

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

API 47 - 085 - 10181 County Ritchie District Clay  
Quad Pennsboro 7.5' Pad Name Noland Pad Field/Pool Name -----  
Farm name Darrell A. Noland, et al Well Number Knoll Unit 2H  
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 4349948m Easting 501894m  
Landing Point of Curve Northing 4350337.24m Easting 502399.93m  
Bottom Hole Northing 4352185m Easting 501656m

Elevation (ft) 1143' 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 2/12/2015 Date drilling commenced 4/8/2015 Date drilling ceased 7/10/2015  
Date completion activities began 4/15/2016 Date completion activities ceased 5/20/2016  
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 124', 216' Open mine(s) (Y/N) depths N  
Salt water depth(s) ft None Identified Void(s) encountered (Y/N) depths N  
Coal depth(s) ft None Identified Cavern(s) encountered (Y/N) depths N

**APPROVED**

NAME: Michael Haff

DATE: 10-21-2016

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Reviewed by: \_\_\_\_\_

API 47-085 - 10181 Farm name Darrell A. Noland, et al Well number Knoll Unit 2H

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	28"	20"	40'	New	94#/J-55	N/A	Y
Surface	17-1/2"	13-3/8"	566'	New	48#/H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2520'	New	36#/J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	13,899'	New	20#/P-110	N/A	Y
Tubing		2-3/8"	6877'		4.6#/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 <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	Class A	150 sx	15.6	1.18	38 Cu. Ft.	0'	8 Hrs.
Surface	Class A	670 sx	15.6	1.18	389 Cu. Ft.	0'	8 Hrs.
Coal							
Intermediate 1	Class A	971 sx	15.6	1.18	790 Cu. Ft.	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	825 sx (Lead), 1174 sx (Tail)	14.5 (Lead), 15.2 (Tail)	1.30 (Lead), 1.86 (Tail)	2716 Cu. Ft.	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 13,899' MD, 6426' TVD (BHL), 3432' TVD (Deepest Point Drilled) Loggers TD (ft) 13,835' MD

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 6626'

\*\* This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Penns Park Unit 2H API# 47-085-10100). Please reference the wireline logs submitted with Form WR-35 for the Penns Park Unit 2H. A Cement Bond Log has been included with this submittal.

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

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 \_\_\_\_\_

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WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED N/A

API 47- 085 - 10181 Farm name Darrell A. Noland, et al Well number Knoll Unit 2H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
			<b>SEE ATTACHED EXHIBIT 1</b>		

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
			<b>SEE ATTACHED EXHIBIT 2</b>					

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Please insert additional pages as applicable.

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PRODUCING FORMATION(S)	DEPTHS			
Marcellus	6400' (Top)	TVD	7026' (Top)	MD

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 3000 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 7298 mcfpd Oil 138 bpd NGL --- bpd Water 647 bpd GAS MEASURED BY  Estimated  Orifice  Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H <sub>2</sub> S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	0		0		
<b>SEE ATTACHED EXHIBIT 3</b>					

Please insert additional pages as applicable.


Drilling Contractor Precision Drilling Company, LP  
Address 2640 Reach Road City Williamsport State PA Zip 17701

Logging Company Rush Wellsite Services  
Address 600 Alpha Drive City Canonsburg State PA Zip 15317

Cementing Company Nabors Completion & Production Services, Co. (bought Superior)  
Address 1650 Hackers Creeks City Jane Lew State WV Zip 26378

Stimulating Company US Well Services  
Address 533 Industrial Park Drive City Jane Lew State WV Zip 26378

Please insert additional pages as applicable.

Completed by Natalie Komp Telephone 303-357-6820  
Signature  Title Permitting Agent Date 7/12/2016

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

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API 47-085-10181 Farm Name Darrell A. Noland, et al Well Number Knoll Unit 2H

**EXHIBIT 1**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	15-Apr-16	13,640	13,808	60	Marcellus
2	15-Apr-16	13,440	13,608	60	Marcellus
3	15-Apr-16	13,241	13,409	60	Marcellus
4	16-Apr-16	13,041	13,209	60	Marcellus
5	16-Apr-16	12,842	13,010	60	Marcellus
6	16-Apr-16	12,642	12,810	60	Marcellus
7	16-Apr-16	12,443	12,611	60	Marcellus
8	17-Apr-16	12,243	12,411	60	Marcellus
9	17-Apr-16	12,043	12,212	60	Marcellus
10	17-Apr-16	11,844	12,012	60	Marcellus
11	17-Apr-16	11,644	11,813	60	Marcellus
12	18-Apr-16	11,445	11,613	60	Marcellus
13	18-Apr-16	11,245	11,414	60	Marcellus
14	18-Apr-16	11,046	11,214	60	Marcellus
15	18-Apr-16	10,846	11,015	60	Marcellus
16	18-Apr-16	10,647	10,815	60	Marcellus
17	19-Apr-16	10,447	10,616	60	Marcellus
18	19-Apr-16	10,248	10,416	60	Marcellus
19	19-Apr-16	10,048	10,216	60	Marcellus
20	19-Apr-16	9,849	10,017	60	Marcellus
21	20-Apr-16	9,649	9,817	60	Marcellus
22	20-Apr-16	9,450	9,618	60	Marcellus
23	20-Apr-16	9,250	9,418	60	Marcellus
24	20-Apr-16	9,051	9,219	60	Marcellus
25	21-Apr-16	8,851	9,019	60	Marcellus
26	21-Apr-16	8,651	8,820	60	Marcellus
27	21-Apr-16	8,452	8,620	60	Marcellus
28	21-Apr-16	8,252	8,421	60	Marcellus
29	22-Apr-16	8,053	8,221	60	Marcellus
30	22-Apr-16	7,853	8,022	60	Marcellus
31	22-Apr-16	7,654	7,822	60	Marcellus
32	22-Apr-16	7,454	7,623	60	Marcellus
33	22-Apr-16	7,255	7,423	60	Marcellus
34	23-Apr-16	7,055	7,224	60	Marcellus

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## 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	15-Apr-16	75.1	6,728	6,330	5,424	303,320	7,966	N/A
2	15-Apr-16	75.8	6,647	6,489	4,731	304,020	7,950	N/A
3	15-Apr-16	70.9	6,509	5,804	4,552	297,800	8,199	N/A
4	16-Apr-16	69.8	6,411	5,980	4,342	303,650	7,931	N/A
5	16-Apr-16	76.2	6,654	6,188	4,296	292,760	7,835	N/A
6	16-Apr-16	75.8	6,465	6,047	4,071	302,960	7,869	N/A
7	16-Apr-16	73.3	6,593	5,832	4,126	303,300	7,894	N/A
8	17-Apr-16	73.5	6,438	5,775	4,310	303,750	7,832	N/A
9	17-Apr-16	74.9	6,606	6,280	4,987	303,200	7,848	N/A
10	17-Apr-16	76.7	6,521	5,898	4,934	303,740	7,824	N/A
11	17-Apr-16	73.6	6,459	6,158	4,236	303,550	7,837	N/A
12	18-Apr-16	74.4	6,372	5,888	3,863	303,300	7,857	N/A
13	18-Apr-16	76.0	6,482	6,529	3,988	303,870	8,082	N/A
14	18-Apr-16	75.0	6,421	5,760	4,332	303,080	8,297	N/A
15	18-Apr-16	74.1	6,361	6,001	4,823	303,750	7,850	N/A
16	18-Apr-16	74.2	6,353	6,016	4,079	303,900	7,822	N/A
17	19-Apr-16	72.7	6,392	6,342	3,912	303,400	7,749	N/A
18	19-Apr-16	76.0	6,443	5,952	4,527	303,290	7,720	N/A
19	19-Apr-16	75.0	6,360	5,602	3,720	303,420	7,684	N/A
20	19-Apr-16	73.1	6,320	5,517	4,231	303,350	7,708	N/A
21	20-Apr-16	72.4	6,428	5,397	4,626	303,150	7,694	N/A
22	20-Apr-16	75.0	6,216	5,322	4,791	304,550	7,667	N/A
23	20-Apr-16	74.0	6,436	5,856	3,539	303,120	7,630	N/A
24	20-Apr-16	73.8	6,390	5,513	4,357	303,825	8,692	N/A
25	21-Apr-16	71.1	6,027	5,626	4,404	303,275	7,609	N/A
26	21-Apr-16	75.0	6,131	6,098	3,984	303,290	7,599	N/A
27	21-Apr-16	76.0	6,213	6,268	4,368	302,960	7,569	N/A
28	21-Apr-16	74.7	6,133	6,060	3,868	303,550	7,670	N/A
29	22-Apr-16	71.6	5,930	6,433	3,546	303,900	7,589	N/A
30	22-Apr-16	76.0	6,321	6,733	4,024	303,660	7,550	N/A
31	22-Apr-16	76.0	6,211	6,480	4,638	303,380	7,572	N/A
32	22-Apr-16	75.0	6,085	6,053	4,493	303,410	7,621	N/A
33	22-Apr-16	72.6	5,940	6,374	3,876	303,050	7,587	N/A
34	23-Apr-16	73.8	6,084	6,038	4,224	290,200	7,475	N/A
	AVG=	74.2	6,355	6,013	4,301	10,288,730	265,278	TOTAL

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## EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Fresh Water	124	N/A	124	N/A
Fresh Water	216	N/A	216	N/A
Siltstone/Sandstone	0	139	0	139
Sandstone	139	219	139	219
Shale	219	359	219	359
Siltstone/Shale	359	399	359	399
Trace Coal	399	659	399	659
Siltstone	659	699	659	699
Sandstone	699	739	699	739
Siltstone/Shale	739	759	739	759
Sandstone	759	779	759	779
Shale/Limestone	779	819	779	819
Siltstone	819	879	819	879
Shale	879	959	879	959
Shale	959	999	959	999
Shale/Limestone	999	1,259	999	1,259
Siltstone/Shale	1,259	1,359	1,259	1,359
Sandstone	1,359	1,579	1,359	1,579
Sandstone	1,579	2,033	1,579	2,052
Big Lime	2,033	2,882	2,052	2,923
Fifty Foot Sandstone	2,882	3,018	2,923	3,065
Gordon	3,018	3,401	3,065	3,470
Fifth Sandstone	3,401	3,474	3,470	3,547
Bayard	3,474	3,963	3,547	4,071
Speechley	3,963	4,223	4,071	4,365
Baltown	4,223	4,674	4,365	4,875
Bradford	4,674	5,010	4,875	5,262
Benson	5,010	5,253	5,262	5,540
Alexander	5,253	6,159	5,540	6,571
Sycamore	6,159	6,255	6,571	6,700
Middlesex	6,255	6,358	6,700	6,880
Burkett	6,358	6,382	6,880	6,948
Tully	6,382	6,400	6,948	7,026
Marcellus	6,400	NA	7,026	NA

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# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/15/2016
Job End Date:	4/23/2016
State:	West Virginia
County:	Ritchie
API Number:	47-085-10181-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Knoll 2H
Latitude:	39 29891000
Longitude:	-80 97803410
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,433
Total Base Water Volume (gal):	11,632,526
Total Base Non Water Volume:	0



## Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Service Abstract Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Antero Resources	Base Fluid	Water	7732-18-5	100.00000	89.97342	
Sand	J S Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	9.54192	
HCL Acid (12.6%-18.0%)	J S Well Services, LLC	Bulk Acid	Water	7732-18-5	87.50000	0.20959	
			Hydrogen Chloride	7647-01-0	18.00000	0.05006	
LGC-15	J.S. Well Services	Gelling Agents	Guar Gum	9000-30-0	50.00000	0.06047	
			Petroleum Distillates	64742-47-8	60.00000	0.05727	
			Suspending agent (solid)	14808-60-7	3.00000	0.00925	
			Surfactant	68439-51-0	3.00000	0.00363	
WFR	U.S. Well Services	Friction Reducer	Water	7732-18-5	60.00000	0.03423	
			2-Propenoic acid, polymer with propenamide	29003-06-9	30.00000	0.01711	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.01378	

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SI-1100	J.S. Well Services	Scale Inhibitor	Ethoxylated alcohol blend	68002-97-1	4.00000	0.00228
			Water	7732-18-5	80.00000	0.01012
			Ethylene Glycol	107-21-1	25.00000	0.00357
			Copolymer of Maleic and Acrylic acid	52255-49-9	10.00000	0.00149
			Potassium salt of diethylene triamine penta (methylene phosphonic acid)	15827-60-8	7.50000	0.00128
			Hexamethylene trimine penta (methylene phosphonic acid)	94690-00-1	5.00000	0.00082
			Phosphino carboxylic acid polymer	71050-62-9	5.00000	0.00082
			Hexamethylene diamine penta (methylene phosphonic acid)	23605-74-5	2.00000	0.00033
K-BAC 1020	J.S. Well Services	Anti-Bacterial Agent				
			2,2-dibromo-3-nitropropionamide	10222-01-2	20.00000	0.00402
			Deionized Water	7732-18-5	28.00000	0.00229
AP One	J.S. Well Services	Gel Breakers	Ammonium Persulfate	7727-54-0	100.00000	0.00170
AI-302	J.S. Well Services	Acid Corrosion Inhibitors				
			Water	7732-18-5	95.00000	0.00046
			2-Propyn-1-ol compound with methylxirane	38172-91-7	15.00000	0.00007

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS

\* Total Water Volume sources may include fresh water, produced water, and/or recycled water

\*\* Information is based on the maximum potential for concentration and thus the total may be over 100%

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

July 13, 2016

West Virginia Department of Environmental Protection  
Office of Oil and Gas  
Attn: John Kearney  
601 57<sup>th</sup> Street  
Charleston, WV 25304

Mr. Kearney:

Please find enclosed the Well Operator's Report of Well Work, Form WR-35 (including As-Drilled Survey Plat, Directional Survey and FracFocus report) and corresponding logs for the following well:

- Knoll Unit 1H (API# 47-085-10098) – Noland Pad
- Knoll Unit 2H (API# 47-085-10181) – Noland Pad
- Penns Park Unit 1H (API# 47-085-10099) – Noland Pad
- Penns Park Unit 2H (API# 47-085-02182) – Noland Pad
- Owo Unit 1H (API# 47-095-02179) – Coastal 1 Pad
- Owo Unit 2H (API# 47-095-02180) – Coastal 1 Pad
- James Gray Unit 1H (API# 47-095-02187) – Coastal 1 Pad

If you have any questions please feel free to contact me at (303) 357-6820.

Sincerely,

Natalie Komp  
Permitting Agent  
Antero Resources Corporation

Enclosures

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Office of Oil & Gas  
JUL 18 2016

LATITUDE 39°20'00"

5,623'

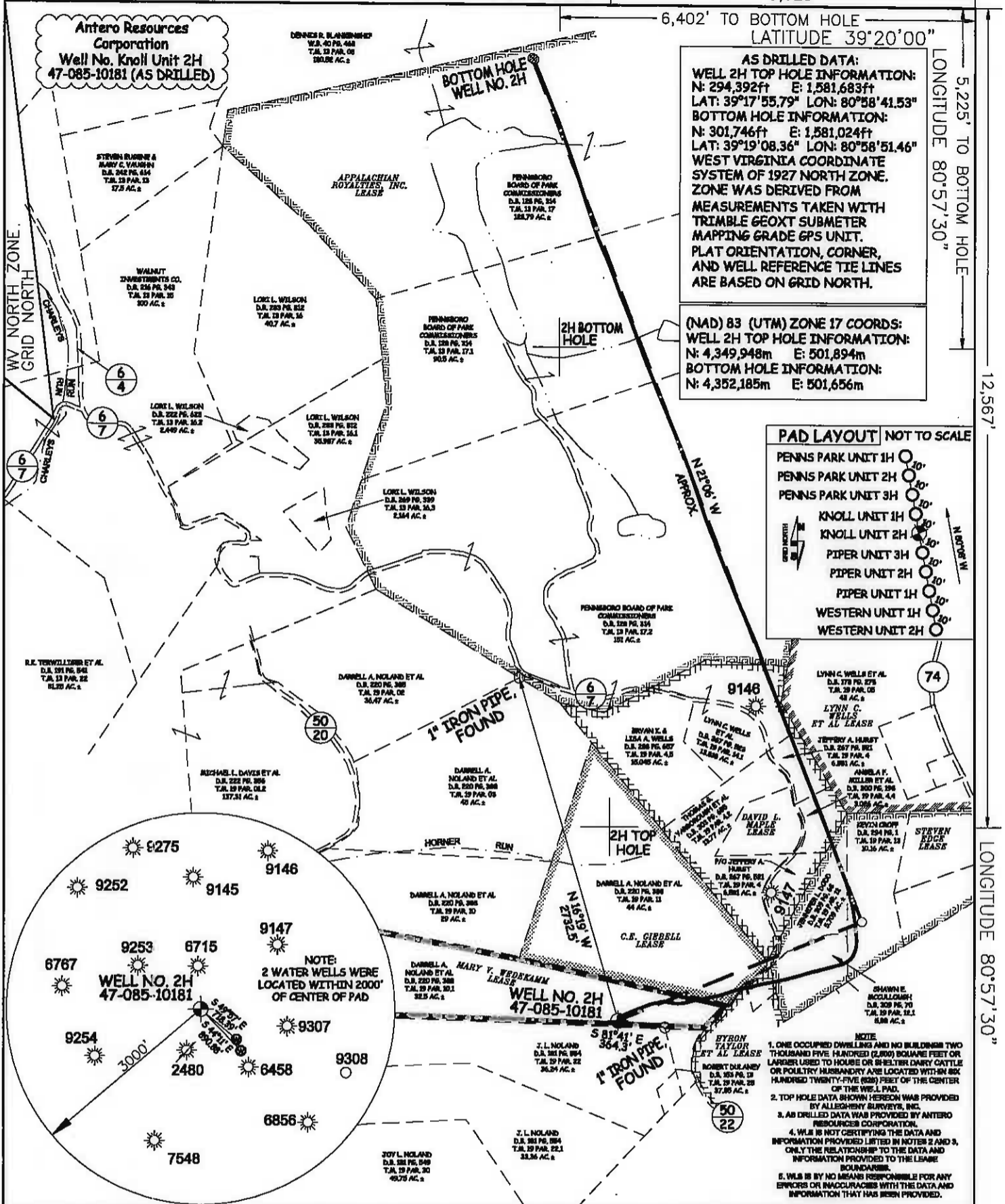
6,402' TO BOTTOM HOLE

LATITUDE 39°20'00"

LONGITUDE 80°57'30"

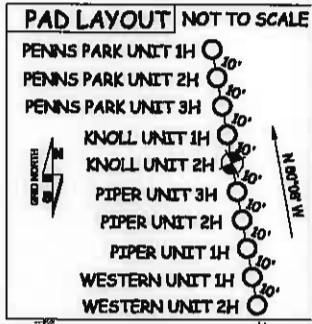
12,567'

LONGITUDE 80°57'30"



**AS DRILLED DATA:**  
**WELL 2H TOP HOLE INFORMATION:**  
 N: 294,392ft E: 1,581,683ft  
 LAT: 39°17'55.79" LON: 80°58'41.53"  
**BOTTOM HOLE INFORMATION:**  
 N: 301,746ft E: 1,581,024ft  
 LAT: 39°19'08.36" LON: 80°58'51.46"  
 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: 4,349,948m E: 501,894m  
**BOTTOM HOLE INFORMATION:**  
 N: 4,352,185m E: 501,656m



- NOTE:**
- ONE OCCUPIED DWELLING AND NO BUILDING TWO THOUSAND FIVE HUNDRED (2,000) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN 600 HUNDRED TWENTY-FIVE (600) FEET OF THE CENTER OF THE WELL PAD.
  - TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALLEGHENY SURVEYS, INC.
  - AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
  - 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 LEASEE.
  - WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.

JOB # **14-003WA**  
 DRAWING # **KNOLL2HAD**  
 SCALE **1" = 1000'**  
 MINIMUM DEGREE OF ACCURACY **SUBMETER**  
 PROVEN SOURCE OF ELEV. **SUBMETER MAPPING GRADE GPS**



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
 WILLOW LAND SURVEYING PLLC  
 266 HUSHERS RUN RD PENNSBORO WEST VIRGINIA 26415

**LEGEND**  
 - - - Surface Owner Boundary Lines +/-  
 - - - Interior Surface Tracts +/-  
 X Existing Fence  
 ⊕ Found monument, as noted  
 ○ Proposed Well Path  
 ⊙ As Drilled Well Path

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

WELL TYPE: OIL \_\_\_ GAS **X** LIQUID INJECTION \_\_\_ WASTE DISPOSAL \_\_\_  
 (IF "GAS") PRODUCTION **X** STORAGE \_\_\_ DEEP \_\_\_ SHALLOW **X**

LOCATION: ELEVATION **1,158' ORIGINAL - 1,143' AS DRILLED** WATERSHED **NORTH FORK HUGHES RIVER**  
 QUADRANGLE **PENNSBORO 7.5** DISTRICT **CLAY** COUNTY **RITCHIE**

SURFACE OWNER **DARRELL A. NOLAND ET AL** ACREAGE **32.5 ACRES +/-**  
 OIL & GAS ROYALTY OWNER **MARY V. WEDEKAMM; BYRON TAYLOR ET AL; C.E. GIBELL; DAVID L. MAPLE; STEVEN EDGE; APPALACHIAN ROYALTIES, INC.** LEASE ACREAGE **32.5 ACRES+; 37.85 ACRES+; 44 ACRES+; 54.25 ACRES+; 36.48 ACRES+; 372.5 ACRES+**

PROPOSED WORK: DRILL \_\_\_ CONVERT \_\_\_ DRILL DEEPER \_\_\_ REDRILL \_\_\_ FRACTURE OR STIMULATE \_\_\_  
 PLUG OFF OLD FORMATION \_\_\_ PERFORATE NEW FORMATION \_\_\_ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) **(X) AS DRILLED** PLUG & ABANDON \_\_\_ CLEAN OUT & REPLUG \_\_\_  
 TARGET FORMATION **MARCELLUS** ESTIMATED DEPTH **6,425' TVD 13,899 MD**

WELL OPERATOR **ANTERO RESOURCES CORP.** DESIGNATED AGENT **DIANNA STAMPER**  
 ADDRESS **1615 WYNKOOP STREET** ADDRESS **CT CORPORATION SYSTEM**  
**DENVER, CO 80202** **5400 D BIG TYLER ROAD**  
**CHARLESTON, WV 25313**

LATITUDE 39°20'00"

5,623'

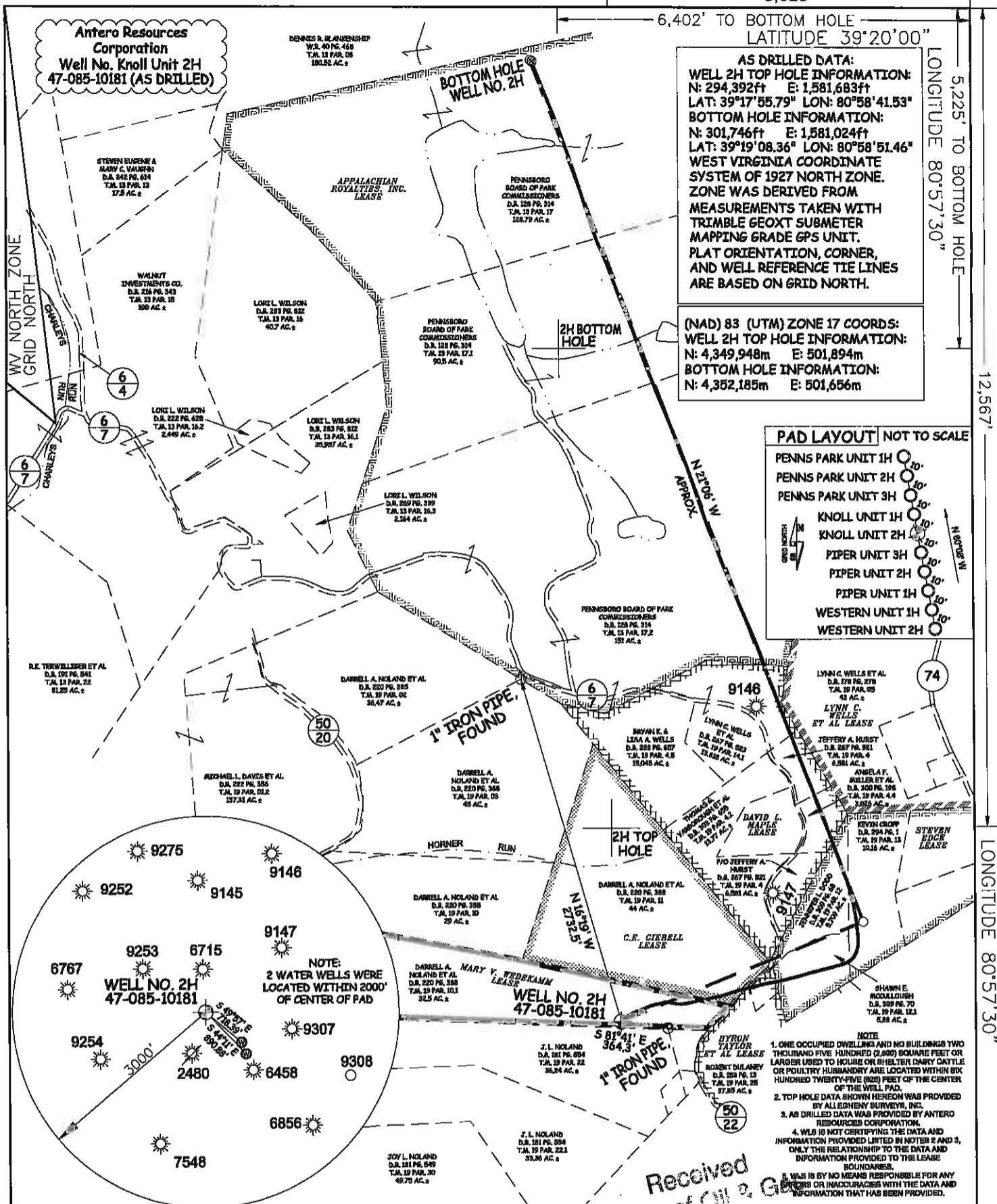
6,402' TO BOTTOM HOLE

LATITUDE 39°20'00"

LONGITUDE 80°57'30"

12,567'

LONGITUDE 80°57'30"



JOB # 14-003WA  
DRAWING # KNOLL2HAD  
SCALE 1" = 1000'  
MINIMUM DEGREE OF ACCURACY SUBMETER  
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
WILLOW LAND SURVEYING PLLC  
266 HUSHERS RUN RD PENNSBORO WEST VIRGINIA 26415

**LEGEND**  
— Surface Owner Boundary Lines +/-  
--- Interior Surface Tracts +/-  
X Existing Fence  
⊕ Found monument, as noted  
○ Proposed Well Path  
⊗ As Drilled Well Path

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

WELL TYPE: OIL \_\_\_ GAS  LIQUID INJECTION \_\_\_ WASTE DISPOSAL \_\_\_  
(IF "GAS") PRODUCTION  STORAGE \_\_\_ DEEP \_\_\_ SHALLOW

LOCATION: ELEVATION 1,159' ORIGINAL - 1,143' AS DRILLED WATERSHED NORTH FORK HUGHES RIVER  
QUADRANGLE PENNSBORO 7.5 DISTRICT CLAY COUNTY RITCHIE

SURFACE OWNER DARRELL A. NOLAND ET AL ACREAGE 32.5 ACRES +/-  
OIL & GAS ROYALTY OWNER MARY V. WEDEKAMM; BYRON TAYLOR ET AL; C.E. GIEBELL; LEASE ACREAGE 32.5 ACRES +/- 37.85 ACRES +/- 44 ACRES +/-  
DAVID L. MAPLE; STEVEN EDGE; APPALACHIAN ROYALTIES, INC. 54.25 ACRES +/- 36.48 ACRES +/- 372.5 ACRES +/-

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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 6,425' TVD 13,899 MD

WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER  
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD  
FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

Received  
Office of Oil & Gas

COUNTY NAME PERMIT