



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

Wednesday, September 29, 2021
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION
1615 WYNKOOP STREET
DENVER, CO 80202

Re: Permit Modification Approval for PARR UNIT 2H
47-095-02747-00-00

Lateral Extension, Updated Lease Chain

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 handwritten signature in blue ink, appearing to read 'James A. Martin', is positioned above the printed name and title.

James A. Martin
Chief

Operator's Well Number: PARR UNIT 2H
Farm Name: KAYLA LEEK
U.S. WELL NUMBER: 47-095-02747-00-00
Horizontal 6A New Drill
Date Modification Issued: 09/29/2021

Promoting a healthy environment.

10/01/2021

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

1) Well Operator: Antero Resources Corporation 494507062 095 - Tyler Ellsworth Porter Falls 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Parr Unit 2H Well Pad Name: Margery Pad

3) Farm Name/Surface Owner: Kayla Leek Public Road Access: CR 11

4) Elevation, current ground: 1041' Elevation, proposed post-construction: _____

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

Other _____

(b) If Gas Shallow Deep _____

Horizontal

6) Existing Pad: Yes or No Yes

*DMH
9-16-21*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus Shale: 7100' TVD, Anticipated Thickness- 55 feet, Associated Pressure- 2850#

8) Proposed Total Vertical Depth: 7100' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 23,200 MD

11) Proposed Horizontal Leg Length: 14,826'

12) Approximate Fresh Water Strata Depths: 103'

13) Method to Determine Fresh Water Depths: Offset well records. Depths have been adjusted according to surface elevations.

14) Approximate Saltwater Depths: 1998'

15) Approximate Coal Seam Depths: None Anticipated

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: _____

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#	90	90	CTS, 77 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	300	300	CTS, 417 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#	23200	23200	5987 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#			
Liners							

*DMH
9-16-21*

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	9300	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			
Sizes:	N/A			
Depths Set:	N/A			

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.

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

*Draft
9-16-21*

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 51.65 acres

22) Area to be disturbed for well pad only, less access road (acres): 13.44 acres

23) Describe centralizer placement for each casing string:

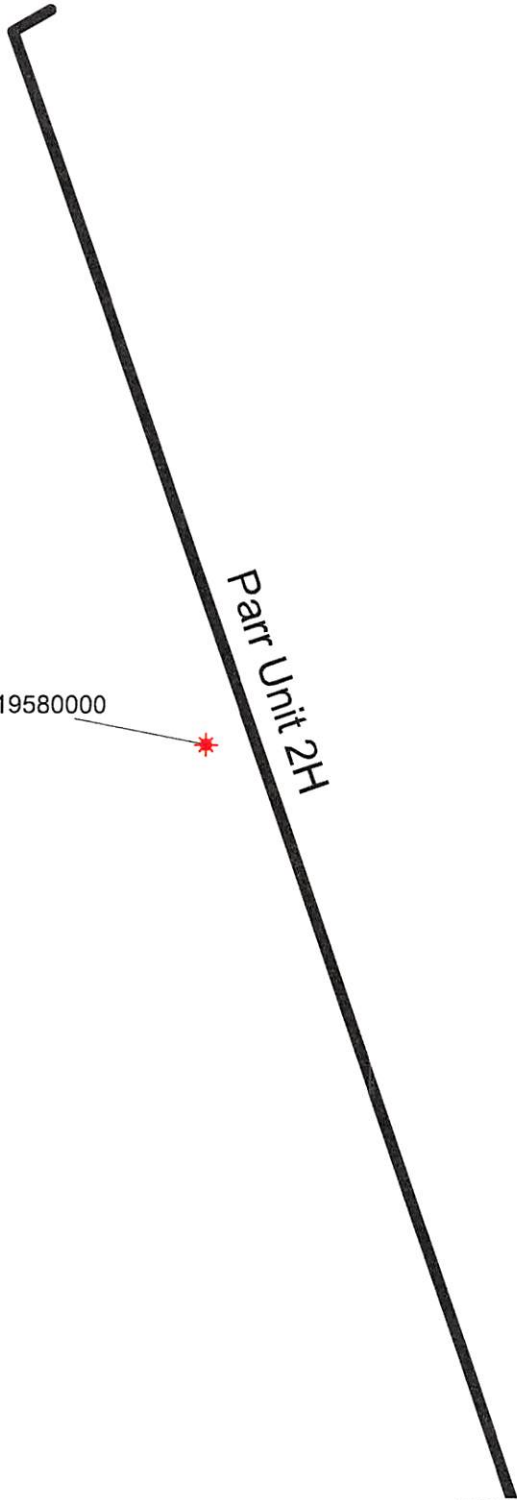
Conductor: no centralizers
Surface Casing: one centralizer 10' above the float shoe, one on the insert float collar and one every 4th joint spaced up the hole to surface.
Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface.
Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

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
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

25) Proposed borehole conditioning procedures:

*Note: Attach additional sheets as needed.



47095019580000

Parr Unit 2H

47095021420000



Antero Resources Corporation

Parr Unit 2H - AOR



WELL SYMBOLS
Gas Well

September 7, 2021

10/01/2021

LATITUDE 39°32'30"

10,566'

LATITUDE 39°30'00"

6,051' TO BOTTOM HOLE

8,747'

7,768' TO BOTTOM HOLE

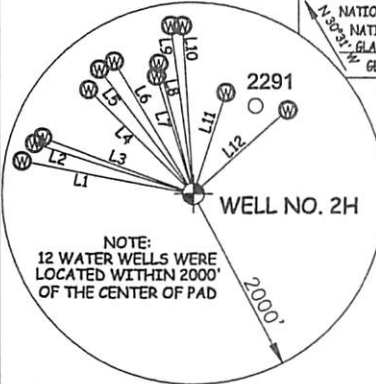
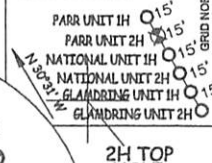
LONGITUDE 80°47'30"

Antero Resources Corporation Well No. Parr Unit 2H

NOTES:
WELL 2H TOP HOLE INFORMATION:
 N: 373,424ft E: 1,625,049ft
 LAT: 39°31'03.55" LON: 80°49'44.83"
BOTTOM HOLE INFORMATION:
 N: 359,162ft E: 1,629,359ft
 LAT: 39°28'43.23" LON: 80°48'47.18"
 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: 4,374,246m E: 514,703m
BOTTOM HOLE INFORMATION:
 N: 4,369,923m E: 516,089m

PAD LAYOUT NOT TO SCALE



22-16.3	Charles Stevens
22-17	Dorothy Stevens Revocable Trust
22-18	Clara Baker
22-18.1	Dorothy Stevens Revocable Trust
22-21	Paul Baker
22-22	Paul Baker
22-23	Anthony Parr
22-23.1	Raymond Parr
22-23.2	Anthony Parr
22-24	Ruth Weekley Est.
22-25	Paul Baker
22-26	John Sole
22-27	Carol Knapp Revocable Trust
22-28	WSD Properties LLC
22-29	WSD Properties LLC
22-30	WSD Properties LLC
22-31	Richard Grodsky Et Al
22-32	Richard Grodsky Et Al
22-33	Wilma Weekley
22-34	Raymond Parr Et Al
22-38	Bruce Parr
22-40	Ronald Webb

LINE	BEARING	DIST.	LINE	BEARING	DIST.
L1	N 79°23' W	1820.64'	L7	N 17°11' W	1289.39'
L2	N 72°38' W	1737.73'	L8	N 14°44' W	1409.38'
L3	N 69°39' W	1680.54'	L9	N 07°35' W	1774.82'
L4	N 45°05' W	1540.95'	L10	N 03°37' W	1761.12'
L5	N 36°53' W	1627.95'	L11	N 17°55' E	1113.36'
L6	N 30°40' W	1612.05'	L12	N 48°24' E	1322.09'

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.

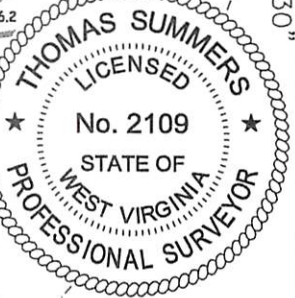


STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

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

Ellsworth District - Tyler County	
11-51	Bear Knob Holdings LLC
16-5	David Leek
16-5.1	Richard Ferrell
16-6	Kayla Leek
16-7	John Thomas
16-7.1	Lianne Wilson
16-8	Jean Neel Et Al
16-9	Bear Knob Holdings LLC
16-10	Jean Neel Et Al
16-11	Jean Neel Et Al
16-15	Harvey Miller Et Al
16-16	Harvey Miller Et Al
16-16.1	Barbara Kittle
16-17	Alfred Steele
16-18	Alfred Steele
16-19	Jean Neel Et Al
16-20	Jean Neel Et Al
16-21	Kayla Leek
16-24	James Eastham
16-25	Nancy Fowler
16-26	Barbara Kittle
16-27	Gilbert Eddy
16-28	Karneth Tomblin Et Al
16-36	George Karabetis
16-37	Rosella Murner
16-38	EQT Production Company
16-39	Richard Pyles
16-39.1	Leo Wiker
16-40	Gary Weekley
16-42	Richard Pyles
16-42.3	Richard Pyles
16-58	American Energy Marcellus Minerals LLC
22-6	EQT Production Company
22-7	Kenneth Baker
22-8	EQT Production Company
22-9	Steven Wright
22-10	Leslie Henderson
22-13	Debra Blake
22-14	Leslie Weekley
22-15	Lonnie Wade Et Al
22-16	Darlene Stephans
22-16.1	Joann McSwegin
22-16.2	Sarah Bassett

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.

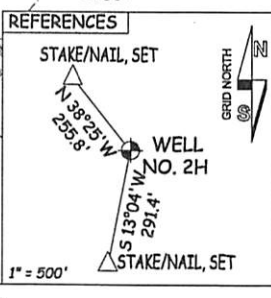


JOB # 21-006WA
 DRAWING # PARR2HR
 SCALE 1" = 2000'
 MINIMUM DEGREE OF ACCURACY SUBMETER
 PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

LEGEND
 - - - Surface Owner Boundary Lines +/-
 - - - Adjoining Surface Tracts +/-
 ⊕ Found monument, as noted

THOMAS SUMMERS P.S. 2109
 DATE 08/23/21
 OPERATOR'S WELL# PARR UNIT #2H

(NAD) 27 (UTM) ZONE 17 COORDS:
WELL 2H TOP HOLE INFORMATION:
 N: 14,350,458ft E: 1,688,608ft
POINT OF ENTRY INFORMATION:
 N: 14,350,309ft E: 1,688,389ft
BOTTOM HOLE INFORMATION:
 N: 14,336,275ft E: 1,693,154ft



WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL API WELL # 47 - 095 - 02747
 (IF "GAS") PRODUCTION STORAGE DEEP SHALLOW
 LOCATION: ELEVATION AS BUILT - 1,041' WATERSHED OUTLET MIDDLE ISLAND CREEK STATE COUNTY PERMIT
 QUADRANGLE PORTER FALLS 7.5' DISTRICT ELLSWORTH COUNTY TYLER
 SURFACE OWNER KAYLA LEEK ACREAGE 69.06 ACRES +/-
 OIL & GAS ROYALTY OWNER RIDGETOP CAPITAL LP; BRC APPALACHIAN MINERALS I LLC; LEASE ACREAGE 69.06 AC ±: 373.47 AC ±;
 JAMES F. DOAN ET UX; ROSELLA MAY MURNER SHEPHERD; RICHARD D. PYLES ET UX; WILLIAM J. WIKER ET AL; 692.78 AC ±: 30 AC ±: 47.17 AC ±: 389.01/2021
 TARYN E. PILLING; KAY F. HAIN REVOCABLE LIVING TRUST; DAVID E. BOWYER; DAVID E. BOWYER; 15.6 AC ±: 37 AC ±: 60 AC ±: 75 AC ±:
 GREENBRIER ROYALTY FUND III LLC; RAY E. STEVENS ET UX; HERBERT GRAY; PAUL RICHARD BAKER; PAUL RICHARD BAKER; BECKIE A. BRINKER 134.75 AC ±: 26.443 AC ±: 10.25 AC ±: 4.13 AC ±: 6.38 AC ±: 19.5 AC ±;
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
 PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) MOD-BHL
 TARGET FORMATION MARCELLUS PLUG & ABANDON CLEAN OUT & REPLUG
 WELL OPERATOR ANTERO RESOURCES CORP. ESTIMATED DEPTH 7,100' TVD 23,200' MD
 ADDRESS 1615 WYNKOOP ST. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM
 FORM WW-6 DENVER, CO 80202 ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313

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
<u>Ridgetop Capital LP Lease</u>			
Ridgetop Capital LP	Petroedge Energy LLC	1/8	0420/0643
Petroedge Energy LLC	Statoil USA Onshore Properties Inc.	Assignment	0436/0001
Statoil USA Onshore Properties Inc.	EQT Production Company	Assignment	0539/0239
EQT Production Company	Antero Resources Corporation	Assignment	0663/0001
<u>BRC Appalachian Minerals I, LLC Lease</u>			
BRC Appalachian Minerals I, LLC	BRC Working Interest Company, LLC	1/8	0369/0300
BRC Working Interest Company, LLC	Chesapeake Appalachia, LLC	Assignment	0369/0784
Chesapeake Appalachia, LLC	Statoil USA Onshore Properties Inc	Assignment	0378/0764
Statoil USA Onshore Properties Inc	EQT Production Company	Assignment	0539/0239
EQT Production Company	Antero Resources Corporation	Assignment	0663/0001
<u>James F. Doan, et ux Lease</u>			
James F. Doan, et ux	KC Production Company	1/8+	0232/0113
<u>Rosella May Murner Shepherd Lease</u>			
Rosella May Murner Shepherd	Antero Resources Corporation	1/8+	0023/0791
<u>Richard D Pyles, et ux Lease</u>			
Richard D Pyles, et ux	PetroEdge Energy, LLC	1/8+	0385/0350
PetroEdge Energy, LLC	Statoil USA Onshore Properties	Assignment	0406/0147
Statoil USA Onshore Properties	EQT Production Company	Assignment	0539/0239
EQT Production Company	Antero Resources Corporation	Assignment	0022/0144
<u>William J Wiker, et ux Lease</u>			
William J Wiker et ux	EQT Production Company	1/8+	0557/0624
EQT Production Company	Antero Resources Corporation	Assignment	0663/0001
<u>Taryn E. Pilling Lease</u>			
Taryn E. Pilling	Antero Resources Corporation	1/8+	0566/0331
<u>Kay F. Hain Revocable Living Trust Lease</u>			
Kay F. Hain Revocable Living Trust Lease	Antero Resources Corporation	1/8+	0085/0287
<u>David E. Bowyer Lease</u>			
David E. Bowyer	Antero Resources Corporation	1/8+	0078/0318
<u>David E. Bowyer Lease</u>			
David E. Bowyer	Antero Resources Corporation	1/8+	0101/0738

10/01/2021

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)

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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:

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>Greenbrier Royalty Fund II, LLC Lease</u>			
Greenbrier Royalty Fund II, LLC	Antero Resources Corporation	1/8+	0112/0042
<u>Ray E. Stevens et ux Lease</u>			
Ray E. Stevens et ux Lease	Petro Edge Energy LLC	1/8	0390/0676
Petro Edge Energy LLC	Statoil USA Onshore Properties	Assignment	0406/0147
Statoil USA Onshore Properties	EQT Production Company	Assignment	0539/0239
EQT Production Company	Antero Resources Corporation	Assignment	0663/0001
<u>Herbert Gray Lease</u>			
Herbert Gray	Statoil USA Onshore Properties Inc	1/8	0462/0232
Statoil USA Onshore Properties Inc	EQT Production Company	Assignment	0539/0239
EQT Production Company	Antero Resources Corporation	Assignment	0663/0001
<u>Paul Richard Baker Lease</u>			
Paul Richard Baker	EQT Production Company	1/8	0564/0197
EQT Production Company	Antero Resources Corporation	Assignment	0663/0001
<u>Paul Richard Baker Lease</u>			
Paul Richard Baker	EQT Production Company	1/8	0564/0197
EQT Production Company	Antero Resources Corporation	Assignment	0663/0001
<u>Beckie A Brinker Lease</u>			
Beckie A Brinker	Antero Resources Corporation	1/8+	0563/0160



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

Re: Expedited Modifications H6A Horizontal Well Work Permits Margery Pad

1 message

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

Wed, Sep 29, 2021 at 2:08 PM

To: Dani DeVito <ddevito@shalepro.com>, mhamsher@anteroresources.com, Derek Haught <derek.m.haught@wv.gov>, ljackson@wvassessor.com

Attached is the last modification for the Margery Pad
95-02747.

Let me know if you have any questions.

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

On Wed, Sep 29, 2021 at 12:07 PM Stansberry, Wade A <wade.a.stansberry@wv.gov> wrote:

I have attached permit copies for the Margery Pad for the following wells

95-02742

95-02743

95-02744

95-02745

95-02746

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

10/01/2021

(304) 926-0452 fax

Wade.A.Stansberry@wv.gov

 **47-095-02747 - mod.pdf**
1930K

10/01/2021