7/2020	83.1	10842	5089	5401.93	418790	10231.38	N/A
5	9/8/2020	86.78	9299	5536	3288.2	419360	8797.143	N/A
6	9/8/2020	87.78	9595	5524	3263.54	421336	8227	N/A
7	9/8/2020	93.83	9909	5095	3498.35	421834	8103.19	N/A
8	9/9/2020	83.75	9357	5200	3074.31	419370	7963.571	N/A
9	9/9/2020	86.1	9033	5560	3435.32	416957	8142.571	N/A
10	9/9/2020	97.46	10204	5582	3138.56	420790	9523.643	N/A
11	9/10/2020	96.98	10321	5210	3127.08	417950	7988.167	N/A
12	9/10/2020	93.19	10221	5222	3364.59	420043	7974.381	N/A
13	9/10/2020	89.99	9717	5328	3006.53	415162	9485.714	N/A
14	9/11/2020	92.38	10012	6122	3445.07	420590	8016.524	N/A
15	9/11/2020	93.95	9770	4092	3275.51	420002	7914.524	N/A
16	9/11/2020	94.77	9812	5378	3236.15	421914	8044.214	N/A
17	9/11/2020	92.55	9815	5777	3189.35	420277	7764	N/A
18	9/12/2020	96.67	10217	6232	3335.32	418100	7904.905	N/A
19	9/12/2020	93.08	9719	5790	3401.28	420103	7870.952	N/A
20	9/12/2020	96.18	10064	5350	3498.73	414020	7845.119	N/A
21	9/12/2020	96.92	9912	6103	3427.69	420710	8104.881	N/A
22	9/13/2020	95.86	9620	5516	3334.56	420750	7816.571	N/A
23	9/13/2020	95.03	9673	5361	3544.47	421258	8262.286	N/A
24	9/13/2020	87.88	9004	5903	3607.95	420885	7757.762	N/A
25	9/14/2020	97.39	10029	6056	3551.1	421480	8076.976	N/A
26	9/14/2020	96.17	9880	5607	3757.62	422454	7813.024	N/A
27	9/14/2020	96.54	9768	3902	3658.93	415531	7974.857	N/A
28	9/14/2020	93.44	9150	5940	3763.4	419550	7642.667	N/A
29	9/15/2020	92.87	8996	6000	3423.17	420500	7700.548	N/A
30	9/15/2020	96.03	9293	5616	3695.24	420420	7890.238	N/A
31	9/15/2020	97.55	8996	5804	3600.14	419940	7584.69	N/A
32	9/15/2020	94.8	9023	9052	3639.05	420860	7577.405	N/A
33	9/16/2020	89.49	9304	5985	3499.28	422423	8389.81	N/A
34	9/16/2020	96.69	9217	5273	3693.47	419900	7604.071	N/A
35	9/16/2020	94.83	9023	5484	3732.77	419340	7462.571	N/A
36	9/17/2020	94.73	9053	6586	3779.9	422464	7624.5	N/A
37	9/17/2020	96.35	9054	5517	3692.19	422618	7495.238	N/A
38	9/17/2020	94	9098	5544	3664.02	440340	7575.548	N/A
39	9/18/2020	97.17	9031	5858	3809.1	423803	7507.048	N/A
40	9/18/2020	89.24	8965	5611	4089.13	422210	7953.048	N/A
41	9/18/2020	94.14	8938	5309	3761.24	420033	7448.119	N/A
42	9/19/2020	96.2	9038	5391	3737.03	421467	7538.81	N/A
43	9/19/2020	97.31	9017	6242	3673.97	420293	7387.429	N/A
44	9/19/2020	97.48	8948	3806	3756.47	420680	7595.929	N/A
45	9/20/2020	94.23	8854	5659	3886.91	420810	7306.357	N/A
46	9/20/2020	96.79	9015	5226	4039.55	416780	7434.19	N/A
47	9/21/2020	94.84	8958	5784	3703.95	421000	7373.31	N/A
48	9/21/2020	97.75	9080	5698	3847.42	422851	7520.357	N/A
49	9/21/2020	97.1	8988	6410	4554.57	420470	7354.81	N/A
50	9/22/2020	95.77	8903	5966	4170.27	421180	7227.214	N/A
51	9/22/2020	96.41	8984	5900	4037	421680	7324.714	N/A
52	9/22/2020	95.84	9016	4047	3696.97	422510	7255.714	N/A
53	9/23/2020	94.7	9030	6635	3808	420870	7315.476	N/A
54	9/23/2020	97.69	8997	6160	4083	399900	7155.071	N/A
55	9/24/2020	97.3	8925	5750	4613.73	399920	7227.31	N/A
56	9/24/2020	96.11	9005	6013	4108	400580	7033.357	N/A
57	9/24/2020	97.68	8985	5602	3954	400100	6921.1429	N/A
58	9/24/2020	97.05	9010	5605	3935.4	400280	7065.4048	N/A
59	9/25/2020	97.18	9079	6094	4055	397070	6949.381	N/A
60	9/25/2020	97.43	8986	6366	4002	398590	6837.8095	N/A
61	9/25/2020	98.46	8894	6010	3839.3	399180	6972.5714	N/A
62	9/26/2020	98.63	8961	4603	3783.85	398860	6902.9286	N/A
63	9/26/2020	98.66	9117	6181	3921	399360	6779.381	N/A
64	9/26/2020	98.27	8970	6008	3967	399560	6851.0476	N/A
65	9/26/2020	99.31	8786	5729	3668.2	399390	6868.4762	N/A
66	9/27/2020	98.95	9023	5653	4118	400430	6813.0714	N/A
67	9/27/2020	96.59	8665	5456	3898	400130	6845.0476	N/A
68	9/27/2020	98.84	8154	8463	3891.06	398840	6901.1429	N/A
69	9/28/2020	96.67	8373	5430	4073.15	401120	6742.3333	N/A
70	9/28/2020	93.56	8734	5542	4020	397110	7227.4286	N/A
71	9/28/2020	99.57	8903	5555	4078.43	399490	6741.6667	N/A
72	9/29/2020	99.86	8905	5768	4304.16	396670	6710.1667	N/A
73	9/29/2020	99.66	8363	6043	4041.77	399370	6780.1667	N/A
74	9/29/2020	99.06	8325	6451	4086	398690	6767.4762	N/A
75	9/29/2020	99.2	8128	5674	3804.59	399450	6649.9524	N/A
76	9/30/2020	98.91	8092	5976	3951.16	398698	6591.4524	N/A
77	9/30/2020	99	8030	5339	3904	399850	6666.119	N/A
78	9/30/2020	98.64	8037	5496	3854.52	399830	6667.3333	N/A
79	9/30/2020	100.1	8086	5726	4135.14	399930	6792.119	N/A
	AVG=	95	9,189	5,715	3,750	32,443,696	594,771	TOTAL



**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	70	190	70	190
Silty Shale	190	240	190	240
shaly sand	240	410	240	410
Shale	410	470	410	470
Dolomitic Shale	470	750	470	750
Shaly Siltstone	750	870	750	870
Silty Sandstone	870	910	870	910
Shaly Sand	910	980	910	980
Sandstone	980	1,120	980	1,120
Silty, Shaly, Sandstone	1,120	1,180	1,120	1,180
Sandstone, Tr Shale, Tr Coal	1,180	1,230	1,180	1,230
Silty Sandstone	1,230	1,510	1,230	1,510
Shaly Siltstone	1,510	1,612	1,510	1,642
Big Lime	1,642	2,465	1,642	2,611
Fifty Foot Sandstone	2,465	2,541	2,581	2,696
Gordon	2,541	2,909	2,666	3,110
Fifth Sandstone	2,909	3,201	3,080	3,435
Bayard	3,201	3,781	3,405	4,091
Speechley	3,781	4,109	4,061	4,464
Balltown	4,109	4,299	4,434	4,681
Bradford	4,299	4,562	4,651	4,979
Benson	4,562	4,714	4,949	5,152
Alexander	4,714	5,962	5,122	6,640
Sycamore	5,830	5,932	6,450	6,610
Middlesex	5,932	6,021	6,610	6,819
Burkett	6,021	6,042	6,819	6,886
Tully	6,042	6,053	6,886	6,924
Marcellus	6,053	NA	6,924	NA

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

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## Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	9/6/2020
Job End Date:	10/1/2020
State:	West Virginia
County:	Tyler
API Number:	47-095-02599-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Garmin 2H
Latitude:	39.41513000
Longitude:	-80.95719000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,117
Total Base Water Volume (gal):	24,936,460
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 Blend	Halliburton	Base Fluid					
			Water	7732-18-5	100.00000	86.57419	Density = 8.50
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.15569	

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HAI-501	Halliburton	Acid Corrosion Inhibitor					
				Listed Below			
HYDROCHLORIC ACID, 22 BAUME	Halliburton	Solvent					
				Listed Below			
Sand-Common White-100 Mesh, SSA-2	Halliburton	Proppant					
				Listed Below			
Excelerate LX-15	Halliburton	Friction Reducer					
				Listed Below			
MC B-8614	Halliburton	Biocide					
				Listed Below			
Sand-Premium White-40/70	Halliburton	Proppant					
				Listed Below			
OPTIFLO-II DELAYED RELEASE BREAKER	Halliburton	Breaker					
				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			

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Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.

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			Crystalline silica, quartz	14808-60-7	100.00000	13.25151	
			Hydrochloric acid	7647-01-0	30.00000	0.03751	
			Complex Amine Compound	Proprietary	60.00000	0.02228	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01114	
			Guar gum	9000-30-0	100.00000	0.00341	
			Glutaraldehyde	111-30-8	30.00000	0.00252	
			Sobitan, mono-9-octadecenoate, (Z)	1338-43-8	5.00000	0.00186	
			Surfactant	Proprietary	5.00000	0.00186	
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00042	
			Ethoxylated alcohols	Proprietary	5.00000	0.00038	
			Alkoxyated polyhydric alcohol	Proprietary	1.00000	0.00037	
			Organic chloride compound	Proprietary	1.00000	0.00037	
			Methanol	67-56-1	100.00000	0.00032	
			Ammonium persulfate	7727-54-0	100.00000	0.00012	
			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	0.00004	
			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	
			Organic salt #2	Proprietary	0.01000	0.00000	
			Sodium hydroxide	1310-73-2	0.01000	0.00000	

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			Organic salt #1	Proprietary	0.01000	0.00000	
			Nitrated acetate salt	Proprietary	0.01000	0.00000	
			Acrylamide	79-06-1	0.01000	0.00000	
			Sodium glycolate	2836-32-0	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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