

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

API 47-091-01321 County Taylor District FLEMINGTON
Quad ROSEMONT 7.5' Pad Name RSM118 Field/Pool Name _____
Farm name JAMES M. TAYLOR ET AL Well Number 515749
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 4,349,723.1 Easting 569,607.6
Landing Point of Curve Northing 4,349,887.6 Easting 570,247.8
Bottom Hole Northing 4,348,507.5 Easting 570,776.3

Elevation (ft) 1465 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 w/o Flowback
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 01/30/2015 Date drilling commenced 06/03/2015 Date drilling ceased 8/31/2015
Date completion activities began 11/5/2015 Date completion activities ceased 11/11/2015
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 282,606,827 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1357 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 22,600,646,697,757,797,813,847,889,938,1071 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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FEB 05 2015

WV Dept. of Environmental Protection

Reviewed by: *[Signature]*

2/28/2016

API 47-091 - 01321 Farm name JAMES M. TAYLOR ET AL Well number 515749

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"	945'	NEW	J-55 54.5LB/FT	NONE	Y
Coal							
Intermediate 1	12.375"	9.625"	2505'	NEW	A-500 40LB/FT	1539'	Y
Intermediate 2							
Intermediate 3							
Production	8.5"	5.5"	13,514'	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	836	15.6	1.20	1003.2	0	8
Coal							
Intermediate 1	CLASS A / CLASS H	437 / 473	15.2 / 16.0	1.25 / 1.25	1137.5	0	8
Intermediate 2							
Intermediate 3							
Production	CLASS A / CLASS H	1,230 / 725	15.2 / 15.6	1.07 / 1.84	2650.1	2,143	24
Tubing							

Drillers TD (ft) 13,514' 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) 4,765' 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: 1.12.22
 INTERMEDIATE- 6 CENTRALIZERS RAN AT LEAST EVERY 500' FEET
 PRODUCTION- Composite body centralizers installed every joint from TD to 3,149'

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS RECEIVED Office of Oil and Gas

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS FEB 05 2016

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED WV Department of Environmental Protection

API 47- 091 - 01321 Farm name JAMES M. TAYLOR ET AL Well number 515749

Drilling Contractor Savanna Drilling Rig 803
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 Hoss Co. Services LLC
Address 614 Trotters Lane City Charleston State WV Zip 25312

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

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WV Department of
Environmental Protection

02/12/2016

515749 Final Formations (API #47-9101321)

Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
FRESH WATER ZONE	1		837	
SAND/SHALE	1		32	
PITTSBURGH COAL	32		38	
SAND/SHALE	38		610	
COAL	610		615	
SAND/SHALE	615		656	
COAL	656		661	
SAND/SHALE	661		707	
UPPER FREEPORT	707		708	
SAND/SHALE	708		767	
LOWER FREEPORT	767		768	
SAND/SHALE	768		807	
UPPER KITTANNING	807		808	
SAND/SHALE	808		823	
MIDDLE KITTANNING	823		828	
SAND/SHALE	828		857	
LOWER KITTANNING	857		858	
SAND/SHALE	858		899	
COAL	899		905	
SAND/SHALE	905		948	
COAL	948		953	
SAND/SHALE	953		1,081.00	
MAXTON	981		1,058.00	
SAND/SHALE	1,058.00		1,360.00	
COAL	1,081.00		1,085.00	
BIG LIME	1,360.00		1,542.00	
SAND/SHALE	1,542.00		1,643.00	
WEIR	1,643.00		1,657.00	
SAND/SHALE	1,657.00		1,871.00	
GANTZ	1,871.00		1,937.00	
SAND/SHALE	1,937.00		1,945.00	
50F	1,945.00		1,995.00	
SAND/SHALE	1,995.00		2,052.00	
30F	2,052.00		2,092.00	
SAND/SHALE	2,092.00		2,130.00	
GORDON	2,130.00		2,180.00	
SAND/SHALE	2,180.00		2,276.00	
4TH SAND	2,276.00		2,371.00	
SAND/SHALE	2,371.00		2,419.00	
BAYARD	2,419.00		2,466.00	
SAND/SHALE	2,466.00		2,811.00	
WARREN	2,811.00		3,157.00	
SPEECHLEY	3,157.00		3,439.00	
BRADFORD	3,439.00		3,608.00	
BALLTOWN B	3,608.00		3,855.00	
RILEY	3,855.00		4,467.00	
BENSON	4,467.00		5,018.00	5,008.10
ELK	5,018.00	5,008.10	7,082.00	6,622.60
SONYEA	7,082.00	6,622.60	7,589.00	7,027.00
MIDDLESEX	7,589.00	7,027.00	7,715.00	7,128.60
GENESSEE	7,715.00	7,128.60	7,889.00	7,264.00
GENESE0	7,889.00	7,264.00	7,921.00	7,287.90
TULLY	7,921.00	7,287.90	7,994.00	7,340.90
HAMILTON	7,994.00	7,340.90	8,196.00	7,470.00
MARCELLUS	8,196.00	7,470.00		

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515749 - 47-091-01321-0000 - Perforations

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	10/23/2015	13,512.65	13,514.00	10	MARCELLUS
1	11/5/2015	13,369.00	13,461.00	32	MARCELLUS
2	11/5/2015	13,219.00	13,341.00	40	MARCELLUS
3	11/5/2015	13,069.00	13,191.00	40	MARCELLUS
4	11/5/2015	12,923.00	13,041.00	40	MARCELLUS
5	11/6/2015	12,769.00	12,891.00	40	MARCELLUS
6	11/6/2015	12,619.00	12,741.00	40	MARCELLUS
7	11/6/2015	12,469.00	12,591.00	40	MARCELLUS
8	11/6/2015	12,319.00	12,437.00	40	MARCELLUS
9	11/6/2015	12,169.00	12,291.00	40	MARCELLUS
10	11/7/2015	12,019.00	12,141.00	40	MARCELLUS
11	11/7/2015	11,869.00	11,991.00	40	MARCELLUS
12	11/7/2015	11,719.00	11,841.00	40	MARCELLUS
13	11/7/2015	11,569.00	11,691.00	40	MARCELLUS
14	11/7/2015	11,419.00	11,541.00	40	MARCELLUS
15	11/7/2015	11,269.00	11,391.00	40	MARCELLUS
16	11/8/2015	11,119.00	11,241.00	40	MARCELLUS
17	11/8/2015	10,969.00	11,091.00	40	MARCELLUS
18	11/8/2015	10,819.00	10,941.00	40	MARCELLUS
19	11/8/2015	10,669.00	10,791.00	40	MARCELLUS
20	11/8/2015	10,519.00	10,641.00	40	MARCELLUS
21	11/8/2015	10,369.00	10,491.00	40	MARCELLUS
22	11/9/2015	10,219.00	10,341.00	40	MARCELLUS
23	11/9/2015	10,069.00	10,191.00	40	MARCELLUS
24	11/9/2015	9,919.00	10,041.00	40	MARCELLUS
25	11/9/2015	9,769.00	9,891.00	40	MARCELLUS
26	11/9/2015	9,619.00	9,741.00	40	MARCELLUS
27	11/9/2015	9,469.00	9,589.00	40	MARCELLUS
28	11/10/2015	9,319.00	9,441.00	40	MARCELLUS
29	11/10/2015	9,169.00	9,291.00	40	MARCELLUS
30	11/10/2015	9,019.00	9,141.00	40	MARCELLUS
31	11/10/2015	8,869.00	8,991.00	40	MARCELLUS
32	11/10/2015	8,719.00	8,839.00	40	MARCELLUS
33	11/10/2015	8,569.00	8,691.00	40	MARCELLUS
34	11/10/2015	8,419.00	8,541.00	40	MARCELLUS

515749 - 47-091-01321-0000 - 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	10/30/2015	9.80	7,897.00	9,424.00	5,899.00	0	558	0
1	11/5/2015	97.70	8,794.00	8,972.00	5,086.00	253,860	6455	0
2	11/5/2015	97.40	8,900.00	9,090.00	5,330.00	248,260	6383	0
3	11/5/2015	98.90	8,871.00	9,076.00	6,079.00	253,840	6778	0
4	11/5/2015	97.70	8,913.00	9,187.00	6,059.00	250,660	6688	0
5	11/6/2015	92.40	8,871.00	9,081.00	6,297.00	248,520	6464	0
6	11/6/2015	92.70	8,943.00	9,074.00	6,092.00	249,520	6244	0
7	11/6/2015	91.50	8,935.00	9,037.00	5,619.00	250,320	6268	0
8	11/6/2015	93.00	8,989.00	9,321.00	5,880.00	251,120	6209	0
9	11/6/2015	88.40	8,995.00	9,209.00	5,804.00	251,180	6372	0
10	11/7/2015	92.60	8,982.00	9,220.00	6,070.00	251,440	6436	0
11	11/7/2015	97.40	8,990.00	9,108.00	5,219.00	251,580	6191	0
12	11/7/2015	94.30	8,946.00	9,091.00	5,487.00	253,080	6140	0
13	11/7/2015	95.60	8,958.00	9,101.00	5,514.00	250,000	6258	0
14	11/7/2015	91.30	8,975.00	9,110.00	5,155.00	250,060	6016	0
15	11/7/2015	94.50	8,927.00	9,063.00	5,804.00	252,800	6110	0
16	11/8/2015	95.00	8,921.00	9,025.00	5,861.00	249,720	6160	0
17	11/8/2015	99.00	8,980.00	9,149.00	5,743.00	249,960	6240	0
18	11/8/2015	90.30	8,945.00	9,022.00	6,078.00	250,270	6,083	0
19	11/8/2015	96.80	8,988.00	9,085.00	6,106.00	250,430	6,187	0
20	11/8/2015	96.30	8,980.00	9,055.00	6,316.00	252,360	6,025	0
21	11/8/2015	96.60	9,019.00	9,220.00	6,266.00	249,740	6,208	0
22	11/9/2015	95.30	8,965.00	9,116.00	5,911.00	251,930	6,169	0
23	11/9/2015	100.10	8,909.00	8,990.00	5,662.00	250,980	6,023	0
24	11/9/2015	98.40	8,938.00	9,058.00	6,137.00	254,020	6085	0
25	11/9/2015	100.20	8,949.00	9,064.00	5,896.00	250,060	6021	0
26	11/9/2015	97.90	8,812.00	9,066.00	6,362.00	251,240	6044	0
27	11/9/2015	101.40	8,515.00	9,046.00	6,285.00	248,960	6357	0
28	11/10/2015	100.60	8,863.00	9,069.00	5,852.00	251,360	5961	0
29	11/10/2015	100.50	8,924.00	9,057.00	5,899.00	248,820	6029	0
30	11/10/2015	101.70	8,871.00	9,100.00	5,883.00	249,900	5930	0
31	11/10/2015	101.80	8,901.00	9,046.00	5,625.00	251,700	5901	0
32	11/10/2015	100.30	8,755.00	9,175.00	5,807.00	250,380	5857	0
33	11/10/2015	100.40	8,592.00	8,917.00	6,047.00	249,480	5633	0
34	11/11/2015	85.10	8,903.00	9,287.00	5,025.00	249,020	7376	0

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	11/5/2015
Job End Date:	11/11/2015
State:	West Virginia
County:	Taylor
API Number:	47-091-01321-00-00
Operator Name:	EQT Production
Well Name and Number:	515749
Longitude:	-80.19298700
Latitude:	39.29399600
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	7,470
Total Base Water Volume (gal):	8,898,078
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	89.45850	None
Sand (Proppant)	Keane Group	Proppant	Silica Substrate	14808-60-7	100.00000	10.27244	None
Hydrochloric Acid (15%)	Keane Group	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.03088	None
FFR760	Keane Group	Friction Reducer	Hydrotreated Light Distillate	64742-47-8	30.00000	0.01881	None
			Alkyl Alcohol	Proprietary	10.00000	0.00627	None
			Oxyalkylated alcohol A	Proprietary	5.00000	0.00313	None
AI 600	Keane Group	Corrosion Inhibitor	Ethylene Glycol	107-21-1	40.00000	0.00021	None
			N, N-Dimethylformamide	68-12-2	20.00000	0.00010	None
			2-Butoxyethanol	111-76-2	15.00000	0.00008	None
			Cinnamialdehyde	104-55-2	15.00000	0.00008	None
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	15.00000	0.00008	None
			1-Decanol	112-30-1	5.00000	0.00003	None

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		Poly (oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega- hydroxy-, branched	127087-87-0	5.00000	0.00003	None
		isopropyl alcohol	67-63-0	2.50000	0.00001	None
		Triethyl Phosphate	78-40-0	2.50000	0.00001	None
		1-Octanol	111-87-5	2.50000	0.00001	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)

A	JAMES & MARGARET TAYLOR ET AL	137.39 AC.±	TM 01-01
B	QUALITY MACHINE COMPANY INC	25 AC.±	
C	GREENWOOD LAND INC.	95.91 AC.±	TM 01-07
D	GREENWOOD LAND INC.	24.11 AC.±	TM 01-7.70
E	MONONGAHELIA POWER COMPANY	01 AC.±	TM 06-5.1

ROYALTY OWNERS		
GREENWOOD LAND INC. ET AL	408.86 AC.±	LEASE NO. 123804
PEGGY KNOTTS ET AL	724.57 AC.±	LEASE NO. 123605

EQT PRODUCTION COMPANY
TAYLOR LEASE
123 ACRES±
WELL NO. WV 515749
(RSM118 H13)

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

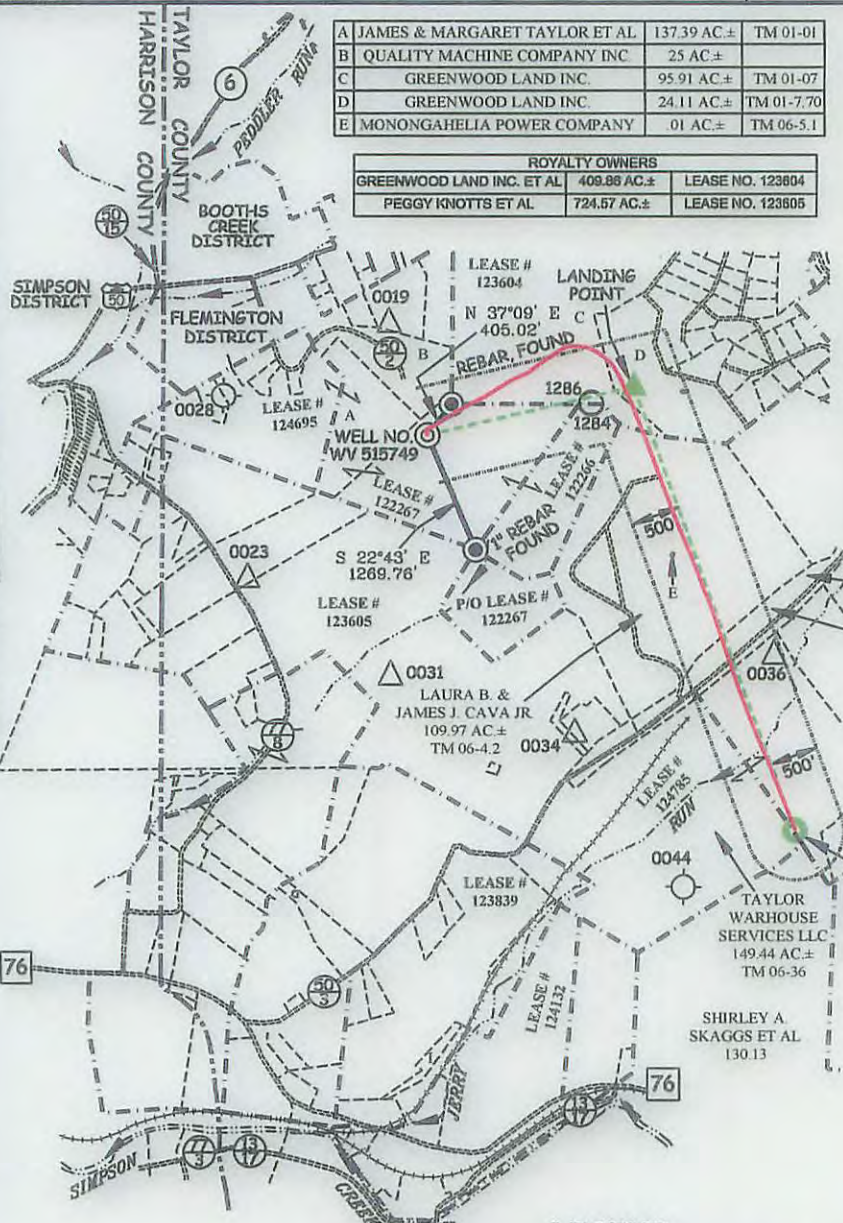
NAD'27 S.P.C.(FT) N. 289,946.0 E. 1,803,871.2
 NAD'27 GEO. LAT-(N) 39.293997 LONG-(W) 80.192987
 NAD'83 UTM (M) N. 4,349,723.1 E. 569,607.6

LANDING POINT

NAD'27 S.P.C.(FT) N. 290,450.8 E. 1,805,981.2
 NAD'27 GEO. LAT-(N) 39.295427 LONG-(W) 80.185546
 NAD'83 UTM (M) N. 4,349,887.6 E. 570,247.8

BOTTOM HOLE

NAD'27 S.P.C.(FT) N. 285,893.3 E. 1,807,640.0
 NAD'27 GEO. LAT-(N) 39.282949 LONG-(W) 80.179563
 NAD'83 UTM (M) N. 4,348,507.5 E. 570,776.3



LEGEND

LEASE LINE	---
SURFACE LINE	----
PROPOSED PATH	---
AS DRILLED PATH	---
OFFSET LINE	---
TIE LINE	---
CREEK	~~~~~
ROAD	---
COUNTY ROUTE	---
STATE ROUTE	---
PROPOSED WELL	⊙
EXISTING WELL	⊙
PERMITTED WELL	⊙
STORAGE HOLE	⊙
TAX MAP-PARCEL	00-00

NOTES ON SURVEY

1. NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
2. AS DRILLED INFORMATION PROVIDED BY EQT.

AS DRILLED COORDINATES FOR WELL NO. WV 515749

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

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BOTTOM HOLE

NAD'27 S.P.C.(FT) N. 285,898.9 E. 1,807,646.8
 NAD'27 GEO. LAT-(N) 39.282964 LONG-(W) 80.179539
 NAD'83 UTM (M) N. 4,348,509.3 E. 570,778.4

Professional Energy Consultants
 A DIVISION OF SMITH LAND SURVEYING, INC.

SLS
 SURVEYORS
 ENGINEERS
 ENVIRONMENTAL
 PROJECT MGMT.

(204) 462-5834 WWW.SLSURVEYS.COM

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 DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 2288 *Earl N. Thompson*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
 DATE SEPTEMBER 03, 20 14
 REVISED SEPTEMBER 21, 20 15
 OPERATORS WELL NO. WV 515749
 API WELL NO. 47 - 091 - 01321H
 STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 200 FILE NO. 7265AD515749
 HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK)
 SCALE 1" = 2000'

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

WELL TYPE: OIL ___ GAS LIQUID INJECTION ___ WASTE DISPOSAL ___ IF "GAS" PRODUCTION STORAGE ___ DEEP ___ SHALLOW

LOCATION: ELEVATION 1463'(GROUND)/1465'(PROPOSED) WATERSHED PEDDLER RUN
 DISTRICT FLEMINGTON COUNTY TAYLOR QUADRANGLE ROSEMONT 7.5'
 SURFACE OWNER JAMES M. TAYLOR ET AL ACREAGE 137.39±
 ROYALTY OWNER JAMES TAYLOR (LIFE) ET AL ACREAGE 123± 02/12/2016
 PROPOSED WORK: LEASE NO. 122267
 DRILL CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___
 PHYSICAL CHANGE IN WELL (SPECIFY) TARGET FORMATION MARCELLUS ESTIMATED DEPTH TVD 7,632'

WELL OPERATOR EQT PRODUCTION COMPANY DESIGNATED AGENT REX C. RAY
 ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330 ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330