

APPROVED

NAME: *DL C Ford*

DATE: *2/10/2016*

Well Operator's Report of Well Work



Where energy meets innovation.

Well Number: 515681

API: 47 - 017 - 06610

Submission: Initial Amended

Notes:

RECEIVED
Office of Oil and Gas

JAN 27 2016

WV Department of
Environmental Protection

02/12/2016

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

API 47-017-06610 County DODDRIDGE District SOUTHWEST
Quad OXFORD Pad Name OXF127 Field/Pool Name _____
Farm name I.L. MORRIS Well Number 515681
Operator (as registered with the OOG) EQT Production Company
Address 625 Liberty Ave. EQT Plaza, Suite 1700 City Pittsburgh State PA Zip 15222

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,338,831.88 Easting 518,094.80
Landing Point of Curve Northing 4,338,534.69 Easting 517,783.68
Bottom Hole Northing 4,337,483.62 Easting 518,307.41

Elevation (ft) 1242 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)

Water base Mud 13.5 ppg barium sulfate, sodium chloride, xanthan gum, polyanionic cellulose, modified starch, sodium hydroxide, phosphonates and alkyl phosphates, glutaraldehyde solution, calcium hydroxide,
partially hydrolyzed polyacrylamide/polyacrylate, potassium chloride, sodium carbonate, ground walnut shells, alcohol and modified fatty acid, ferrochrome lignosulfonate, calcium carbonate, fibrous cellulose

Date permit issued 12/01/2014 Date drilling commenced 04/11/2015 Date drilling ceased 8/5/2015
Date completion activities began 10/25/2015 Date completion activities ceased 10/29/2015
Verbal plugging (Y/N) N 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 83',394',502' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1034',1263',1386',1442' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 225' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

RECEIVED
Office of Oil and Gas
JAN 27 2016

Reviewed by: _____
02/12/2016

API 47-017 - 06610 Farm name I.L. MORRIS Well number 515681

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"	40'	NEW	A-500 94LB/FT	NONE	Y
Surface	17.5"	13.375"	1032'	NEW	J-55 54.5LB/FT	270'	Y
Coal							
Intermediate 1	12.375"	9.625"	2985'	NEW	A-500 40LB/FT	NONE	Y
Intermediate 2							
Intermediate 3							
Production	8.5"	5.5"	11,378'	NEW	P-110 20LB/FT	NONE	N
Tubing							
Packer type and depth set							

Comment Details N/A

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	CLASS A	38	15.6	1.18	44.84	0	8
Surface	CLASS A	837	15.6	1.20	1004.4	0	8
Coal							
Intermediate 1	CLASS A	1085	15.6	1.18	1280.3	0	8
Intermediate 2							
Intermediate 3							
Production	CLASS A / CLASS H	630 / 540	14.2 / 15.2	1.23 / 1.97	1838.7	3541	24
Tubing							

Drillers TD (ft) 11,380 MD Loggers TD (ft) N/A
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 4,710 MD

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 _____

CONDUCTOR- NONE
 SURFACE- JOINTS: 1, 10, 20
 INTERMEDIATE- 7 CENTRALIZERS RAN AT LEAST EVERY 500' FEET
 PRODUCTION- Composite body spiral centralizers installed every joint from TD to 4,200'

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 _____

RECEIVED
Office of Oil and Gas

JAN 27 2016

WV Department of
Environmental Protection

API 47- 017 - 06610 Farm name I.L. MORRIS Well number 515681

Drilling Contractor Savanna Drilling
Address 125 Industry Road City Waynesburg State PA Zip 15370

Logging Company GYRODATA
Address 601 MAYER ST City BRIDGEVILLE State PA Zip 15017

Logging Company _____
Address _____ City _____ State _____ Zip _____

Cementing Company C&J Energy Services
Address 2504 Smith Creek Road City Waynesburg State PA Zip 15370

RECEIVED
Office of Oil and Gas
FEB 27 2016
WV Department of
Environmental Protection

515681 Final Formations API 47-1706610

Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
FRESH WATER ZONE	1	1	505	505
SAND/SHALE	1	1	227	227
WASHINGTON COAL	227	227	228	228
SAND/SHALE	228	228	1,713.00	1,713.00
MAXTON	1,713.00	1,713.00	1,879.00	1,879.00
BIG LIME	1,879.00	1,879.00	2,172.00	2,172.00
WEIR	2,172.00	2,172.00	2,345.00	2,345.00
BEREA	2,345.00	2,345.00	2,389.00	2,388.90
GANTZ	2,389.00	2,388.90	2,470.00	2,469.90
50F	2,470.00	2,469.90	2,580.00	2,579.90
30F	2,580.00	2,579.90	2,623.00	2,622.90
GORDON	2,623.00	2,622.90	2,727.00	2,726.90
4TH SAND	2,727.00	2,726.90	2,862.00	2,861.80
5TH SAND	2,862.00	2,861.80	2,901.00	2,900.80
BAYARD	2,901.00	2,900.80	3,235.00	3,234.60
WARREN	3,235.00	3,234.60	3,306.00	3,305.60
SPEECHLEY	3,306.00	3,305.60	3,837.00	3,836.60
BALLTOWN A	3,837.00	3,836.60	3,990.00	3,989.60
BALLTOWN B	3,990.00	3,989.60	4,179.00	4,178.60
BRADFORD	4,179.00	4,178.60	4,442.00	4,441.60
RILEY	4,442.00	4,441.60	4,871.00	4,869.90
BENSON	4,871.00	4,869.90	5,102.00	5,097.10
ALEXANDER	5,102.00	5,097.10	5,827.00	5,678.20
RHINESTREET	5,827.00	5,678.20	6,670.00	6,285.50
SONYEA	6,670.00	6,285.50	6,876.00	6,423.50
MIDDLESEX	6,876.00	6,423.50	6,977.00	6,482.10
GENESSEE	6,977.00	6,482.10	7,119.00	6,554.20
GENESE0	7,119.00	6,554.20	7,204.00	6,589.10
TULLY	7,204.00	6,589.10	7,261.00	6,609.70
HAMILTON	7,261.00	6,609.70	7,322.00	6,628.00
MARCELLUS	7,322.00	6,628.00		

RECEIVED
Office of Oil and Gas

JAN 27 2016

WV Department of
Environmental Protection

02/12/2016

515681-47-017-06610-0000- Stimulated Stages

Stage Number	Stimulation Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbbls)	Amount of Nitrogen/other (units)
Initiation Sleeve	10/25/2015	11.8	8,515	9,161	4,888	0	614	0
1	10/25/2015	99.1	8,075	8,458	3,656	250,070.00	6,268	0
2	10/26/2015	99.3	7,715	7,979	4,094	248,550.00	6,171	0
3	10/26/2015	95.5	7,851	8,208	4,204	250,380.00	6,003	0
4	10/26/2015	94.6	7,450	7,815	4,274	250,905.00	5,973	0
5	10/26/2015	90.4	7,238	8,754	4,915	250,252.00	7,485	0
6	10/26/2015	98.9	7,570	8,115	4,942	251,003.00	6,116	0
7	10/27/2015	98.5	7,321	7,606	4,375	254,380.00	6,156	0
8	10/27/2015	96.4	7,350	7,565	4,692	257,005.00	6,475	0
9	10/27/2015	94.5	7,323	7,644	4,602	249,400.00	5,984	0
10	10/27/2015	99	7,404	8,011	5,414	251,670.00	6,049	0
11	10/27/2015	100	7,122	7,292	3,902	251,730.00	6,012	0
12	10/27/2015	98.7	7,674	8,204	4,817	251,790.00	5,940	0
13	10/27/2015	95.4	7,562	9,055	4,724	251,590.00	5,878	0
14	10/28/2015	95.2	7,106	7,570	4,807	250,695.00	5,975	0
15	10/28/2015	97.8	7,154	7,364	3,712	248,715.00	5,954	0
16	10/28/2015	99.4	6,959	7,157	3,393	249,065.00	5,929	0
17	10/28/2015	97.9	7,076	7,718	4,640	249,985.00	5,864	0
18	10/28/2015	97.6	6,950	7,285	3,343	252,565.00	6,010	0
19	10/28/2015	96.9	6,815	7,073	4,366	252,395.00	6,104	0
20	10/28/2015	97.2	7,004	7,203	3,930	253,200.00	5,812	0
21	10/29/2015	98.6	7,112	8,076	5,240	251,560.00	6,001	0
22	10/29/2015	100.3	7,048	7,259	4,051	252,120.00	5,823	0
23	10/29/2015	92.2	7,039	7,755	4,643	253,600.00	6,113	0
24	10/29/2015	97.6	6,963	7,117	4,014	250,180.00	5,879	0
25	10/29/2015	98.8	6,963	7,325	4,289	251,050.00	5,931	0
26	10/29/2015	97.1	7,109	7,414	4,985	255,725.00	5,888	0
27	10/29/2015	99.3	6,618	7,018	3,433	254,645.00	5,887	0

RECEIVED
Office of Oil and Gas

JAN 27 2016

WV Department of
Environmental Protection

515681-47-017-06610-0000 - Perforations

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	9/15/2015	11,376	11,378	10	MARCELLUS
1	10/25/2015	11,214	11,336	32	MARCELLUS
2	10/26/2015	11,064	11,186	40	MARCELLUS
3	10/26/2015	10,914	11,036	40	MARCELLUS
4	10/26/2015	10,764	10,886	40	MARCELLUS
5	10/26/2015	10,614	10,731	40	MARCELLUS
6	10/26/2015	10,464	10,586	40	MARCELLUS
7	10/26/2015	10,314	10,436	40	MARCELLUS
8	10/27/2015	10,164	10,286	40	MARCELLUS
9	10/27/2015	10,014	10,136	40	MARCELLUS
10	10/27/2015	9,864	9,986	40	MARCELLUS
11	10/27/2015	9,714	9,836	40	MARCELLUS
12	10/27/2015	9,564	9,682	40	MARCELLUS
13	10/27/2015	9,414	9,536	40	MARCELLUS
14	10/28/2015	9,264	9,386	40	MARCELLUS
15	10/28/2015	9,114	9,236	40	MARCELLUS
16	10/28/2015	8,964	9,086	40	MARCELLUS
17	10/28/2015	8,814	8,936	40	MARCELLUS
18	10/28/2015	8,664	8,786	40	MARCELLUS
19	10/28/2015	8,514	8,636	40	MARCELLUS
20	10/28/2015	8,364	8,486	40	MARCELLUS
21	10/29/2015	8,214	8,336	40	MARCELLUS
22	10/29/2015	8,064	8,186	40	MARCELLUS
23	10/29/2015	7,914	8,036	40	MARCELLUS
24	10/29/2015	7,764	7,886	40	MARCELLUS
25	10/29/2015	7,614	7,736	40	MARCELLUS
26	10/29/2015	7,464	7,586	40	MARCELLUS
27	10/29/2015	7,314	7,436	40	MARCELLUS

Hydraulic Fracturing Fluid Product Component Information Disclosure



RECEIVED
Office of Oil and Gas

JAN 27 2016

WV Department of
Environmental Protection

Job Start Date:	10/25/2015
Job End Date:	10/29/2015
State:	West Virginia
County:	Doddridge
API Number:	47-017-06610-00-00
Operator Name:	EQT Production
Well Name and Number:	515681
Longitude:	-80.79066500
Latitude:	39.19847100
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,628
Total Base Water Volume (gal):	6,900,348
Total Base Non Water Volume:	0

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Keane Group	Carrier/Base Fluid	Water	7732-18-5	100.00000	89.10498	None
Sand (Proppant)	Keane Group	Proppant	Silica Substrate	14808-60-7	100.00000	10.51343	None
MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60.00000	0.05704	None
Hydrochloric Acid (15%)	Keane Group	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.03139	None
FFR760	Keane Group	Friction Reducer	Hydrotreated Light Distillate	64742-47-8	30.00000	0.01535	None
			Alkyl Alcohol	Proprietary	10.00000	0.00512	None
			Oxyalkylated alcohol A	Proprietary	5.00000	0.00256	None
EC6330A	Keane Group	Scale Inhibitor	Sodium Phosphate, Tribasic	7601-54-9	5.00000	0.00123	None
			Ethylene Glycol	107-21-1	5.00000	0.00123	None
PGS-214	Keane Group	Slurry	PGS-214	Proprietary	100.00000	0.00075	None
AI 600	Keane Group	Corrosion Inhibitor					

			Ethylene Glycol	107-21-1	40.00000	0.00021	None
			Dimethylformamide	68-12-2	20.00000	0.00010	None
			Pyridine, alkyl derives, quaternized with benzyl chloride	68909-18-2	15.00000	0.00008	None
			Cinnamialdehyde	104-55-2	15.00000	0.00008	None
			Nonyl Phenol Ethoxylate, Branched	127087-87-0	15.00000	0.00008	None
			1-Decanol	112-30-1	5.00000	0.00003	None
			2-Butoxyethanol	111-76-2	5.00000	0.00003	None
			1-Octanol	111-87-5	5.00000	0.00003	None
			Triethyl Phosphate	78-40-0	2.50000	0.00001	None
			Methanol	67-56-1	2.50000	0.00001	None
			Alkyl Pyridine	68391-11-7	1.00000	0.00001	None
Greenskeeper LF	Keane Group	Solvent					
			Distillates, Petroleum, Hydrotreated Light	64742-47-8	100.00000	0.00010	None
LEB-10X	Keane Group	Gel Breaker					
			Ethylene Glycol	107-21-1	30.00000	0.00003	None

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.

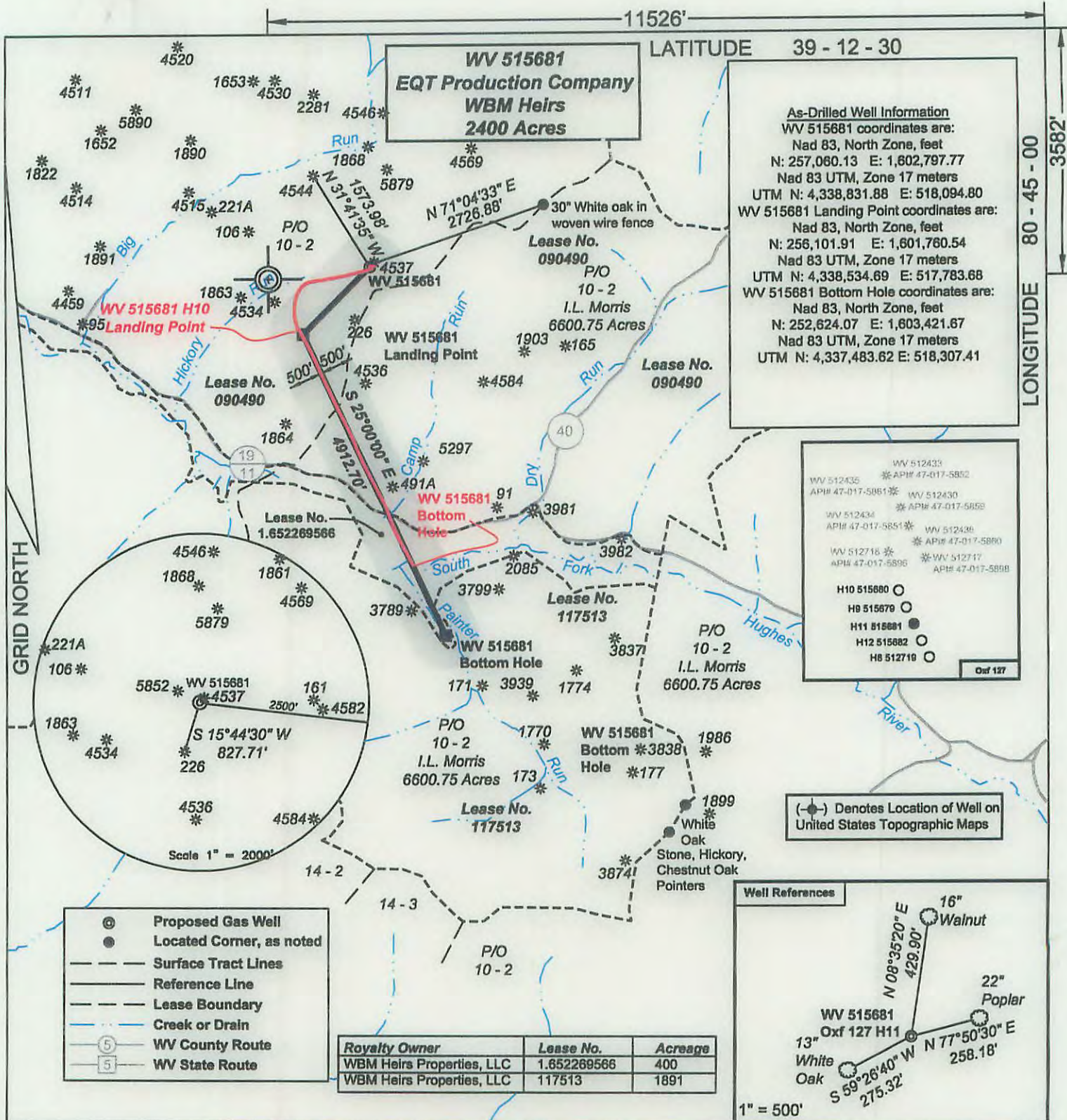
* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** 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)

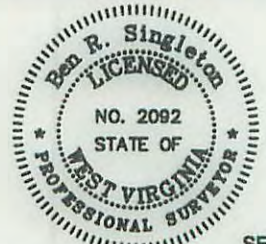
RECEIVED
Office of Oil and Gas
JAN 27 2016
WV Department of
Environmental Protection



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 regulations issued and prescribed by the Department of Environmental Protection.

Ben R. Singleton

P.S. 2092



SEAL

FILE NO: 150-30-SW-14
DRAWING NO: H11
SCALE: 1" = 2000'
MINIMUM DEGREE OF ACCURACY: 1:2500
PROVEN SOURCE OF ELEVATION: NGS CORS Station

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS DIVISION

DATE: September 1 20 14

OPERATOR'S WELL NO. 515681

API WELL NO

47 - 017 - 06610
STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
(IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
LOCATION: ELEVATION: Existing 1240 Proposed 1242.1 WATERSHED Hickory Run of South Fork of Hughes River QUADRANGLE: Oxford
DISTRICT: Southwest COUNTY: Doddridge
SURFACE OWNER: I. L. Morris ACREAGE: 6600.75
ROYALTY OWNER: WBM Heirs Properties, LLC LEASE NO: 090490 ACREAGE: 2400
PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY)
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus ESTIMATED DEPTH: TVD 6630 MD 14000

WELL OPERATOR: EQT Production Company DESIGNATED AGENT: Rex C. Ray
ADDRESS: 115 Professional Place PO Box 280 Bridgeport, WV 26330 ADDRESS: 115 Professional Place PO Box 280 Bridgeport, WV 26330