

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

API 47 - 095 - 02388 County Tyler District Meade
Quad Pennsboro 7.5' Pad Name Ritchie Petroleum Field/Pool Name ---
Farm name David M. Hartley Well Number Hopper 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 4356653m Easting 502135m
Landing Point of Curve Northing 4356452.59m Easting 501742.96m
Bottom Hole Northing 4354398m Easting 502602m

Elevation (ft) 1176' 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 12/20/2016 Date drilling commenced 3/6/2017 Date drilling ceased 9/27/2017
Date completion activities began 3/8/2017 Date completion activities ceased 7/25/2018
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 162, 201, 577 Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1293 Void(s) encountered (Y/N) depths No
Coal depth(s) ft None Identified Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

APPROVED

Reviewed by: [Signature]
08/11/2023
6/21/23

API 47-095 - 02388 Farm name David M. Hartley Well number Hopper Unit 1H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	65'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	496'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2488'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	16055'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6532'		4.7#, N-80		
Packer type and depth set		N/A					

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	102 sx	15.6	1.18	120	0'	8 Hrs.
Surface	Class A	605 sx	15.6	1.18	826	0'	8 Hrs.
Coal							
Intermediate 1	Class A	907 sx	15.6	1.18	1181	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	798 sx (Lead) 1333 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.44 (Lead), 1.87 (Tail)	3774	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 16055' MD, 6459' TVD (BHL), 6462' (Deepest Point Drilled) Loggers TD (ft) 16055' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

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Office of Oil and Gas

Kick off depth (ft) 6013'

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

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

08/11/2023 JM

API 47- 095 - 02388 Farm name David M. Hartley Well number Hopper Unit 1H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus</u>	<u>6408' (TOP)</u> TVD	<u>6679' (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 10248 mcfpd Oil 142 bpd NGL --- bpd Water 532 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 Patterson - UTI Drilling Company LLC
Address 207 Carlton Drive City Eighty Four State PA Zip 15330

Logging Company Kodiak Services Int'l
Address 2219 Sawdust Road, Unit 1604-1605 City The Woodlands State TX Zip 77380

Cementing Company BJ Services
Address 1036 East Main Street City Bridgeport State WV Zip 26330

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

Please insert additional pages as applicable.

Completed by Carly Marvel Telephone 303-357-7373
Signature Carly Marvel Title Permitting Agent Date 4/6/2023

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

08/11/2023 

API 47-095-02388 Farm Name David M. Hartley Well Number Hopper Unit 1H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	1/3/2018	15784	15954	60	Marcellus
2	1/3/2018	15582	15752	60	Marcellus
3	1/4/2018	15380	15550	60	Marcellus
4	1/5/2018	15178	15348	60	Marcellus
5	1/6/2018	14976	15146	60	Marcellus
6	1/8/2018	14774	14945	60	Marcellus
7	1/8/2018	14572	14743	60	Marcellus
8	1/9/2018	14371	14541	60	Marcellus
9	1/12/2018	14169	14339	60	Marcellus
10	1/14/2018	13967	14137	60	Marcellus
11	1/15/2018	13765	13935	60	Marcellus
12	1/16/2018	13563	13733	60	Marcellus
13	1/16/2018	13361	13531	60	Marcellus
14	1/16/2018	13159	13329	60	Marcellus
15	1/17/2018	12957	13128	60	Marcellus
16	1/19/2018	12755	12926	60	Marcellus
17	1/20/2018	12554	12724	60	Marcellus
18	1/20/2018	12352	12522	60	Marcellus
19	1/21/2018	12150	12320	60	Marcellus
20	1/21/2018	11948	12118	60	Marcellus
21	1/22/2018	11746	11916	60	Marcellus
22	1/22/2018	11544	11714	60	Marcellus
23	1/22/2018	11342	11512	60	Marcellus
24	1/23/2018	11140	11311	60	Marcellus
25	1/23/2018	10938	11109	60	Marcellus
26	1/23/2018	10737	10907	60	Marcellus
27	1/24/2018	10535	10705	60	Marcellus
28	1/24/2018	10333	10503	60	Marcellus
29	1/25/2018	10131	10301	60	Marcellus
30	1/25/2018	9929	10099	60	Marcellus
31	1/25/2018	9727	9897	60	Marcellus
32	1/26/2018	9525	9695	60	Marcellus
33	1/26/2018	9323	9494	60	Marcellus
34	1/27/2018	9121	9292	60	Marcellus
35	1/27/2018	8920	9090	60	Marcellus
36	1/27/2018	8718	8888	60	Marcellus
37	1/28/2018	8516	8686	60	Marcellus
38	1/28/2018	8314	8484	60	Marcellus
39	1/28/2018	8112	8282	60	Marcellus
40	1/29/2018	7910	8080	60	Marcellus
41	1/29/2018	7708	7878	60	Marcellus
42	1/30/2018	7506	7677	60	Marcellus
43	1/30/2018	7304	7475	60	Marcellus
44	1/30/2018	7103	7273	60	Marcellus
45	1/31/2018	6901	7071	60	Marcellus
46	1/31/2018	6699	6869	60	Marcellus

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Office of Oil and Gas

APR 07 2023

WV Department of
Environmental Protection

08/11/2023

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	1/3/2018	71.7	7928		4009	11937	11059	N/A
2	1/3/2018	78	7730	5313	3630	16673	9037	N/A
3	1/4/2018	79.6	7714	5454	3320	16488	9295	N/A
4	1/5/2018	71.1	7930	5730	4110	17770	11691	N/A
5	1/6/2018	78.9	7840	5270	4199	17309	9430	N/A
6	1/8/2018	73	7264	5247	4055	16566	9202	N/A
7	1/8/2018	78	7627	5285	4114	17026	8906	N/A
8	1/9/2018	75.5	7696	5383	3867	16946	8776	N/A
9	1/12/2018	67.8	7881	5044	4309	17234	16536	N/A
10	1/14/2018	75.9	7677	5101	4213	16991	11117	N/A
11	1/15/2018	72.8	7455	5000	5782	18237	8612	N/A
12	1/16/2018	75	7289	5145	5021	17455	9633	N/A
13	1/16/2018	75.2	6848	5209	4265	16322	8606	N/A
14	1/16/2018	75.7	7307	5309	4969	17585	8759	N/A
15	1/17/2018	76	7217	5525	4965	17707	9221	N/A
16	1/19/2018	76.5	7182	5553	3489	16224	8810	N/A
17	1/20/2018	71.4	7155	5521	4775	17451	9408	N/A
18	1/20/2018	76.6	7173	5252	5065	17490	9057	N/A
19	1/21/2018	73.4	7112	5706	4024	16842	9414	N/A
20	1/21/2018	75.9	7168	5088	4429	16685	9130	N/A
21	1/22/2018	73.4	7052	5269	4479	16800	8732	N/A
22	1/22/2018	76.6	7207	5524	4794	17525	9522	N/A
23	1/22/2018	72.9	6904	5269	5014	17187	8970	N/A
24	1/23/2018	75.9	6790	5131	4260	16181	9757	N/A
25	1/23/2018	76	7197	5360	4844	17401	9987	N/A
26	1/23/2018	73.4	6782	5296	4627	16705	8792	N/A
27	1/24/2018	78.3	6936	5025	4009	15970	9495	N/A
28	1/24/2018	75.2	6902	5190	4435	16527	8878	N/A
29	1/25/2018	79.3	7182	5092	4504	16778	9489	N/A
30	1/25/2018	74	7164	5171	4094	16429	10350	N/A
31	1/25/2018	78.2	6999	5175	4369	16543	9151	N/A
32	1/26/2018	78.7	7153	5221	4224	16598	9164	N/A
33	1/26/2018	77.7	6974	5077	3629	15680	9713	N/A
34	1/27/2018	78.3	6966	5362	3633	15961	8829	N/A
35	1/27/2018	79.6	6946	5160	4489	16595	8592	N/A
36	1/27/2018	78.7	6845	5237	4578	16660	8714	N/A
37	1/28/2018	75	7141	5285	3638	16064	12041	N/A
38	1/28/2018	78.3	6691	5353	3951	15995	8635	N/A
39	1/28/2018	79.2	6891	5485	4075	16451	10223	N/A
40	1/29/2018	79.4	6877	5471	4509	16857	10531	N/A
41	1/29/2018	79.3	6666	5505	3951	16122	9280	N/A
42	1/30/2018	78.6	6551	5808	4435	16794	9277	N/A
43	1/30/2018	80	6666	5437	4181	16284	8894	N/A
44	1/30/2018	76.9	6478	5282	4422	16182	8951	N/A
45	1/31/2018	73.8	6428	4950	3730	15108	8922	N/A
46	1/31/2018	74.4	6256	5404	3884	15544	8710	N/A
	AVG=	76.1	7,127	5,304	4,291	763,879	438,351	TOTAL

REC-2018-014
 APR 09 2023
 WV Department of Environmental Protection

08/11/2023


EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Sandstone	0	N/A	0	N/A
Silty Sandstone	260	N/A	260	N/A
Shale w/trace Coal	560	N/A	560	N/A
Silty Sandstone	740	N/A	740	N/A
Limey Shale	880	N/A	880	N/A
Silty Shale w/trace Coal	1,080	N/A	1,080	N/A
Silty Sandstone	1,240	N/A	1,240	N/A
Silty Shale w/trace Coal	1,380	N/A	1,380	N/A
Silty Sandstone	1,520	N/A	1,520	N/A
Sandstone w/trace Coal	1,600	N/A	1,600	N/A
Silty Sandstone	1,680	N/A	1,680	N/A
Shale w/trace Coal	1,740	N/A	1,740	N/A
Silty Sandstone	1,840	N/A	1,840	N/A
Big Lime	2,047	N/A	2,049	N/A
Big Injun	2,156	N/A	2,158	N/A
Gantz Sand	2,568	N/A	2,569	N/A
Fifty Food Sandstone	2,858	N/A	2,860	N/A
Gordon	2,933	N/A	2,935	N/A
Fifht Sandstone	3,205	N/A	3,210	N/A
Bayard	3,290	N/A	3,295	N/A
Warren	3,670	N/A	3,680	N/A
Speechley	4,024	N/A	4,041	N/A
Balltown	4,305	N/A	4,327	N/A
Bradford	4,687	N/A	4,717	N/A
Benson	5,080	N/A	5,117	N/A
Alexander	5,304	N/A	5,344	N/A
Rhinestreet	5,857	N/A	5,907	N/A
Sycamore	6,189	N/A	6,270	N/A
Middlesex	6,284	N/A	6,407	N/A
Burkett	6,375	N/A	6,589	N/A
Tully	6,398	N/A	6,651	N/A
Marcellus	6,408	N/A	6,679	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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Office of Oil and Gas

APR 07 2023

WV Department of
Environmental Protection

08/11/2023

LATITUDE 39°22'30"

4,821'

3,278' TO BOTTOM HOLE

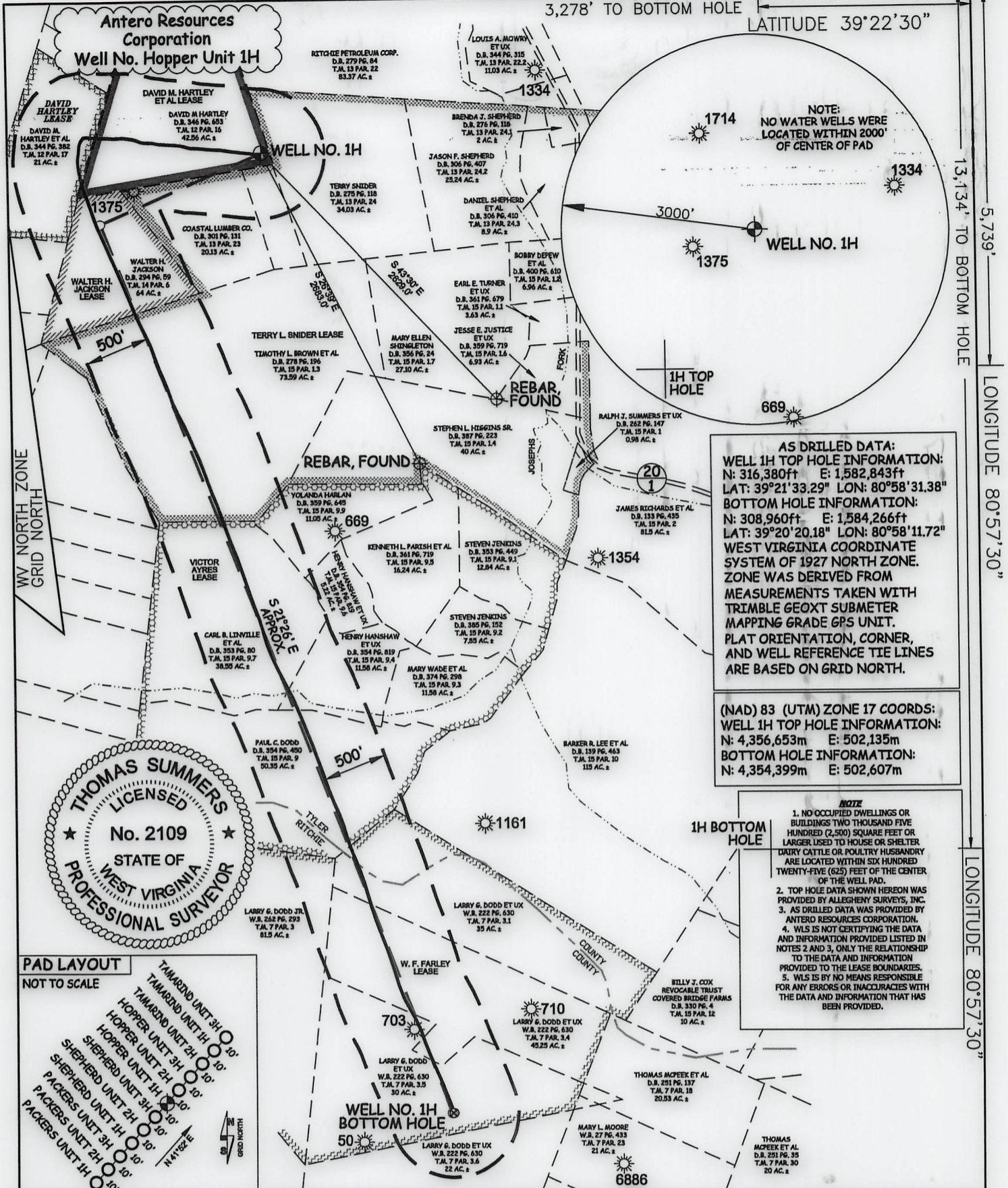
LATITUDE 39°22'30"

13,134' TO BOTTOM HOLE

5,739'

LONGITUDE 80°57'30"

COUNTY NAME PERMIT



JOB # 15-042WA
DRAWING # HOPPER1HAD
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS
STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

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 AVENUE PENNSBORO WEST VIRGINIA 26415

LEGEND

- Surface Owner Boundary Lines +/-
- Interior Surface Tracts +/-
- Proposed Well Path
- As Drilled Well Path

THOMAS SUMMERS P.S. 2109

DATE 11/07/18
OPERATOR'S WELL# HOPPER 1H

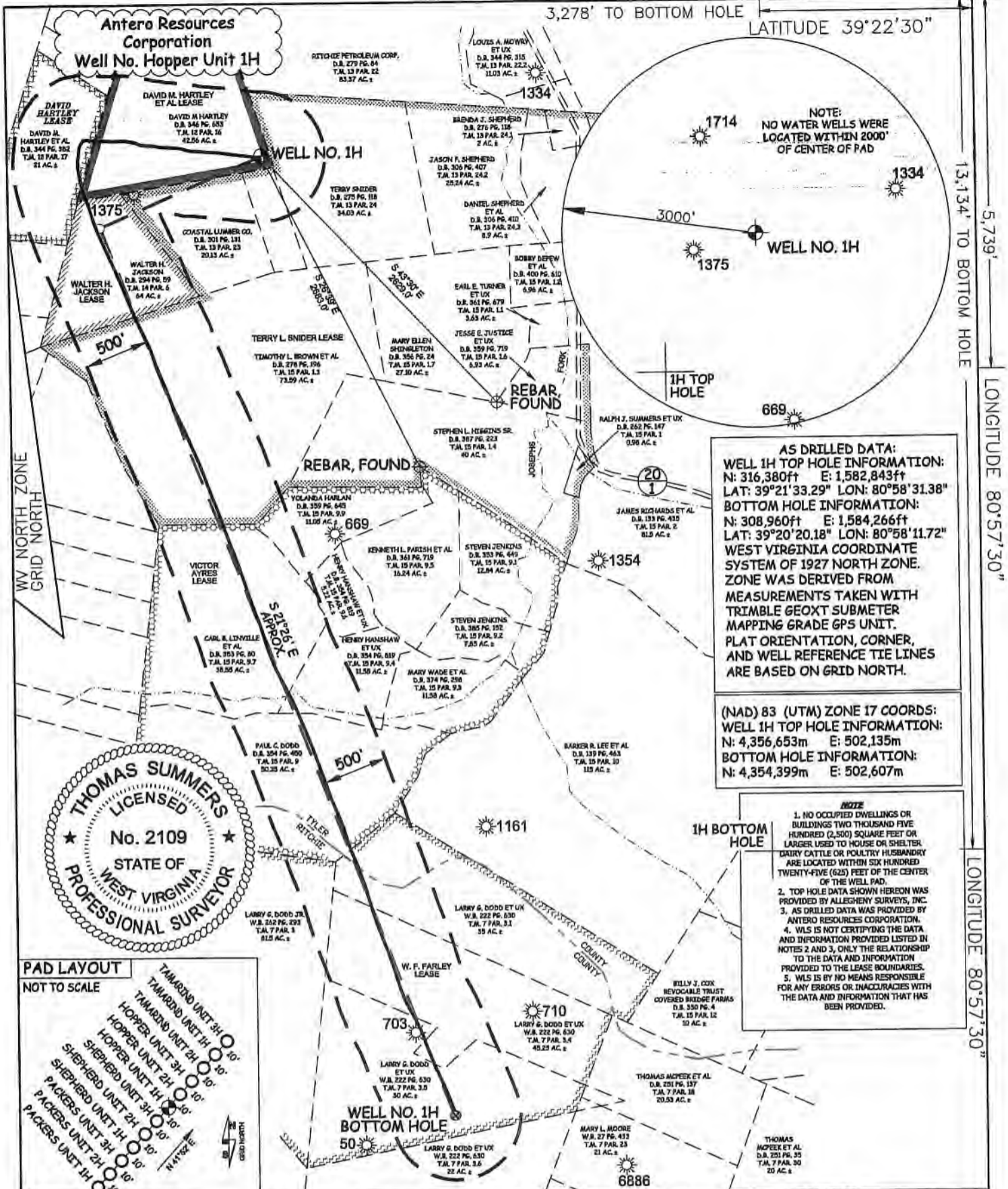
WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL API WELL # 47 - 095 - 02388
(IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X STATE COUNTY PERMIT
LOCATION: ELEVATION 1,176' AS BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK QUADRANGLE PENNSBORO 7.5' DISTRICT MEADE COUNTY TYLER **08/11/2023**
SURFACE OWNER DAVID M. HARTLEY ACREAGE 42.56 ACRES +/-
OIL & GAS ROYALTY OWNER DAVID M. HARTLEY ET AL; DAVID HARTLEY; TERRY L. SNIDER; WALTER H. JACKSON; VICTOR AYRES; W. F. FARLEY LEASE ACREAGE 42.56 AC±; 21 AC±; 221.24 AC±; 19.38 AC±; 167.5 AC±; 192 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 6,468' TVD 14,406' 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

LATITUDE 39°22'30"

4,821'

3,278' TO BOTTOM HOLE

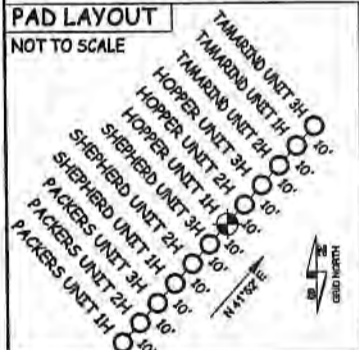
LATITUDE 39°22'30"



AS DRILLED DATA:
WELL 1H TOP HOLE INFORMATION:
 N: 316,380ft E: 1,582,843ft
 LAT: 39°21'33.29" LON: 80°58'31.38"
BOTTOM HOLE INFORMATION:
 N: 308,960ft E: 1,584,266ft
 LAT: 39°20'20.18" LON: 80°58'11.72"
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE.
 ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:
WELL 1H TOP HOLE INFORMATION:
 N: 4,356,653m E: 502,135m
BOTTOM HOLE INFORMATION:
 N: 4,354,399m E: 502,607m

- NOTE**
1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.
 2. TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALLEGHENY SURVEYS, INC.
 3. AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
 4. WLS IS NOT CERTIFYING THE DATA AND INFORMATION PROVIDED LISTED IN NOTES 2 AND 3, ONLY THE RELATIONSHIP TO THE DATA AND INFORMATION PROVIDED TO THE LEASE BOUNDARIES.
 5. WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.



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THOMAS SUMMERS P.S. 2109
 RECEIVED
 DATE 11/07/18 and Gas
 OPERATOR'S WELL# HOPPER 1H
 APR 07 2023

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
 (IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
 LOCATION: ELEVATION 1,176' AS BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK
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 ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD
 FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

COUNTY NAME PERMIT

08/11/2023

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	6/8/2018
Job End Date:	6/18/2018
State:	West Virginia
County:	Tyler
API Number:	47-095-02388-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Hopper 1H
Latitude:	39.35924700
Longitude:	-80.97538300
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,468
Total Base Water Volume (gal):	11,808,306
Total Base Non Water Volume:	0



APR 07 2023



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
Fresh Water	Operator	Base Fluid					
			Water	7732-18-5	100.00000	87.89793	Density = 8.330
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.14290	

MC S-2510T	Halliburton	Scale Inhibitor					
				Listed Below			
SAND-PREMIUM WHITE-40/70, BULK	Halliburton	Proppant					
				Listed Below			
SAND-COMMON WHITE - 100 MESH, 3307 LB BAG	Halliburton	Proppant					
				Listed Below			
FIGHTR EC-3	Halliburton	Friction Reducer					
				Listed Below			
Legend LD-2560	Multi-Chem	Completion/Stimulation					
				Listed Below			
MC B-8614	Halliburton	Biocide					
				Listed Below			
SP BREAKER	Halliburton	Breaker					
				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			

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HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor					
				Listed Below			
HYDROCHLORIC ACID	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	11.91333	
			Acrylamide polymer	Proprietary	30.00000	0.02066	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02066	
			Hydrochloric acid	7647-01-0	15.00000	0.01288	
			Ethylene Glycol	107-21-1	60.00000	0.00846	
			Sodium persulfate	7775-27-1	100.00000	0.00584	
			Guar gum	9000-30-0	100.00000	0.00365	
			Polyoxyalkylene	Proprietary	5.00000	0.00344	
			Sorbitan, mono-9-octadecenoate, (Z)	1338-43-8	5.00000	0.00344	
			Glutaraldehyde	111-30-8	30.00000	0.00262	
			Neutralized Polyacrylic Emulsion	Proprietary	10.00000	0.00141	
			Alcohols, C10-16, ethoxylated	68002-97-1	30.00000	0.00046	
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00044	
			Methanol	67-56-1	60.00000	0.00011	
			Ethanol	64-17-5	1.00000	0.00009	
			Polyoxylated fatty amine salt	61791-26-2	5.00000	0.00008	

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			Ethoxylated alcohols	Proprietary	30.00000	0.00005	
			Fatty acids, tall oil	Proprietary	30.00000	0.00005	
			Modified thiourea polymer	Proprietary	30.00000	0.00005	
			Olefins	Proprietary	5.00000	0.00002	
			Propargyl alcohol	107-19-7	10.00000	0.00002	
			Phosphoric acid	7664-38-2	0.10000	0.00001	
			Sodium sulfate	7757-82-6	0.10000	0.00001	

* 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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