

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

API 47-073-02523 County Pleasants District Washington  
Quad Raven Rock 7 1/2 minute Pad Name NA Field/Pool Name NA  
Farm name BW Well Number 4  
Operator (as registered with the OOG) Appalachian Oil Purchasers, LLC  
Address 157 Lower Eureka Lane City St. Marys State WV Zip 26170

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4358508.86 Easting 478743.08  
Landing Point of Curve Northing NA Easting NA  
Bottom Hole Northing NA Easting NA

Elevation (ft) 640 feet 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)  
\_\_\_\_\_  
\_\_\_\_\_

Date permit issued 8/13/10 Date drilling commenced 11/17/10 Date drilling ceased 2/3/11  
Date completion activities began 2/9/11 Date completion activities ceased 4/2/11  
Verbal plugging (Y/N) NA Date permission granted NA Granted by NA

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 150 feet Open mine(s) (Y/N) depths No  
Salt water depth(s) ft 450 feet Void(s) encountered (Y/N) depths No  
Coal depth(s) ft 370 feet Cavern(s) encountered (Y/N) depths No  
Is coal being mined in area (Y/N) No

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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	24"	20"	115'	New	94	NA	Yes
Surface	17.5"	13-3/8"	506'	New	54.5	NA	Yes
Coal	12-3/8"	9-5/8"	1800'	New	40	NA	Yes
Intermediate 1	8-3/4"	7"	5176'	New	23	NA	No
Intermediate 2							
Intermediate 3							
Production	6-1/4"	4-1/2"	7457'	New	11.6	NA	No
Tubing							
Packer type and depth set		Baker Model D packer set at 6885'					

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	20"			1.18		Surface	
Surface	13-3/8"			1.18		Surface	
Coal	9-5/8"			1.26		Surface	
Intermediate 1	7"			1.41		3020' by CBL	
Intermediate 2							
Intermediate 3							
Production	4-1/2"			1.18		3830'	
Tubing							

Drillers TD (ft) 7,503 feet Loggers TD (ft) 7,498 feet

Deepest formation penetrated Queenston Shale Plug back to (ft) \_\_\_\_\_

Plug back procedure NA

Kick off depth (ft) NA

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

Well cored  Yes  No Conventional  Sidewall Were cuttings collected  Yes  No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING 4.5" casing string had centralizers placed every 3 joints

WAS WELL COMPLETED AS SHOT HOLE  Yes  No DETAILS \_\_\_\_\_

WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS \_\_\_\_\_

WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED \_\_\_\_\_

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**PERFORATION RECORD**

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
		7,150'	7,244'		Clinton sandstone
		7,300'	7,326'		Medina sandstone

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)
NA								

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Please insert additional pages as applicable.

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PRODUCING FORMATION(S)	DEPTHS	
	TVD	MD
Saltwater injection - NA		

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

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

OPEN FLOW Gas \_\_\_\_\_ mcfpd Oil \_\_\_\_\_ bpd NGL \_\_\_\_\_ bpd Water \_\_\_\_\_ bpd GAS MEASURED BY  Estimated  Orifice  Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H <sub>2</sub> S, ETC)
See Attachment 1	0		0		

Please insert additional pages as applicable.

Drilling Contractor Waco Oil and Gas  
Address PO Box 397 City Glenville State WV Zip 26351

Logging Company Weatherford  
Address 100 Leetsdale Dr., Suite A City Leetsdale State PA Zip 15056

Cementing Company BJ Service Company  
Address 837 Philippi Pike City Clarksburg State WV Zip 26301

Stimulating Company N/A  
Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Please insert additional pages as applicable.

Completed by Ashleigh Strahler Telephone (740) 371-5328  
Signature Ashleigh Strahler Title Operations Engineer Date 8/21/16

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

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# Attachment 1

<u>Lithology/Formation</u>	<u>Depth</u>
Big Injun	1150'-1190'
Berea	1580'-1620'
Ohio Shale	1650'-1720'
Onandoga	5140'-5380'
Oriskany	5380'-5510'
Helderberg	5510'-5860'
Salina	5860'-6320'
Lockport	6419'-6753'
Rochester	6753'-7000'
Dayton	7000'-7012'
Brassfield	7084'-7121'
Clinton	7140'-7259'
Medina	7297'-7328'
Queenstone	7328'-7503'

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