

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

Tuesday, October 4, 2022
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION 1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for PETER 4H

47-017-06936-00-00

Lateral Extension

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.

Operator's Well Number: PETER 4H

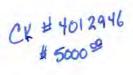
Farm Name: JEFFREY D & CRAIG A HILL ET AL

U.S. WELL NUMBER: 47-017-06936-00-00

Horizontal 6A New Drill
Date Modification Issued: 10/04/2022

Promoting a healthy environment.

WW-6B (04/15)



API NO. 47-017 - 06936

OPERATOR WELL NO. Peter Unit 4H MOD

Well Pad Name: Lemley Pad

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

1) Well Operator: Antero	Resources Corpor	at 494507062	017-Doddrid	Grant	Smithburg 7.5'
.,		Operator ID	County	District	Quadrangle
2) Operator's Well Number	: Peter Unit 4H MC	DD Well P	ad Name: Leml	ey Pad	
3) Farm Name/Surface Ow	ner: Phillip N. Hill, e	et al Public R	oad Access: Hol	low Run F	Rd
4) Elevation, current groun	d: 1304' AS BUILT	Elevation, propose	d post-constructi	on:	
5) Well Type (a) Gas Other	X Oil _	Un	derground Stora	ge	
(b)If Gas	Shallow X Horizontal X	Deep			50W
6) Existing Pad: Yes or No	Yes				
7) Proposed Target Format Marcellus Shale: 7400' TV					
8) Proposed Total Vertical	Depth: 7400' TVD				
9) Formation at Total Verti	K &	us			
10) Proposed Total Measur	red Depth: 19500'	MD			
11) Proposed Horizontal Le	eg Length: 8490.1'				
12) Approximate Fresh Wa	ter Strata Depths:	291', 345, 366	' 790'		
13) Method to Determine F	resh Water Depths:	47-017-04998, 47-017-	04719. Depths have be	en adjusted ac	ccording to surface elevations
14) Approximate Saltwater	Depths: 1460', 167	73', 1700', 1710'			
15) Approximate Coal Sear	n Depths: 980'				
16) Approximate Depth to	Possible Void (coal 1	mine, karst, other):	None Anticipa	ited	
17) Does Proposed well loo directly overlying or adjace			No	, <u>X</u>	
(a) If Yes, provide Mine I	nfo: Name:				RECEIVED
	Depth:				Office of Oil and Gas
	Seam:				SEP 26 2022
	Owner:			Env	WV Department of ironmental Protection

OPERATOR WELL NO. Peter Unit 4H MOD
Well Pad Name: Lemley Pad

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	X60	78.67#	100'	100'	CTS, 96 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	840'	840'	CTS, 583 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	3200'	3200'	CTS, 1303 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110HP	20#	19500'	19500'	3996 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners		- 11					

SOW 10/4/2022

ТҮРЕ	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	~1.18
Fresh Water	13-3/8"	17-1/2"	0.38"	2730	1000	Class A	~1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A	~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							

PACKERS

Kind:	N/A	RECEIVED Office of Oil and Gas
Sizes:	N/A	SEP 2 6 2022
Depths Set:	N/A	WV Department of Environmental Protection

WW-6B
(10/14)

API NO. 47- 017 - 06936

OPERATOR WELL NO. Peter Unit 4H MOD Well Pad Name: Lemley Pad

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

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

*Antero will be air drilling the fresh water string which makes it difficult to determine when fresh water is encountered. Therefore, we have built in a buffer for the casing setting depth which helps to ensure that all fresh water zones are covered.

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): 27.26 acres
- 22) Area to be disturbed for well pad only, less access road (acres): 4.31 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

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.

RECEIVED 24) Describe all cement additives associated with each cement type of Oil &

Conductor: no additives, Class A cement.

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

Intermediate: Class A 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-12/40 CHARACTER C-44/4005% C-51

Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB 47/4005% ACSA-51 + 0.2% ACR-20

25) Proposed borehole conditioning procedures:

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

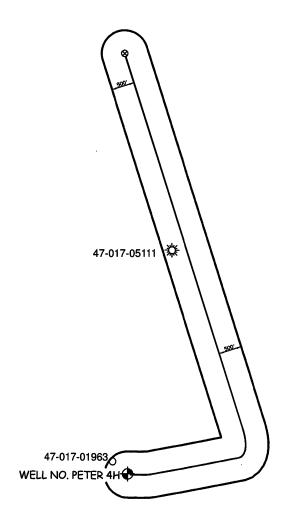
Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

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.

LEMLEY PAD ANTERO RESOURCES CORPORATION



RECEIVED
Office of Oil & Gas

SEP 21 2022

WV Department of Environmental Protection

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

DATE: 09/19/22

DRAWN BY: D.L.P.

JOB #: 22-005WA FILE: PETER3HAOR.DWG 0'

SCALE: 1-INCH = 2000-FEET 4000'

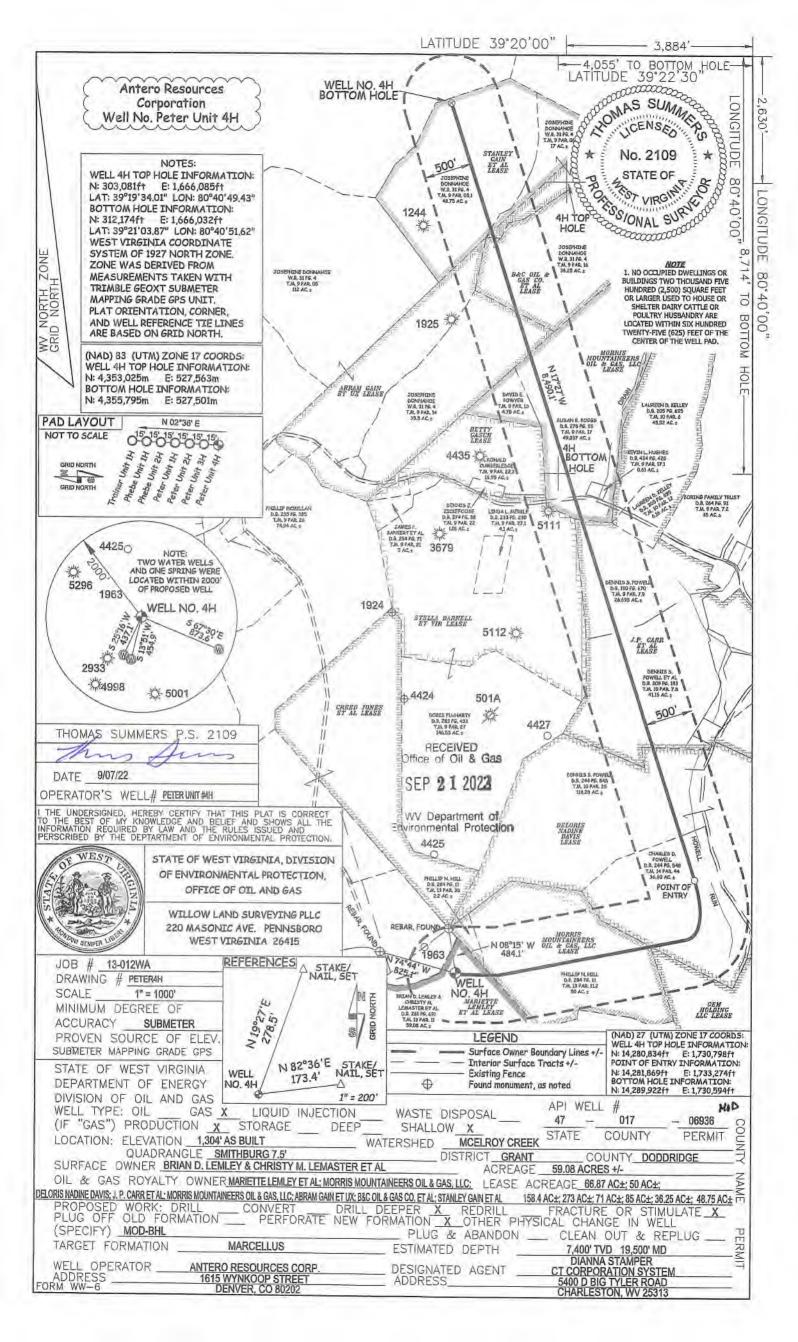
2000'

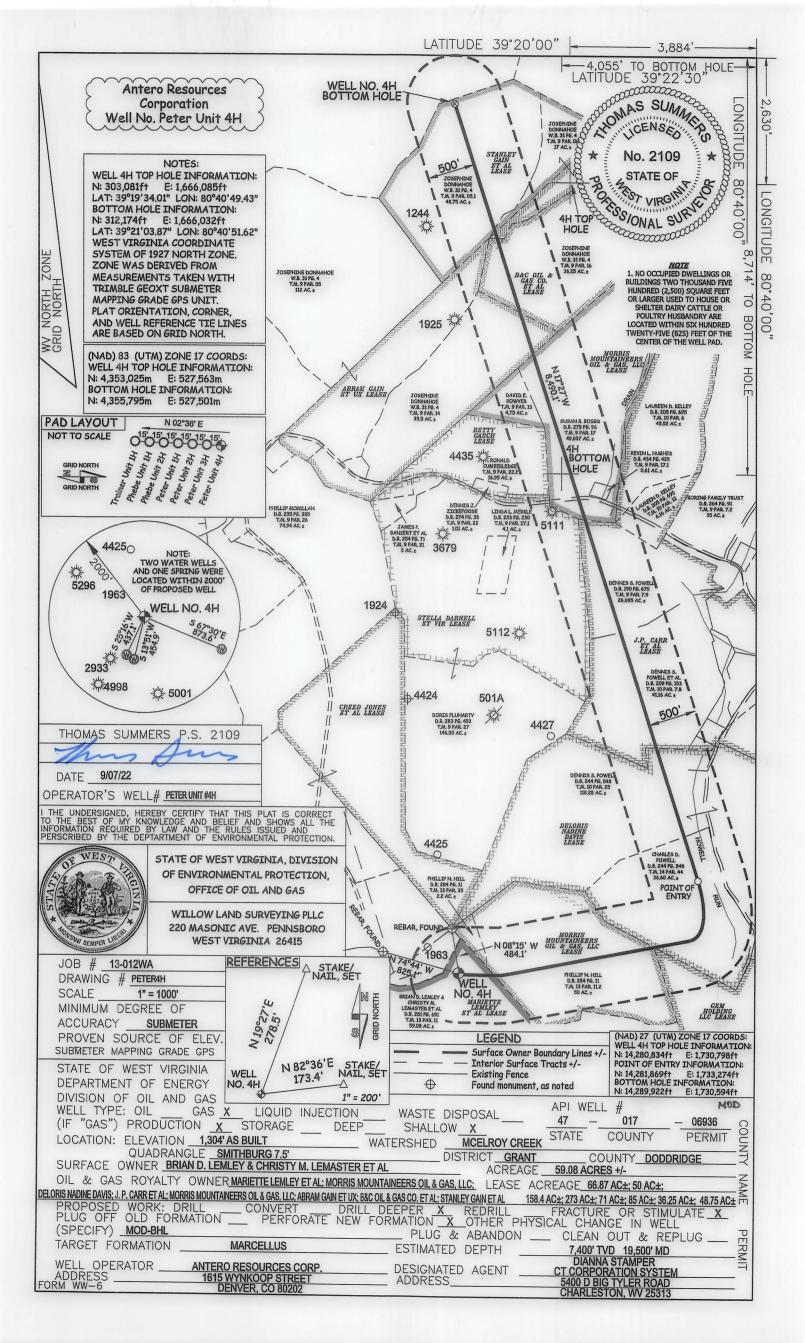
6000'

UWI (APINum)	Well Name	Well Number	Operator	Historical Operator	TD	Perforated Interval (shallowest, deepest)	Perforated Formation(s)	Producible Formation(s) not perf'd
47017019630000	W BOYCE	5124	DOMINION TRANSMISION	HOPE NATURAL GAS	2,294		Big Injun, Squaw	Alexander, Berea
47017051110000	DARNELL STELLA R	8489	DIVERSIFIED PROD LLC	DOMINION EXPL&PROD	4,987	1764 - 4812	Big Injun, Gordon, Benson	Alexander, Berea

Office of Oil & Gas
SEP 21 2022

WW Department of Environmental Protection





INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE Chapter 22, Article 6A, Section 5(a)(5) IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page	
Mariette Lemley, et al Lease				
Mariette Lemley, et al	S&K Land Company	1/8	0114/0075	
S&K Land Company	Mert Development, Inc.	Assignment	0115/0110	
Mert Development, Inc.	Continental Reserves 1980-E	Assignment	0123/0022	
Continental Reserves 1980-E	Appalachian Energy Development Corporation	Assignment	0150/0251	
Appalachian Energy Development Corporation	Appalachian Energy Reserves, Inc	Affidavit of Identity	0019/0210	
Appalachian Energy Reserves, Inc.	Jay Shearer	Assignment	0179/0146	
Jay Shearer	Clowser Production Company	Assignment	0285/0420	
Clowser Production Company	Antero Resources Appalachían Corporation	Assignment	0285/0417	
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	0046/0523	
Morris Mountaineers Oil & Gas LLC Lease				
Morris Mountaineers Oil & Gas LLC	Antero Resources Corporation	1/8+	0503/0354	
Deloris Nadine Davis Lease				
Deloris Nadine Davis	Jay Bee Production Company	1/8+	0215/0229	
Jay Bee Production	Antero Resources Appalachian Corporation	Assignment	0301/0373	
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	0046/0523	
/ J.P. Carr, et al Lease				
J.P. Carr, et al	Hope Natural Gas Company	1/8	0028/0446	
Hope Natural Gas Company	Consolidated Gas Supply Corporation	Merger	0143/0345	
Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation	Assignment	0135/0583	
Consolidated Gas Transmission Corporation	CNG Transmission Corporation	Merger	0051/0795	
CNG Transmission Corporation	Dominion Transmission, Inc	Merger	0058/0362	
Dominion Transmission, Inc	Antero Resources Appalachian Corporation	Assignment	0230/0113	
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	0046/0523	
/ Morris Mountaineers Oil & Gas LLC Lease			101300	
Morris Mountaineers Oil & Gas LLC	Antero Resources Corporation	1/8+	0503/0352	
Abram Gain, et ux Lease		1/8	0023/0046	
Abram Gain, et ux	Hope Natural Gas Company	Merger	0143/0345	
Hope Natural Gas Company	Consolidated Gas Supply Corporation	Assignment	0135/0583	
Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation	Merger	0051/0795	
Consolidated Gas Transmission Corporation	CNG Transmission Corporation	Merger	0058/0362	
CNG Transmission Corporation	Dominion Transmission Inc	Assignment	0230/0113	
Dominion Transmission Inc Antero Resources Appalachian Corporation	Antero Resources Appalachian Corporation ED Antero Resources Corporation fice of Oil & Gas	Name Change	0046/0523	
B & C Oil & Gas, et al Lease	SEP 21 2022			
B & C Oil and Gas	Antero Resources Corporation	1/8+	0380/0166	
	WV Department of Environmental Protection	n		

^{*}Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.

INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE Chapter 22, Article 6A, Section 5(a)(5) IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that -

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
Stanley Gain, et al	Carey Oil Company	1/8	0087/0045
Carey Oil Company	Sally J. Hershberger	Assignment	0091/0444
Sally J. Hershberger	Hershberger Explorations, Inc	Assignment	0092/0613
Hershberger Explorations, Inc	James F. Scott	Assignment	0096/0043
James F. Scott	Emax Oil Company	Assignment	0161/0001
Emax Oil Company	Antero Resources Corporation	Assignment	0342/0358
	Stanley Gain, et al Carey Oil Company Sally J. Hershberger Hershberger Explorations, Inc James F. Scott	Stanley Gain, et al Carey Oil Company Carey Oil Company Sally J. Hershberger Sally J. Hershberger Hershberger Explorations, Inc Hershberger Explorations, Inc James F. Scott Emax Oil Company	Stanley Gain, et al Carey Oil Company 1/8 Carey Oil Company Sally J. Hershberger Assignment Sally J. Hershberger Hershberger Explorations, Inc Assignment Hershberger Explorations, Inc James F. Scott Assignment James F. Scott Emax Oil Company Assignment

Acknowledgement of Possible Permitting/Approval In Addition to the Office of Oil and Gas

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

Office of Oil & Gas

WV Department of Environmental Protection

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator:	Antero Resources Corporation				
By:	Tim Rady				
Its:	Senior Vice President - Land				

^{*}Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.



Stansberry, Wade A <wade.a.stansberry@wv.gov>

Modification Horizontal H6A Well Work Permit (47-017-06933, 47-017-06934, 47-017-06935, 47-017-06936, 47-017-06939)

1 message

Stansberry, Wade A <wade.a.stansberry@wv.gov>

Wed, Oct 5, 2022 at 7:34 AM

To: Mallory Stanton <mstanton@anteroresources.com>, Diane Blair <dblair@anteroresources.com>, Dani DeVito <ddevito@shalepro.com>, David Sponaugle <dsponaug@assessor.state.wv.us>, "Ward, Samuel D" <samuel.d.ward@wv.gov>, "Blevins, Cragin" <cragin.blevins@wv.gov>

I have attached a copy of the newly issued well permit number(s). This will serve as your copy.

47-017-06933 - PETER UNIT 1H 47-017-06934 - PETER UNIT 2H 47-017-06935 - PETER UNIT 3H 47-017-06936 - PETER UNIT 4H 47-017-06939 - TRAINER UNIT 1H

If you have any questions, then please contact us here at the Office of Oil and Gas.

Thank you,

Wade A. Stansberry

Environmental Resource Specialist 3

West Virginia Department of Environmental Protection

Office of Oil & Gas

601 57th St. SE

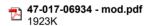
Charleston, WV 25304

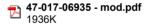
(304) 926-0499 ext. 41115

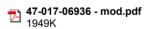
(304) 926-0452 fax

Wade.A.Stansberry@wv.gov

5 attachments







47-017-06939 - mod.pdf 2272K

47-017-06933 - mod.pdf 1986K