

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

API 47-017-6587 County DODDRIDGE District New Milton
Quad 611 Pad Name SMI28 Field/Pool Name _____
Farm name Sue Ann Spiker Well Number 514141
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 4,345,991 Easting 522,584
Landing Point of Curve Northing 4,345,495 Easting 521,862
Bottom Hole Northing 4,344,144 Easting 522,520

Elevation (ft) 1,254 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)
Synthetic base Mud 12.4 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 12/26/2014 Date drilling commenced 1/12/2015 Date drilling ceased 4/14/2015
Date completion activities began 5/13/2015 Date completion activities ceased 5/23/2015
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 35, 92, 113, 136, 273, 298, 379, 403, 440, 491, 513, 583 Open mine(s) (Y/N) depths N
Salt water depth(s) ft N/A Void(s) encountered depths N
Coal depth(s) ft 45, 281, 557, 628, 1207, 1376 Cavern(s) encountered depths N
Is coal being mined in area (Y/N) N

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Reviewed by: JD 8/25
10/30/2015
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API 47-017 - 6587 Farm name Sue Ann Spiker Well number 514141

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"	72'	NEW	A-500 81.3LB/FT	NONE	Y
Surface	17.5"	13.375"	666'	NEW	J-55 54.5LB/FT	206', 455'	Y
Coal							
Intermediate 1	12.375"	9.625"	5333'	NEW	P-110 40LB/FT	1080', 3015'	Y
Intermediate 2							
Intermediate 3							
Production	8.5"	5.5"	12,680'	NEW	P-110 20LB/FT	NONE	N
Tubing							
Packer type and depth set							

Comment Details _____

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	69.1	15.6	1.18	81.54	0	8
Surface	CLASS A	635	15.6	1.20	762	0	8
Coal							
Intermediate 1	CLASS A / A / A	421 / 354 / 1080	14.2 / 15.6 / 15.6	1.24 / 1.18 / 1.18	522 / 417.7 / 1274.4	0	8
Intermediate 2							
Intermediate 3							
Production	Class A 50/50 POZ / H	485/620/1105	14.2 / 15.2	1.26 / 1.97	611.1/1221.4/1832.5	5,421	8
Tubing							

Drillers TD (ft) 12,685 _____ Loggers TD (ft) _____

Deepest formation penetrated Marcellus _____ Plug back to (ft) _____

Plug back procedure _____

Kick off depth (ft) 5578 _____

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: 1,7, 13 _____

INTERMEDIATE- RAN AT LEAST EVERY 500 FEET JOINTS 1, 10, 22, 34, 46, 58, 70, 82, 94, 106, 118, 130 _____

PRODUCTION- Composite body centralizers run every joint from bottom to 5,290 ft _____

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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API 47- 017 - 6587 Farm name Sue Ann Spiker Well number 514141

Drilling Contractor Pioneer Drilling Services
Address 1083 North 88 Road City Rices Landing State PA Zip 15357

Logging Company _____
Address _____ City _____ State _____ Zip _____

Logging Company _____
Address _____ City _____ State _____ Zip _____

Cementing Company Nabors
Address 2504 Smith Creek Road City Waynesburgh State PA Zip 15370

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EQT Well 514141 Final Formations - API 47-1706587

Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
FRESH WATER ZONE	1		570	
SAND / SHALE	1		55	
COAL	55		60	
SAND / SHALE	60		281	
COAL	281		285	
SAND / SHALE	285		577	
COAL	577		650	
COAL	628		633	
SAND / SHALE	633		1,207.00	
SAND / SHALE	650		628	
COAL	1,207.00		1,210.00	
SAND / SHALE	1,210.00		1,376.00	
COAL	1,376.00		1,381.00	
SAND / SHALE	1,381.00		1,753.00	
MAXTON	1,753.00		1,954.00	
BIG LIME	1,954.00		2,048.00	
BIG INJUN	2,048.00		2,251.00	
WEIR	2,251.00		2,351.00	
SAND / SHALE	2,351.00		2,458.00	
GANTZ	2,458.00		2,580.00	
FIFTY FOOT	2,580.00		2,664.00	
GORDON	2,664.00		3,264.00	
WARREN	3,264.00		3,343.00	
SPEECHLEY	3,343.00		4,006.00	
BALLTOWN B	4,006.00		4,216.00	
BRADFORD	4,216.00		4,516.00	
RILEY	4,516.00		4,931.00	
BENSON	4,931.00		5,190.00	
ALEXANDER	5,190.00		6,363.00	6,039.40
RHINESTREET	6,363.00	6,039.40	7,376.00	6,361.00
SONYEA	7,376.00	6,361.00	7,885.00	6,523.10
MIDDLESEX	7,885.00	6,523.10	8,049.00	6,576.10
GENESEE	8,049.00	6,576.10	8,299.00	6,652.10
GENESEO	8,299.00	6,652.10	8,491.00	6,696.10
TULLY	8,491.00	6,696.10	8,635.00	6,721.80
HAMILTON	8,635.00	6,721.80	8,778.00	6,747.70
MARCELLUS	8,778.00	6,747.70		

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514141 - 47-017-06587-0000 -- Perforations

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	4/28/2015	13,848.00	13,850.00	10	MARCELLUS
1	5/13/2015	13,703.00	13,793.00	32	MARCELLUS
1.1	5/15/2015	13,663.00	13,780.00	40	MARCELLUS
2	5/16/2015	13,513.00	13,635.00	40	MARCELLUS
3	5/17/2015	13,363.00	13,482.00	40	MARCELLUS
4	5/17/2015	13,213.00	13,335.00	40	MARCELLUS
5	5/17/2015	13,063.00	13,183.00	40	MARCELLUS
6	5/17/2015	12,910.00	13,033.00	40	MARCELLUS
7	5/17/2015	12,763.00	12,885.00	40	MARCELLUS
8	5/17/2015	12,613.00	12,735.00	40	MARCELLUS
9	5/18/2015	12,463.00	12,585.00	40	MARCELLUS
10	5/19/2015	12,313.00	12,435.00	40	MARCELLUS
11	5/19/2015	12,163.00	12,285.00	40	MARCELLUS
12	5/19/2015	12,013.00	12,133.00	40	MARCELLUS
13	5/19/2015	11,865.00	11,985.00	40	MARCELLUS
14	5/19/2015	11,713.00	11,835.00	40	MARCELLUS
15	5/20/2015	11,563.00	11,683.00	40	MARCELLUS
16	5/20/2015	11,413.00	11,533.00	40	MARCELLUS
17	5/20/2015	11,263.00	11,383.00	40	MARCELLUS
18	5/20/2015	11,112.00	11,223.00	40	MARCELLUS
19	5/20/2015	10,963.00	11,085.00	40	MARCELLUS
20	5/21/2015	10,813.00	10,935.00	40	MARCELLUS
21	5/21/2015	10,663.00	10,783.00	40	MARCELLUS
22	5/21/2015	10,513.00	10,631.00	40	MARCELLUS
23	5/21/2015	10,363.00	10,485.00	40	MARCELLUS
24	5/21/2015	10,213.00	10,335.00	40	MARCELLUS
25	5/21/2015	10,061.00	10,185.00	40	MARCELLUS
26	5/22/2015	9,913.00	10,035.00	40	MARCELLUS
27	5/22/2015	9,763.00	9,885.00	40	MARCELLUS
28	5/22/2015	9,613.00	9,735.00	40	MARCELLUS
29	5/22/2015	9,463.00	9,585.00	40	MARCELLUS
30	5/22/2015	9,313.00	9,435.00	40	MARCELLUS
31	5/22/2015	9,163.00	9,285.00	40	MARCELLUS
32	5/23/2015	9,013.00	9,135.00	40	MARCELLUS
33	5/23/2015	8,863.00	8,985.00	40	MARCELLUS

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514141 - 47-017-06587-0000 -- 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 (bbls)	Amount of Nitrogen/other (units)
Initiation Sleeve	5/13/2015	11.70	6,469.00	9,948.00	4,443.00	0	723	0
1	5/13/2015	68.5	9,191	9,735	6,446.00	6,175	4,008	0
1.02	5/13/2015	3.1	8,564	9,065	5,133.00	0	6,368	0
1.1	5/15/2015	64.4	8,119	9,153	6,086.00	1,525	3,401	0
2	5/16/2015	96.3	8,505	9,153	3,782.00	393,273	10,730	0
3	5/17/2015	94.5	8,240	8,597	4,771.00	202,972	6,006	0
4	5/17/2015	96.4	8,344	8,645	4,232.00	201,315	6,417	0
5	5/17/2015	100.6	8,449	8,945	5,256.00	201,974	6,975	0
6	5/17/2015	96.3	8,211	9,055	4,980.00	200,533	6,148	0
7	5/17/2015	92.0	8,456	9,032	5,462.00	200,746	6,065	0
8	5/18/2015	94.7	8,020	9,768	5,938.00	200,422	10,366	0
8.02	5/18/2015	8.0	4,818	6,421	5,151.00	0	2,135	0
9	5/19/2015	95.9	8,174	8,881	5,474.00	201,361	5,610	0
10	5/19/2015	99.2	7,998	8,218	5,361.00	188,351	5,635	0
11	5/19/2015	95.7	8,296	8,558	4,399.00	197,434	5,712	0
12	5/19/2015	99.3	8,133	8,483	5,156.00	198,538	5,771	0
13	5/19/2015	100.0	8,090	8,273	3,956.00	200,922	5,515	0
14	5/20/2015	100.1	8,320	8,683	5,325.00	198,673	5,963	0
15	5/20/2015	99.9	7,838	8,381	4,933.00	199,680	5,469	0
16	5/20/2015	97.9	7,799	8,172	5,118.00	199,176	5,534	0
17	5/20/2015	97.2	7,911	8,262	4,271.00	197,727	5,534	0
18	5/20/2015	100.3	8,010	8,305	5,224.00	200,793	5,604	0
19	5/20/2015	100.0	8,031	8,676	5,395.00	200,652	5,394	0
20	5/21/2015	100.1	8,079	8,341	4,908.00	199,365	5,445	0
21	5/21/2015	96.8	7,970	8,580	5,163.00	198,741	5,111	0
22	5/21/2015	97.3	8,039	8,306	4,248.00	199,580	5,294	0
23	5/21/2015	97.6	8,069	8,415	4,606.00	198,805	5,498	0
24	5/21/2015	96.0	8,170	9,126	5,288.00	199,424	5,446	0
25	5/21/2015	99.9	7,943	8,944	5,191.00	200,823	5,383	0
26	5/22/2015	100.8	8,176	8,627	5,355	199,263	5,793	0
27	5/22/2015	97.7	7,577	7,836	5,140	198,950	5,177	0
28	5/22/2015	99.2	7,516	8,342	4,888	198,179	5,133	0
29	5/22/2015	95.3	7,338	8,180	4,748	198,260	4,850	0
30	5/22/2015	100.9	7,794	8,179	5,030	200,869	5,313	0
31	5/22/2015	100.1	7,711	7,996	5,039	201,918	5,411	0
32	5/23/2015	100.2	7,591	7,800	4,308	201,859	5,330	0
33	5/23/2015	99.3	7,531	8,425	4,815	197,612	5,907	0

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10/30/2015

WV Department of Environmental Protection

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	5/13/2015
Job End Date:	5/23/2015
State:	West Virginia
County:	Dodderidge
API Number:	47-017-06587-00-00
Operator Name:	EQT Production
Well Name and Number:	514141
Longitude:	-80.73839100
Latitude:	39.26288100
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,748
Total Base Water Volume (gal):	8,610,336
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	FTS International	Carrier/Base Fluid	Water	7732-18-5	100.00000	95.80139	None
Sand (Proppant)	FTS International	Proppant	Crystalline Silica	14808-60-7	100.00000	3.10813	None
Hydrochloric Acid (15%)	FTS International	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.12500	None
MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60.00000	0.06070	None
FRW-900	FTS International	Friction reducer	Hydrotreated light distillate	34742-47-8	30.00000	0.02430	None
			Alkyl Alcohol	Proprietary	10.00000	0.00810	None
			Oxyalkylated alcohol A	Proprietary	5.00000	0.00405	None
			Potassium carbonate	584-08-7	48.00000	0.00641	None
			potassium hydroxide	1310-58-3	20.00000	0.00267	None
			Petroleum distillate	34742-47-8	55.00000	0.00254	None
			Guar gum	9000-30-0	50.00000	0.00231	None

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			Clay	14808-60-7	2.00000	0.00009	None
			Surfactant	68439-51-0	2.00000	0.00009	None
CS-500-SI	FTS International	Scale inhibitor					
			Ethylene glycol	107-21-1	10.00000	0.00272	None
FE-100L	FTS International	Iron control					
			Citric acid	77-92-9	55.00000	0.00240	None
CI-150	FTS International	Acid Corrosion Inhibitor					
			Isopropanol	67-63-0	30.00000	0.00048	None
			Organic amine resin salt	Proprietary	30.00000	0.00048	None
			Ethylene glycol	107-21-1	30.00000	0.00048	None
			Aromatic aldehyde	Proprietary	10.00000	0.00016	None
			Quaternary ammonium compound	Proprietary	10.00000	0.00016	None
			Dimethylformamide	68-12-2	10.00000	0.00016	None
Hydrochloric Acid (7.5%)	FTS International	Acidizing					
			Hydrochloric Acid	7647-01-0	7.50000	0.00179	None
APB-1	FTS International	Breaker					
			Ammonium persulfate	7727-54-0	95.00000	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)

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LEGEND

LEASE LINE	---
SURFACE LINE	---
PROPOSED PATH	---
AS DRILLED PATH	---
OFFSET LINE	---
TIE LINE	---
CREEK	---
ROAD	---
FENCE LINE	---
COUNTY ROUTE	---
PLUGGED WELL	○
PROPOSED WELL	○
EXISTING WELL	○
PERMITTED WELL	○
TAX MAP-PARCEL	00-00

LATITUDE 39°17'30"

**EQT PRODUCTION COMPANY
MAXWELL LEASE
1447.16 ACRES±
WELL NO. WV 514141**

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)
 NAD'27 S.P.C.(FT) N. 280,273.3 E. 1,649,362.7
 NAD'27 GEO. LAT-(N) 39.262881 LONG-(W) 80.738391
 NAD'83 UTM (M) N. 4,345,991.4 E. 522,584.1

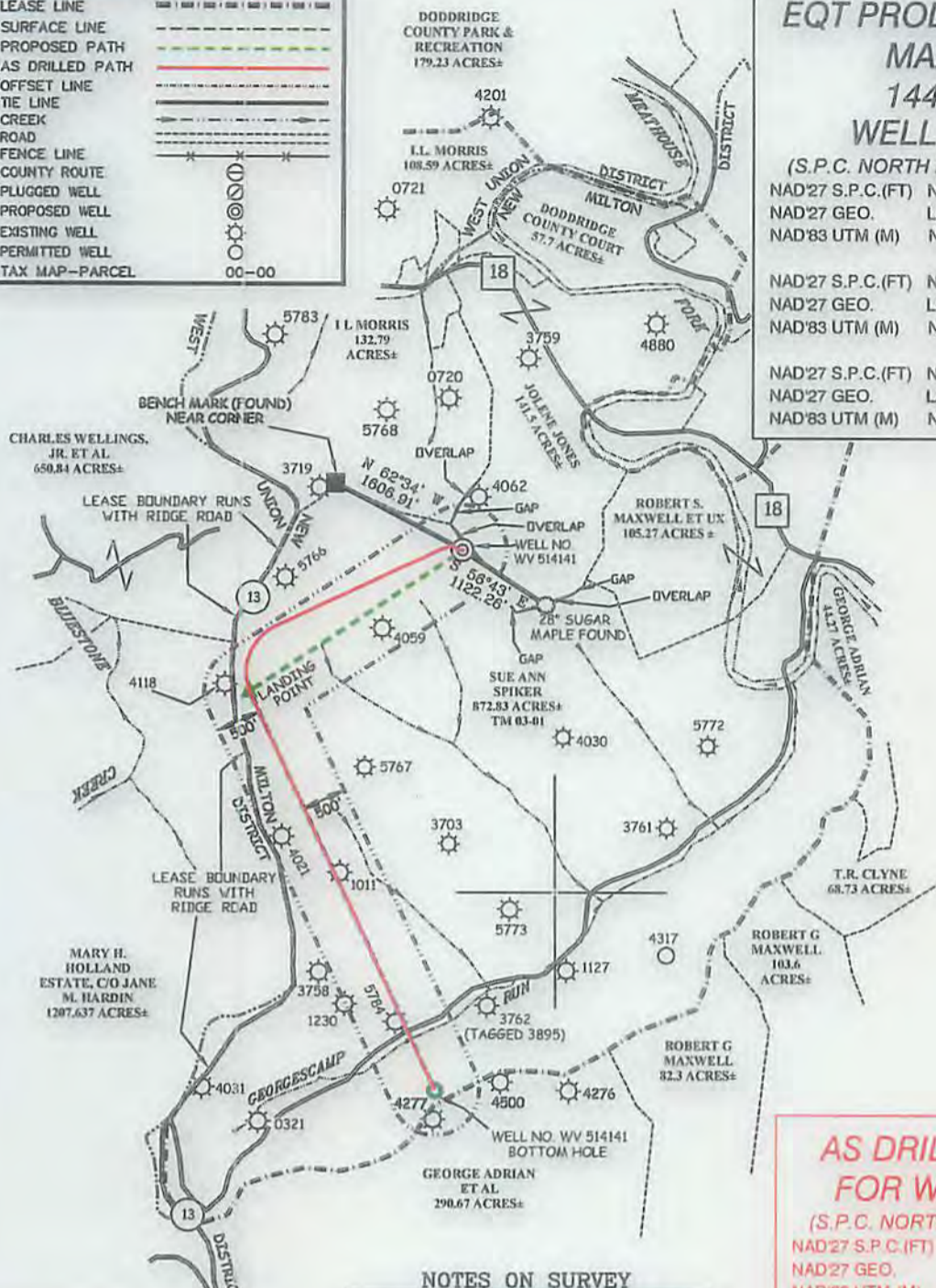
LANDING POINT
 NAD'27 S.P.C.(FT) N. 278,683.8 E. 1,646,967.4
 NAD'27 GEO. LAT-(N) 39.258426 LONG-(W) 80.746772
 NAD'83 UTM (M) N. 4,345,495.0 E. 521,862.4

BOTTOM HOLE
 NAD'27 S.P.C.(FT) N. 274,215.7 E. 1,649,051.0
 NAD'27 GEO. LAT-(N) 39.246239 LONG-(W) 80.739197
 NAD'83 UTM (M) N. 4,344,144.4 E. 522,519.9

NAD'27 GRID NORTH

LONGITUDE 80°42'30"

10,485'



**AS DRILLED COORDINATES
FOR WELL NO. WV 514141**

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)
 NAD'27 S.P.C.(FT) N. 280,273.3 E. 1,649,362.7
 NAD'27 GEO. LAT-(N) 39.262881 LONG-(W) 80.738391
 NAD'83 UTM (M) N. 4,345,991.4 E. 522,584.1
BOTTOM HOLE
 NAD'27 S.P.C.(FT) N. 274,221.1 E. 1,649,047.1
 NAD'27 GEO. LAT-(N) 39.246253 LONG-(W) 80.739211
 NAD'83 UTM (M) N. 4,344,145.0 E. 522,518.7

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.

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

 SURVEYORS
 ENGINEERS
 ENVIRONMENTAL
 PROJECT MGMT.
 630 452-5634 WWW.SLSURVEYS.COM

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAN 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 JULY 17, 20 14
 REVISED 08/06/14, 11/20/14 & 05/06/15
 OPERATORS WELL NO. WV 514141
 API WELL NO. 47 - 017 - 06587H
 STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 200 FILE NO. 7428AD514141
 HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK)
 SCALE 1" = 2,000'

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 1254'(PAD ELEVATION) WATERSHED TRIBUTARY OF GEORGESCAMP RUN
 DISTRICT NEW MILTON COUNTY DODDRIDGE QUADRANGLE SMITHBURG 7.5'
 SURFACE OWNER SUE ANN SPIKER ACREAGE 872.83±
 ROYALTY OWNER LEWIS MAXWELL HEIRS LEASE ACREAGE 1447.16± LEASE NO. 080617
 PROPOSED WORK:
 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 6,726'

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

COUNTY NAME PERMIT