

#### 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 3H

47-017-06935-00-00

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 3H

Farm Name: JEFFREY D & CRAIG A HILL ET AL

U.S. WELL NUMBER: 47-017-06935-00-00

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

Promoting a healthy environment.

WW-6B (04/15)

# CK# 4012945

API NO. 47- 017 - 06935

OPERATOR WELL NO. Peter Unit 3H 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 Res	ources Corpora	494507062	017-Doddrid	Grant	Smithburg 7.5'
1) Well operator.		Operator ID	County	District	Quadrangle
2) Operator's Well Number: Pe	ter Unit 3H MOI	Well P	ad Name: Lemle	y Pad	
3) Farm Name/Surface Owner:	Phillip N. Hill, et	tal Public Ro	oad Access: Holle	ow Run R	d
4) Elevation, current ground:	1304' AS BUILT E	levation, propose	d post-construction	on:	
5) Well Type (a) Gas X Other	Oil	Un	derground Storag	e	
( )	nllow X X	Deep	-		50W
6) Existing Pad: Yes or No Yes	S		_		10/4/2022
7) Proposed Target Formation(s Marcellus Shale: 7400' TVD, A					
8) Proposed Total Vertical Dept	th: 7400' TVD				
9) Formation at Total Vertical D	Depth: Marcellus	S			
10) Proposed Total Measured D	epth: 17800' M	1D			
11) Proposed Horizontal Leg Le	ength: 7775.8'				
12) Approximate Fresh Water S	trata Depths:	291', 345, 366	' 790'		
13) Method to Determine Fresh	Water Depths:	47-017-04998, 47-017-0	04719. Depths have bee	n adjusted ac	cording to surface elevations.
14) Approximate Saltwater Dep	ths: 1460', 1673	3', 1700', 1710'			
15) Approximate Coal Seam De	epths: 980'				
16) Approximate Depth to Possi	ible Void (coal m	ine, karst, other):	None Anticipat	ed	
17) Does Proposed well location directly overlying or adjacent to		Yes	No	x	
(a) If Yes, provide Mine Info:	Name:			ō	RECEIVED
	Depth:				SEP <b>26</b> 2022
	Seam:				W Department of
	Owner:			Envir	onmental Protection

API NO. 47-017 \_ 06935

OPERATOR WELL NO. Peter Unit 3H 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#	17800'	17800'	3568 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

5000 10/4/2022

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

WW-6B (10/14)

API NO. 47- 017 - 06935

OPERATOR WELL NO. Peter Unit 3H 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
- 4.31 acres 22) Area to be disturbed for well pad only, less access road (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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SEP 2 1 2022

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

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

WV Department of

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 12 vironmental Protection

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

#### 25) Proposed borehole conditioning procedures:

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

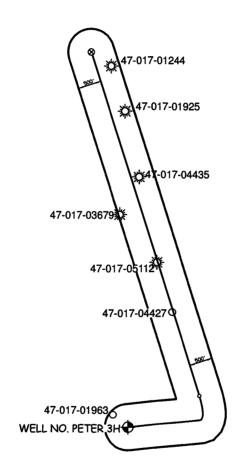
Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

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.

<sup>\*</sup>Note: Attach additional sheets as needed.

## LEMLEY PAD ANTERO RESOURCES CORPORATION



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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

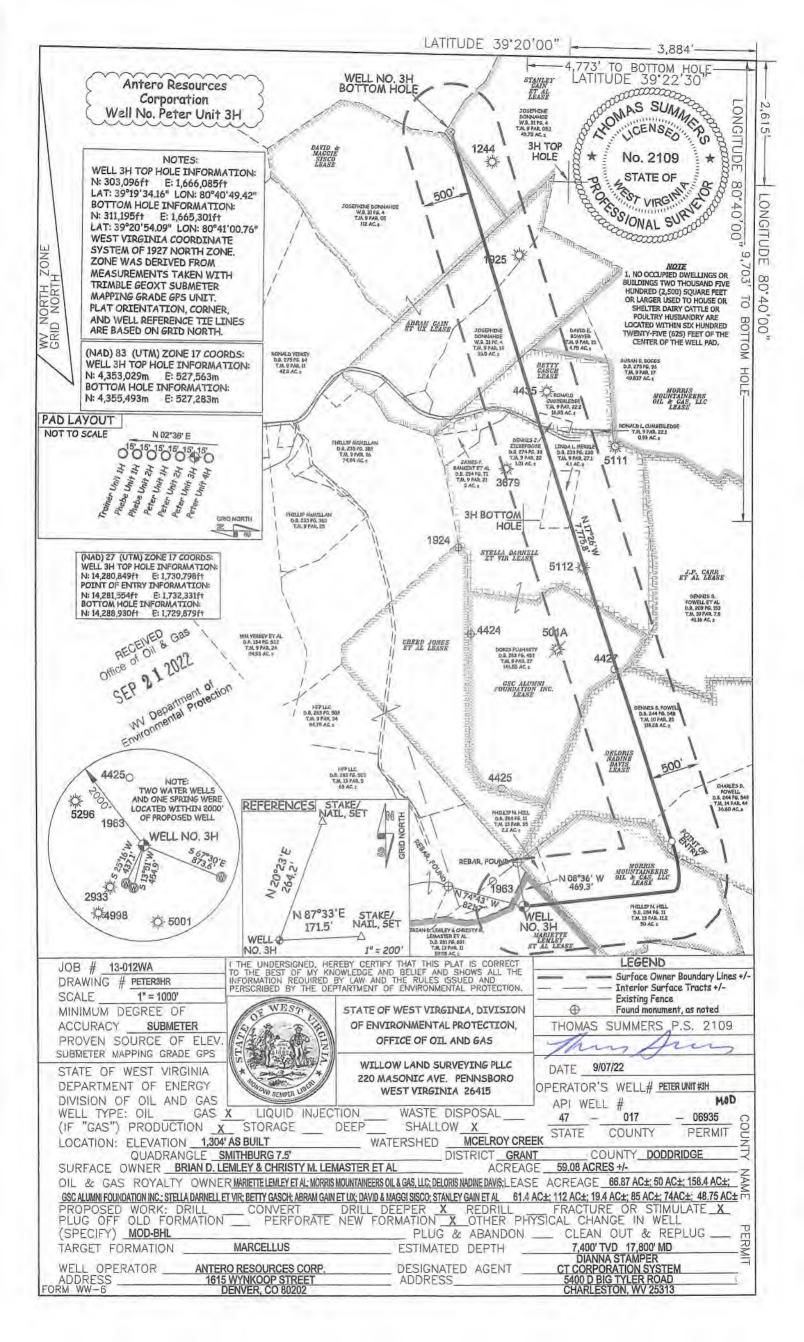
SCALE: 1-INCH = 2000-FEET 0' 2000'

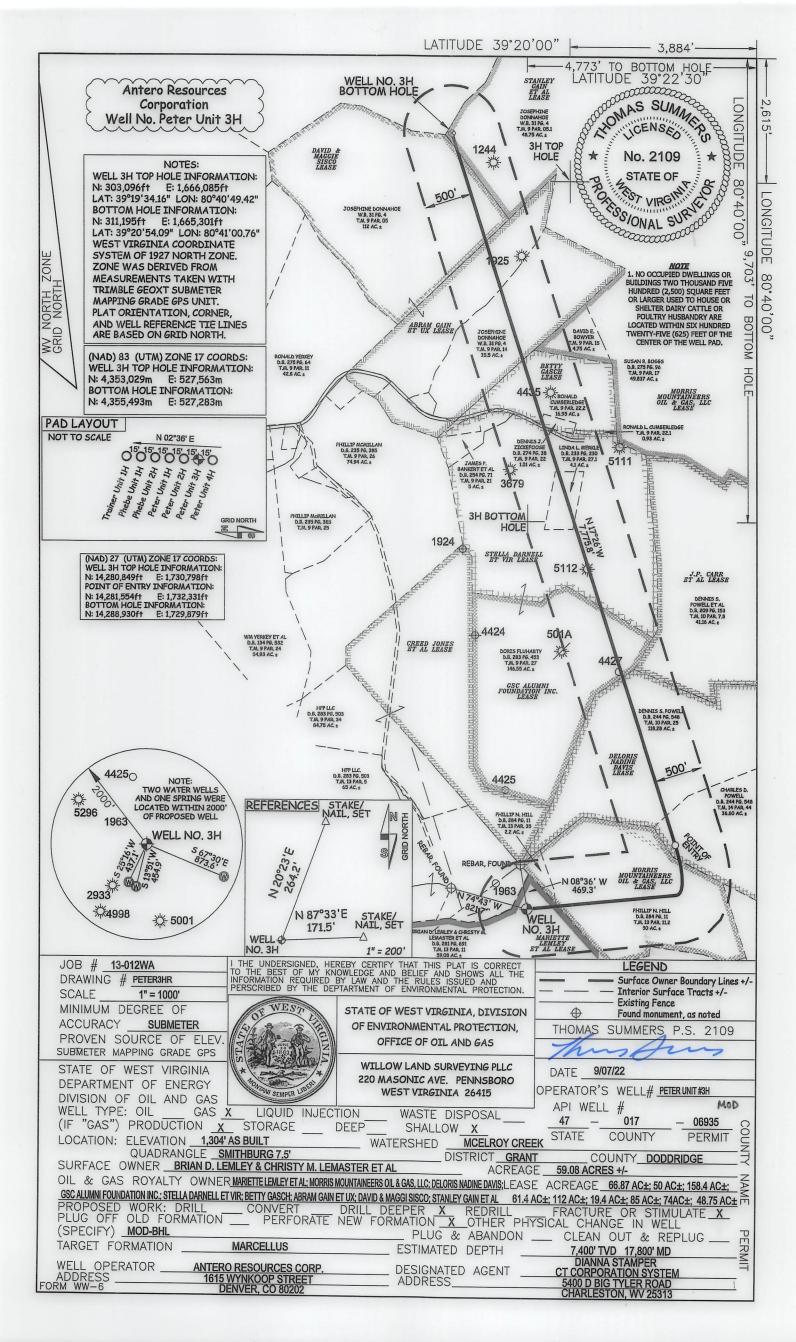
4000'

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
47017044270000	GLENVILLE STATE COLLEGE ALUMNI FOUND	3	ROSS & WHARTON GAS	JACK PROD	5,700	2258 - 5630	Big Injun, Riley, Benson, Elk	Alexander, Berea
47017051120000	DÁRNELL STELLA Ř	8490	DIVERSIFIED PROD LLC	DOMINION EXPL&PROD	2,700	1950 - 2424	Big Injun, Berea	Alexander
47017036790000	DARNELL STELLA R	3344	DIVERSIFIED PROD LLC	CNG DEVELOPMENT CO	5,401	4968 - 4974	Big Injun, Gordon, Benson	Alexander, Berea
47017044350000	GASCH	1	DIVERSIFIED PROD LLC	DAC CORP	2,208	1994 - 2015	Big İnjun	Berea
47017019250000	A GAIN	1531	DIVERSIFIED PROD LLC	CONSOL GAS SUPLY CRP	1,875		Big injun	Alexander, Berea
47017012440000	S R GAIN HRS	1	R & R OIL & GAS LLC	CAREY OIL	2,498		Big Injun	Alexander, Berea







## 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
		Affidavit of Identity	0019/0210
Appalachian Energy Development Corporation	Appalachian Energy Reserves, Inc		0179/0146
Appalachian Energy Reserves, Inc.	Jay Shearer	Assignment	10000 3 4000 3 400
Jay Shearer	Clowser Production Company	Assignment	0285/0420
Clowser Production Company	Antero Resources Appalachian Corporation	Assignment	0285/0417
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	0046/0523
Morris Mountaineers Oil & Gas LLC Lease			davolusal
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
GSC Alumni Foundation Inc Lease			
GSC Alumni Foundation Inc	Eastern American Energy Corporation	1/8	0178/0059
Eastern American Energy Corporation	Edward Mullooly	Assignment	0178/0640
Edward Mullooly	S.W. Jack Ventures	Assignment	0182/0054
S.W. Jack Ventures	Jack Production Inc	Assignment	0180/0344
Jack Production Inc	Mike Ross Inc	Assignment	02570/461
Mike Ross Inc	Antero Resources Appalachian Corporation	Assignment	0267/040
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	0046/0523
Stella Darnel,I et vir Lease			
Stella Darnell, et vir	Hope Natural Gas Company	1/8	0023/0047
Hope Natural Gas Company	CNG Transmission Corporation	Confirmatory Deed	0143/0345
CNG Transmission Corporation	Dominion Transmission Inc	Certificate of Authority	0058/0362
Dominion Transmission Inc	Antero Resources Appalachian Corporation	Partial Assignment	0230/0113
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	0046/0523
Betty Gasch Lease			
Betty Gasch	Drilling Appalachian Corporation	1/8	182/328
Drilling Appalachian Corporation	Antero Resources Appalachian Corporation	Assignment	262/600
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	46/52
Antero Resources Appaiachian Corporation	Antero Resources Corporation	Name Change	40/32
Abram Gain, et ux Lease	The state of the s	410	0000/004/
Abram Gain, et ux	Hope Natural Gas Company	. 1/8	0023/0046
Hope Natural Gas Company	Consolidated Gas Supply Corporation	Merger	0143/034
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
David & Maggie Sisco Lease	State of Section 1997 and Section 1997	Jun X	E 6220 000
David Sisco and Maggie Sisco	Antero Resources Corporation	1/8+	0460/0052

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- (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:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
Stanley Gain, et al Lease				
	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

#### 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

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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

Senior Vice President - Land

<sup>\*</sup>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

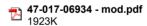
Charleston, WV 25304

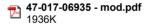
(304) 926-0499 ext. 41115

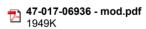
(304) 926-0452 fax

Wade.A.Stansberry@wv.gov

#### 5 attachments







**47-017-06939 - mod.pdf** 2272K

47-017-06933 - mod.pdf 1986K