

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

API 47 - 051 - 01830 County Marshall District Meade
Quad Wileyville 7.5 Pad Name BONNETTE-MSH-PAD1 Field/Pool Name Victory Field
Farm name BONNETTE, ROBERT & LINDA Well Number 201H
Operator (as registered with the OOG) SWN PRODUCTION COMPANY LLC
Address PO BOX 12359 City SPRING State TX Zip 77397-2359

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4396882.897 Easting 524702.529
Landing Point of Curve Northing 4396670.280 Easting 523884.410
Bottom Hole Northing 4397451.264 Easting 523046.980

Elevation (ft) 1428 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)
SOBM

Date permit issued 6/11/2015 Date drilling commenced 6/15/15 Date drilling ceased 8/04/2015
Date completion activities began 11/05/15 Date completion activities ceased 12/13/15
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 396 Open mine(s) (Y/N) depths Office of Oil and Gas
Salt water depth(s) ft 1717 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1204 Cavern(s) encountered (Y/N) depths JUN 28 2016

Is coal being mined in area (Y/N) N

APPROVED

NAME: Jacquelin Hunter
DATE: 6/30/2016

RECEIVED
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N
JUN 28 2016
Reviewed by:
WV Department of
Environmental Protection
AY 108285
10/25/16

API 47-051 - 01830 Farm name BONNETTE, ROBERT & LINDA Well number 201H

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	126	N	J-55/ 94#		Y
Surface	17.5	13.375	725	N	J-55/ 54.50#		Y
Coal	SEE SURFACE						
Intermediate 1	12.25	9.625	2785	N	J-55/ 40#		Y
Intermediate 2							
Intermediate 3							
Production	8.75 TO 8.50	5.5	12874	N	P-110/20#		Y
Tubing		2.375	7598	N	L-80/4.70#		N
Packer type and depth set		N/A					

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	A	GROUT	19.3	1.17		SURFACE	24
Surface	A	680	15.6	1.19	809	SURFACE	8
Coal	SEE SURFACE						
Intermediate 1	A	1065	15.8	1.17	1246	SURFACE	8
Intermediate 2							
Intermediate 3							
Production	A	1014/1363	15.6/8.3	1.24/1.19	2879	SURFACE	24
Tubing							

Drillers TD (ft) 12874 Loggers TD (ft) 12874
 Deepest formation penetrated MARCELLUS Plug back to (ft) NA
 Plug back procedure NA

Kick off depth (ft) 6547

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 _____

ALL CASING STRINGS RAN WITH A CENTRALIZER AT A MINIMUM OF 1 PER EVERY 3RD JOINT OF CASING

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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**State of West Virginia
Department of Environmental Protection
Office of Oil and Gas**

Well Operator's Report of
Initial Gas-Oil Ratio

Well Operator SWN PRODUCTION COMPANY LLC Designated Agent _____
Address PO BOX 12359 Address _____
SPRING, TX 77391-2359 _____

Geological Target Formation: MARCELLUS Depth 7059' TVD/7473' MD feet
Perforation Interval 7635'-12767' MD feet

Guidelines for testing:

1. A minimum of gas vented or flared.
2. A 24 hour pre-flow into pipelines or tanks.
3. Uniform producing rate during the 24 hour test per test period.
4. Measurement standards as for Form WR-39, "Report of Annual Production" (see 35CSR4-15)
5. Separate Form WR-36 for each producing formation in a multiple completion.

TEST DATA

Start of Test Date	Time	End of Test Date	Time	Duration of Test
Tubing Pressure	Casing Pressure	Separator Pressure	Separator Temperature	
Oil Production During Test	Gas Production During Test	Water Production During Test		
BBLs	MCF	BBLs	-Salinity	
Oil Gravity	Producing Method (flowing, pumping, gas lift etc.)			
API				

GAS PRODUCTION

Measurement Method Flange Tap <input type="checkbox"/> Pipe Tap <input type="checkbox"/> L-10 <input type="checkbox"/>		Positive Choke <input checked="" type="checkbox"/>
		Positive flow prover <input type="checkbox"/>
Orifice diameter	Pipe Diameter (inside)	Nominal Choke Size inches 9
Differential Pressure range	Max. Static pressure range	Prover and Orifice diameter - inches
Differential		Static
Gas Gravity (Air = 1.0)	Flowing Temperature	Gas Temperature
Measured	Estimated	
24 Hour Coefficient	24 Hour coefficient pressure PSIA	

TEST RESULTS

Daily Oil	Daily Water	Daily Gas	Gas-Oil Ratio
67.55	77.08	3761.773	

SWN PRODUCTION COMPANY LLC
Well Operator
BY ELIZABETH GEE
ITS: DESIGNATED REPRESENTATIVE

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	11/4/2015
Job End Date:	11/10/2015
State:	West Virginia
County:	Marshall
API Number:	47-051-01830-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	BONNETTE MSH 201H
Longitude:	-80.71177425
Latitude:	39.72146367
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,956
Total Base Water Volume (gal):	5,900,958
Total Base Non Water Volume:	0



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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	Operator	Carrier	Water	7732-18-5	100.00000	70.38826	
DustPro Chemical Coating	Baker Hughes	Dust Suppression	MSDS and Non-MSDS Ingredients Listed Below	N/A		13.97535	
Sand, White, 40/70	Baker Hughes	Proppant	MSDS and Non-MSDS Ingredients Listed Below	N/A		8.39735	
Sand, White, 100 mesh	Baker Hughes	Proppant	MSDS and Non-MSDS Ingredients Listed Below	N/A		5.57787	
HCl, 10.1 - 15%	Baker Hughes	Acidizing	MSDS and Non-MSDS Ingredients Listed Below	N/A		1.06053	SmartCare Product
MaxPerm-20A, 265 gallon tote	Baker Hughes	Friction Reducer	MSDS and Non-MSDS Ingredients Listed Below	N/A		0.05349	SmartCare Product
Scaletrol 720	Baker Hughes	Scale Inhibitor	MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00821	SmartCare Product
Alpha 1427	Baker Hughes	Biocide					

			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00810	SmartCare Product
Ferrotrol 300L	Baker Hughes	Iron Control					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00729	SmartCare Product
CI-39	Baker Hughes	Corrosion Inhibitor					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00213	
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.							
Ingredients in Additive (s) (MSDS and non- MSDS)	Baker Hughes	See Trade Name(s) List					
			Crystalline Silica (Quartz)	14808-60-7	100.00000	13.87246	
			Non-hazardous acrylic polymer	NA	75.00000	10.40445	
			Propylene glycol	57-55-6	30.00000	4.16178	
			Water	7732-18-5	85.00000	0.93936	
			Hydrochloric Acid	7647-01-0	15.00000	0.15791	
			1-Propanesulfonic acid, 2- methyl-2-[(1-oxo-2-propen-1-yl) amino]-, polymer with 2- propenamide, sodium salt	83446-68-8	60.00000	0.03186	
			Hydrotreated Light Distillate	64742-47-8	30.00000	0.01593	
			Citric Acid	77-92-9	60.00000	0.00434	
			Ethylene Glycol	107-21-1	45.00000	0.00367	
			Sodium Chloride	7647-14-5	5.00000	0.00274	
			Sorbitan, mono-(9Z)-9- octadecenoate	1338-43-8	5.00000	0.00266	
			Polyoxyethylene sorbitan monooleate	9005-65-6	5.00000	0.00266	
			Oxyalkylated alcohol	78330-21-9	5.00000	0.00266	
			Glutaraldehyde	111-30-8	30.00000	0.00241	
			2-Propenoic, Polymer with Sodium Phosphinate, Sodium Salt	71050-62-9	20.00000	0.00163	
			Oxyalkylated Fatty Acid	61791-002	40.00000	0.00084	
			Didecyl Dimethyl Ammonium Chloride	7173-51-5	10.00000	0.00080	
			Formic Acid	64-18-6	30.00000	0.00063	
			Aldehyde	104-55-2	30.00000	0.00063	
			Tar Bases, Quinoline Derivs., Benzyl Chloride-Quaternized	72480-70-7	30.00000	0.00063	
			Quaternary Ammonium Compound	68424-85-1	5.00000	0.00051	
			Calcium Chloride	10043-52-4	5.00000	0.00041	
			Ethanol	64-17-5	5.00000	0.00040	
			Isopropanol	67-63-0	5.00000	0.00011	
			Sulfurized polyolefin	68037-13-8	5.00000	0.00011	
			Potassium Chloride	7447-40-7	1.00000	0.00008	
			Potassium Iodide	7681-11-0	2.00000	0.00004	
			Polyaklylene	7756-94-7	1.00000	0.00002	
			Potassium Acetate	127-08-2	0.50000	0.00001	

FERTILIZER
FERTILIZER
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* 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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BONNETTE MSH 201H

LITHOLOGY/FORMATION	TOP DEPTH, TVD (FT)	BOTTOM DEPTH, TVD (FT)	TOP DEPTH, MD (FT)	BOTTOM DEPTH, MD (FT)	QUANTITY AND TYPE OF FLUID
Base of Fresh Water	N.A.	396.00	N.A.	396.00	
Top of Salt Water	654.00	N.A.	654.00	N.A.	
Pittsburgh Coal	1202.73	1209.68	1204.00	1211.00	
Big Injun (ss)	2312.88	2936.61	2319.00	2945.00	
Berea (siltstone)	2936.61	6478.22	2945.00	6539.34	
Rhinestreet (shale)	6478.22	6748.94	6539.34	6837.42	
Cashaqua (shale)	6748.94	6848.31	6837.42	6974.68	
Middlesex (shale)	6848.31	6921.15	6974.68	7094.73	
Burket (shale)	6921.15	6948.02	7094.73	7145.79	
Tully (ls)	6948.02	6979.28	7145.79	7212.60	
Mahantango (shale)	6979.28	7059.08	7212.60	7473.91	
Marcellus (shale)	7059.08	N.A.	7473.91	N.A.	

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BONNETTE MSH 201 - STIMULATION INFORMATION

STAGE NUM	Stim 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
1	11/5/2015	2	7,772	8,489	5,635	501,411	7,088	
2	11/5/2015	2	8,009	8,480	5,060	502,281	7,222	
3	11/5/2015	2	7,876	8,496	5,259	503,699	7,082	
4	11/5/2015	2	8,028	8,513	5,043	503,757	7,049	
5	11/5/2015	2	8,077	8,452	4,746	503,533	6,955	
6	11/6/2015	2	7,892	8,575	5,280	501,166	7,001	
7	11/6/2015	2	7,893	8,876	5,250	500,849	7,033	
8	11/6/2015	2	8,084	8,730	4,834	503,328	6,961	
9	11/7/2015	2	7,818	8,358	5,236	507,076	6,926	
10	11/7/2015	2	7,646	8,623	5,421	502,345	6,906	
11	11/7/2015	2	8,100	8,365	4,636	500,203	7,077	
12	11/8/2015	2	8,048	8,795	5,008	497,426	7,640	
13	11/8/2015	2	7,659	8,631	5,038	502,169	7,033	
14	11/8/2015	2	7,570	8,093	5,312	502,292	6,931	
15	11/8/2015	2	7,747	8,259	5,103	506,170	6,880	
16	11/9/2015	2	7,449	8,098	5,077	501,789	7,052	
17	11/9/2015	2	7,126	7,962	5,038	500,259	6,962	
18	11/9/2015	2	6,733	7,228	4,128	505,203	7,027	
19	11/10/2015	2	5,797	6,415	3,942	501,295	6,862	
20	11/10/2015	2	5,828	8,028	3,553	499,769	6,812	
Grand total		2	7,558	8,876	4,930	10,046,020	140,499	

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BONNETTE MSH 201 - PERFORATION RECORD

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
1	11/5/2015	12,575	12,767	42
2	11/5/2015	12,315	12,512	42
3	11/5/2015	12,055	12,252	42
4	11/5/2015	11,795	11,992	42
5	11/5/2015	11,535	11,732	42
6	11/6/2015	11,275	11,472	42
7	11/6/2015	11,015	11,212	42
8	11/6/2015	10,755	10,952	42
9	11/7/2015	10,495	10,692	42
10	11/7/2015	10,235	10,432	42
11	11/7/2015	9,975	10,172	42
12	11/8/2015	9,715	9,912	42
13	11/8/2015	9,455	9,652	42
14	11/8/2015	9,195	9,392	42
15	11/8/2015	8,932	9,134	42
16	11/9/2015	8,675	8,872	42
17	11/9/2015	8,415	8,612	42
18	11/9/2015	8,155	8,352	42
19	11/10/2015	7,895	8,092	42
20	11/10/2015	7,635	7,832	42

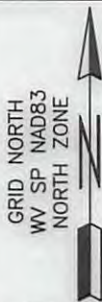
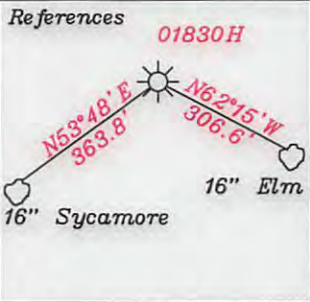
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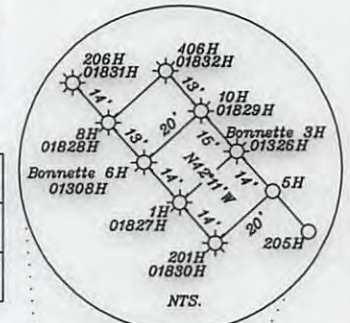
Surface Hole 1,162'

Bottom Hole 6,566'

LATITUDE 39-45-00 N

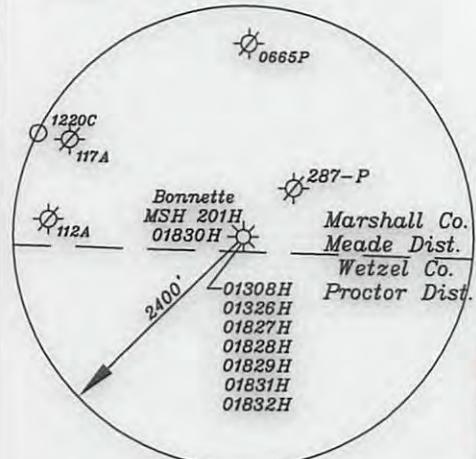


Surface Hole
UTM NAD 83(meters)-4396882.897 N. 524702.529 E
LP1
UTM NAD 83(meters)-4396611.294 N. 524312.018 E
LP2
UTM NAD 83(meters)-4396670.280 N. 523884.410 E
Bottom Hole
UTM NAD 83(meters)-4397451.264 N. 523046.980 E



- A- Ries 3 Ac. TM.3-8 1-292576-001, 1-254767-000
- B- Hohman 4.07 Ac. TM.3-8.3 1-292576-001, 1-254767-000
- C- Hohman 4.12 Ac. TM.3-8.2 & 8.1 1-292576-001, 1-254767-000
- D = B. Ferrell 1 Ac. T.M. 3/9
- E = B. Ferrell 0.54 Ac. T.M. 3/10.1
- F = B. Ferrell 0.33 Ac. T.M. 3/10.5
- G = J. Ferrell 28.97 Ac. T.M. 3/10.3 1-254839-000
- H- Miller 5.02 Ac. TM.3-10.2
- I- Ferrell 1.29 Ac. TM.3-10.4
- J- Zombotti 4.34 Ac. TM.3-11.2
- K- Wright 0.617 Ac. TM.22-3.3
- L- Mysliwiec Trust 1.1 Ac. TM.22-3.1
- M- M. Miller 75 Ac. TM.22-3.2
- N- Bonnette 126.53 Ac. TM.22-8 1-254855-000
- O- Fox 56 Ac. TM.4-1
- P- Frohnapfel 16.62 Ac. TM.22-5&6
- Q- H. Miller 63.73 Ac. T.M. 22-3
- R- Ries 62.32 Ac. T.M. 3-7 1-255029-000
- S- Zombotti 4.15 Ac. TM.3-10
- T- L. Fox 124.57 Ac. TM.22-1 1-273241-000
- U- M. Miller et al 124.8 Ac. TM.22-2 1-263133-000
- Z- Ferrell 1 Ac. TM.3-20.1
- A1- CNG Transmission Co. TM.22-1.1 1.43 Ac.
- B1- Consol Energy Holdings LLC 1 TM.25-3.2 1.43 Ac.
- C1- The Co. Comm. of Marshall Co. 3.143 Ac. TM.22-8.1
- D1- Klug TM.22-7 1 Ac.

Top Hole
UTM NAD 83(meters)-4396882.8 N. 524702.6 E
TP1
UTM NAD 83(meters)-4396520.4 N. 524071.7 E
Bottom Hole
UTM NAD 83(meters)-4397489.9 N. 523043.0 E



Note: No water wells were found within 250' of well location.

Note: All wells within 500' of the horizontal leg are shown on this plat based upon information taken from DEP mapping, well plats and aerial photos.

NUMBER	DIRECTION	DISTANCE
L1	S56°08'W	1,561.13'
L2	N81°11'W	1,416.67'
L3	S28°25'E	1,004.52'
L4	N09°24'W	2,477.65'

LEGEND

As Drilled Leg (Red Text) ———

Permit Leg (Blue Text) ———

Note: A dwelling is located S18°21'W 534' from the center of the pad.

Note: Ties to wells and corners are based on State Plane Grid North-WV North Zone NAD 83.

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS

FILE NO. _____

DRAWING NO. 1

SCALE 1" = 2000'

MINIMUM DEGREE OF ACCURACY 1 in 200

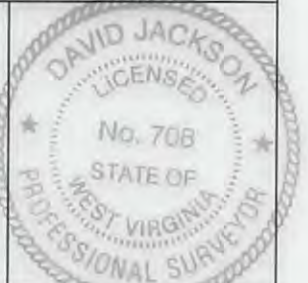
PROVEN SOURCE OF ELEVATION GPS

submeter unit

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 RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

(SIGNED) David Jackson

R.P.E. _____ L.L.S. 708



STATE OF WEST VIRGINIA
Division of Environmental Protection
OFFICE OF OIL AND GAS

DATE March 1, 2016

OPERATOR'S WELL NO. Bonnette MSH 201H

API WELL NO. 47 051 01830H

WELL TYPE: OIL GAS LIQUID INJECTION X WASTE DISPOSAL STATE COUNTY PERMIT

(IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X

LOCATION: ELEVATION 1,427.7' WATER SHED Whetstone Creek

DISTRICT Meade COUNTY Marshall

QUADRANGLE Wileyville 7 1/2'

SURFACE OWNER Robert and Linda Bonnette ACREAGE 126.53 ac.

OIL & GAS ROYALTY OWNER Robert and Linda Bonnette, Robert and Barbara Bias, & Larry and Glenda Kress LEASE ACREAGE 623.67 ac.

LEASE NO. 10/28/2016

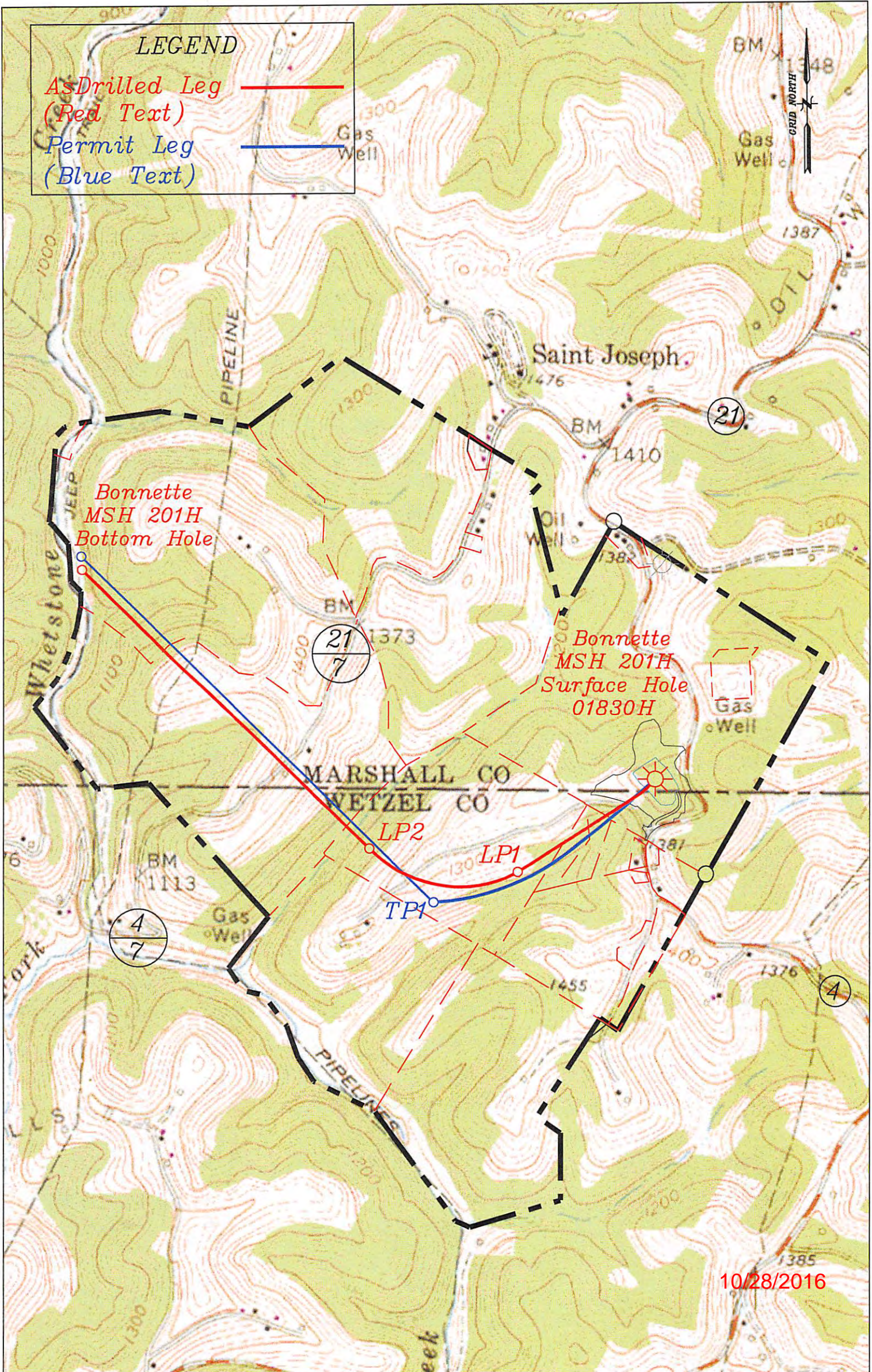
PROPOSED WORK: DRILL X CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION PERFORATE NEW FORMATION X OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As Drilled

PLUG AND ABANDON CLEAN OUT AND REPLUG

TARGET FORMATION Marcellus ESTIMATED DEPTH TVD=7,073':TMD=12,874'

WELL OPERATOR SWN Production Co. LLC DESIGNATED AGENT Dee Southall

ADDRESS P.O. Box 1300 Jane Lew, WV 26378 ADDRESS P.O. Box 1300 Jane Lew, WV 26378



LEGEND

As Drilled Leg (Red Text) ————

Permit Leg (Blue Text) ————

*Bonnets MSH 201H
Bottom Hole*

*Bonnets MSH 201H
Surface Hole
01830H*

MARSHALL CO
WETZEL CO

10/28/2016

Well: Bonnette MSH 201H
 Quad: Wileyville 7 1/2'
 District: Meade
 County: Marshall

