



west virginia department of environmental protection

Office of Oil and Gas
601 57th Street, S.E.
Charleston, WV 25304
(304) 926-0450
fax: (304) 926-0452

Harold D. Ward, Cabinet Secretary
www.dep.wv.gov

Friday, June 27, 2025
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION
1615 WYNKOOP STREET

DENVER, CO 80202


Re: Permit Modification Approval for SAIL UNIT 1H
47-085-10554-00-00

Sidetrack

ANTERO RESOURCES CORPORATION

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926- 0450.

A blue ink signature of James A. Martin, written in a cursive style.

James A. Martin
Chief

Operator's Well Number: SAIL UNIT 1H
Farm Name: LOUIS DANIEL EASTERDAY REVOCABLE LIVING TRUST
U.S. WELL NUMBER: 47-085-10554-00-00
Horizontal 6A New Drill
Date Modification Issued: 6/27/2025

Promoting a healthy environment.

07/04/2025

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

1) Well Operator: Antero Resources Corporation 494507062 085- Ritchie Union Pullman 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Sail Unit 1H MOD Well Pad Name: Minear Pad

3) Farm Name/Surface Owner: Louis Daniel Easterday Revocable Living Trust Public Road Access: Pullman Road

4) Elevation, current ground: _____ Elevation, proposed post-construction: 1097'

5) Well Type (a) Gas ☒ Oil _____ Underground Storage _____
Other _____

(b) If Gas Shallow ☒ Deep _____
Horizontal ☒ _____

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6) Existing Pad: Yes or No Yes

JUN 25 2025

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus Shale: 6800' TVD, Anticipated Thickness- 55 feet, Associated Pressure- 2800#

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8) Proposed Total Vertical Depth: 6800' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 23300' MD

11) Proposed Horizontal Leg Length: 15307'

12) Approximate Fresh Water Strata Depths: 105', 190', 450', 757'

13) Method to Determine Fresh Water Depths: 47-085-08082, 47-085-04932

14) Approximate Saltwater Depths: 1085', 1522'

15) Approximate Coal Seam Depths: N/A

16) Approximate Depth to Possible Void (coal mine, karst, other): None Anticipated

17) Does Proposed well location contain coal seams
directly overlying or adjacent to an active mine? Yes _____ No ☒

(a) If Yes, provide Mine Info: Name: _____
Depth: _____
Seam: _____
Owner: _____

Jeremy Newlon

6-27-2025

18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20"	New	H-40	94#	100	100	CTS, 96 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	807	807	CTS, 841 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2500	2500	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	23#	23300	23300	4943 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#			
Liners							

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	24"	0.438"	1530	50	Class A/L	~1.18
Fresh Water	13-3/8"	17-1/2"	0.38"	2730	1000	Class A/L	~1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A/L	~1.18
Intermediate							
Production	5-1/2"	8-3/4" & 8-1/2"	0.415"	12,630	2500	Lead-H/POZ & Tail - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11,200			
Liners							

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PACKERS

Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			

Jeremy Newlon 6-27-2025

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill, perforate, fracture a new shallow well and complete Marcellus Shale.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Antero plans to pump Slickwater into the Marcellus Shale formation in order to ready the well for production. The fluid will be comprised of approximately 99 percent water and sand, with less than 1 percent special-purpose additives as shown in the attached "List of Anticipated Additives Used for Fracturing or Stimulating Well."

Anticipated Max Pressure - 9300 lbs

Anticipated Max Rate - 80 bpm

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 36.68 acres

22) Area to be disturbed for well pad only, less access road (acres): 17.70 acres

23) Describe centralizer placement for each casing string:

Conductor: no centralizers

Surface Casing: one centralizer 10' above the float shoe, one on the insert float collar and one every 4th joint spaced up the hole to surface.

Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface.

Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

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24) Describe all cement additives associated with each cement type:

Conductor: no additives, Class A/L cement.

Surface: Class A/L cement with 2-3% calcium chloride and 1/4 lb of flake

Intermediate: Class A/L cement with 1/4 lb of flake, 5 gallons of clay treat

Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51

Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20

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25) Proposed borehole conditioning procedures:

Conductor: blowhole clean with air, run casing, 10 bbls fresh water.

Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.

Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

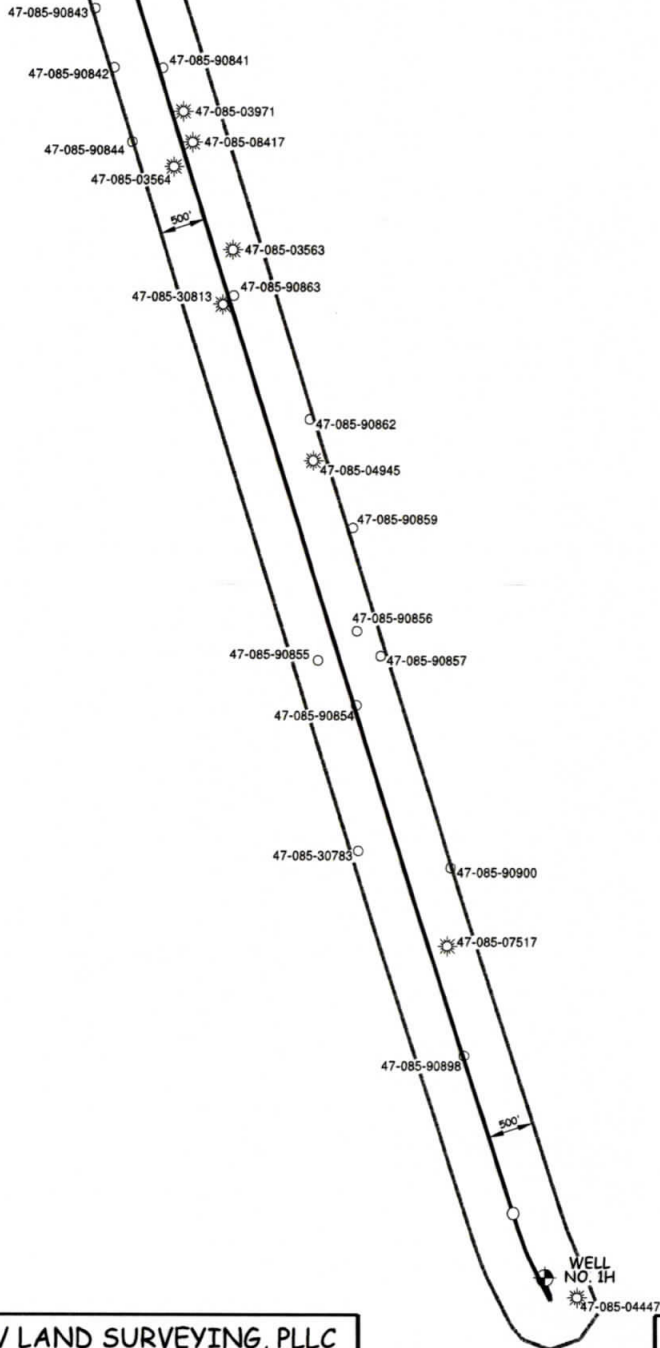
*Note: Attach additional sheets as needed.

Jeremy Newlon

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MINEAR PAD ANTERO RESOURCES CORPORATION

WELL 1H
BOTTOM
HOLE



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WILLOW LAND SURVEYING, PLLC
P.O. BOX 17, PENNSBORO, WV 26415
(304) 659-1717

JOB #: 25-001WA

FILE: SAIL1HAOR.DWG

DATE: 06/24/25

DRAWN BY: D.L.P.

SCALE : 1-INCH = 2000-FEET

0' 2000' 4000' 6000'



07/04/2025

UWI (APINum)	Well Name	Well Number	Operator	Historical Operator	TD	Perforated Interval (shallowest, deepest)	Perforated Formation(s)	Producible Formation(s) not perf'd
47085044470000	HOWARD JOYCE ETAL	H-884	HOWARD JOYCE ETAL	HAUGHT G L & SONS	2,400	1956-2293	Big Injun, Weir	Benson, Alexander
47085908980000								
47085075170000	ELLIOTT J RAYMOND ET AL	4	DIVERSIFIED PRODUCTION LLC	STONEWALL GAS	4,870	3287 - 4746	Lower Huron	Benson, Alexander
47085909000000								
47085307830000	ELIZZIE RICHARDS	5680	HOPE NATURAL GAS	HOPE NATURAL GAS				
47085908540000								
47085908570000								
47085908550000								
47085908560000								
47085908590000								
47085049450000	BURL DODD	1	CHARITY GAS INC	BEALL RUSSELL	1,863	1764 - 1764	Big Injun	Benson, Alexander
47085908620000								
47085308130000	H J KNIGHT 2	4606	PITTSBURGH&W VA GAS	PITTSBURGH&W VA GAS	1,937		Big Injun	Benson, Alexander
47085908630000								
47085035630000	RAY COTTRILL	1	DEEM J F OIL & GAS LLC	BLAUSER DENNIS	1,955	1785 - 1896	Big Injun	Benson, Alexander
47085035640000	RAY COTTRILL	2	DEEM J F OIL & GAS LLC	BLAUSER DENNIS	1,940	1759 - 1847	Big Injun	Benson, Alexander
47085908440000								
47085084170000	KARL KNIGHT/E WAGGONER	2	GREYLOCK OPCO LLC	EASTERN AMERICAN ENE	5,152	4392 - 5038	Riley, Alexander	Benson
47085039710000	L M KNIGHT ETAL	4472	EQUITABLE GAS CO	EQUITABLE GAS CO	1,810		Maxton, Big Lime, Big Injun	Benson, Alexander
47085908420000								
47085908410000								
47085908430000								

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Antero Resources
1615 Wynkoop Street
Denver, CO 80202
Office 303.357.7310
Fax 303.357.7315

June 24th, 2025

West Virginia Department of Environmental Protection
Office of Oil and Gas
Attn: Mr. Taylor Brewer
601 57th Street
Charleston, WV 25304

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Mr. Brewer:

Antero Resources Corporation (Antero) would like to submit the following permit modification for approved well on the existing Minear Pad: Sail Unit 1H (47-085-10554) Expedited.

While drilling the lateral on the Sail Unit 1H, we experienced wellbore stability and mud loss issues determined to be in the curve section of the wellbore somewhere around 5,700 – 6,150' MD. After trying to mitigate, we determined the wellbore to be irreparable. We moved the drilling rig onto the Sail Unit 1H on June 23rd, 2025 and set cement plugs from current KOP (5,636') up through 9-5/8" casing (2,956'). On June 24th, we skid off the Sail Unit 1H and skid over to the Autumn Unit 1H (API# 10550) to drill the well to TD. This will allow 8+ days for cement to cure on Sail Unit 1H.

On July 2nd or 3rd we will skid back onto Sail Unit 1H, dress the cement plug for kick off, and begin the sidetrack at approximately 3,300' MD. We will re-drill the vertical section, curve and lateral – no new leases will be penetrated, the sidetrack lateral will land ~100' west of the original lateral (drilled to 10,468' MD) and slowly make its way back to the original planned lateral and TD in the same planned location.

Attached you will find the following:

- Revised AOR
- Form WW-6B (No changes)

CK# 404226 M

AMT \$ 7,500.00

If you have any questions please feel free to contact me at (303) 357-6959.

Thank you in advance for your consideration.

Sincerely,

A handwritten signature in black ink, appearing to read "S Gaspar", written in a cursive, flowing style.

Stefan Gaspar
Permitting Agent
Antero Resources Corporation

Enclosures

07/04/2025