

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

API 47-009-00194 County BROOKE District BUFFALO
Quad BETHANY Pad Name THURMAN SPEECE BRK PAD Field/Pool Name PANHANDLE FIELD WET
Farm name THURMAN SPEECE, JR. & GOLDIE N. STANLEY Well Number THURMAN SPEECE BRK 1H
Operator (as registered with the OOG) SWN PRODUCTION COMPANY, LLC
Address PO BOX 12359 City SPRING State TX Zip 77391-2359

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,448,878.839 Easting 534,887.217
Landing Point of Curve Northing 4,449,156.012 Easting 534,611.217
Bottom Hole Northing 4,450,807.620 Easting 533,937.857

Elevation (ft) 1139.5 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

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Date permit issued 5/30/2017 Date drilling commenced 7/23/2017 Date drilling ceased 10/15/2017
Date completion activities began 3/03/2018 Date completion activities ceased 4/25/2018
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 264 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 475 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 320 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed

Reviewed by:
ES 6/14/18

Emilio 6.11.18

API 47- 009 - 00194 Farm name THURMAN SPEECE, JR. & GOLDIE N. STANLEY Well number THURMAN SPEECE BRK 1H

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	NEW	J-55/94#		Y
Surface	17.5	13.375	411	NEW	J-55/54.50#	345.3', 303.1'	Y, 10'
Coal	SEE SURFACE						
Intermediate 1	12.25	9.625	1727	NEW	J-55/36#		Y, 35'
Intermediate 2							
Intermediate 3							
Production	8.75/8.50	5.5	12584	NEW	HCP-110/20#		Y
Tubing		2.375	6260	NEW	L-80/4.7#		N
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	GROUT TO SURFACE				SURFACE	24
Surface	CLASS A	382	15.60	1.20	458.4	SURFACE	8
Coal	SEE SURFACE						
Intermediate 1	CLASS A	660	15.60	1.18	778.8	SURFACE	8
Intermediate 2							
Intermediate 3							
Production	CLASS A	880/1674	15.60	1.21/1.19	1064.8/1992.06	SURFACE	24
Tubing							

Drillers TD (ft) 12584 Loggers TD (ft) 12584
 Deepest formation penetrated MARCELLUS Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 5135

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

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DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____

SURFACE: 7 CENTRALIZERS - EVERY THIRD JOINT OF CASING
 INTERMEDIATE: 24 CENTRALIZERS - EVERY THIRD JOINT OF CASING
 PRODUCTION: 181 CENTRALIZERS - EVERY THIRD JOINT FROM SURFACE TO TOP OF CURVE, THEN EVERY JOINT UNTIL TD

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 _____

API 47- 009 - 00194 Farm name THURMAN SPEECE, JR. & GOLDIE N. STANLEY Well number THURMAN SPEECE BRK 1H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
	SEE	ATTACHMENT	1		

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)
		SEE	ATTACHMENT	2				

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PRODUCING FORMATION(S)	DEPTHS	
	5,942	6,322
MARCELLUS	TVD	MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 1270 psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

OPEN FLOW Gas 3262 mcfpd Oil 271 bpd NGL _____ bpd Water 718 bpd
GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	0		0		
	SEE	ATTACHMENT	3		

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Drilling Contractor SWN DRILLING COMPANY
Address PO BOX 12359 City SPRING State TX Zip 77391-2359

Logging Company WEATHERFORD
Address 2000 St. James Place City Houston State TX Zip 77056

Cementing Company SCHLUMBERGER WELL SERVICES
Address 1080 US Hwy 33 East City Weston State WV Zip 26452

Stimulating Company US WELL SERVICES
Address 533 Industrial Park Dr. City Jane Lew State WV Zip 26378

Please insert additional pages as applicable.

Completed by BOBBY WILLIS Telephone 832-796-2884
Signature [Signature] Title REGULATORY ANALYST Date 5/30/2018

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



SWN Production Company, LLC
P O Box 12359
Spring, Texas 77391-2359
www.swn.com

Via Federal Express

June 4, 2018

State of West Virginia
Department of Environmental Protection
Office of Oil & Gas
601 57th Street
Charleston, WV 25304

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RE: SWN Production Company, LLC
Operator ID: 494512924
Regulatory Filings: WR-34 & WR-35

To Whom It May Concern:

Please find enclosed the Page plot (Azimuth) for the Thurman Speece BRK 1H (API: 47-009-00194), which was inadvertently left out of the completion package.

If you have any questions or require additional information, please contact me via email at bobby_willis@swn.com or telephone at (832) 796-2884.

Sincerely,

Bobby Willis
Regulatory Analyst
SW Appalachia Division

/bw
Encl.

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	3/3/2018
Job End Date:	3/19/2018
State:	West Virginia
County:	Brooke
API Number:	47-009-00194-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	Thurman Speece BRK 1H
Latitude:	40.18957300
Longitude:	-80.59015700
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	5,969
Total Base Water Volume (gal):	13,521,318
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	Southwestern Energy	Carrier/Base Fluid	Water	7732-18-5	100.00000	82.74543	
Sand	U.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	16.16487	
HCL Acid (12.6%-17.5%)	U.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.40000	0.84423	
			Hydrogen Chloride	7647-01-0	17.50000	0.19628	
WFRA-2000	U.S. Well Services, LLC	Friction Reducer	Water	7732-18-5	60.00000	0.01312	
			2-Propenoic acid, polymer with 2 propenamide	29003-06-9	30.00000	0.00656	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.00538	
BIOC11219A	Nalco Champion	Anti-Bacterial Agent	Methanol	64-17-5	60.00000	0.00901	
			Benzyl-(C12-C16 Alkyl)-Dimethyl-Ammonium Chloride	68424-85-1	30.00000	0.00572	
			Glutaraldehyde	111-30-8	10.00000	0.00191	

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LT FLUSH SYSTEM I	U.S. Well Services, LLC	Other					
			Mineral oil, petroleum distillates, hydrotreated light naphthenic	64742-53-6	100.00000	0.00322	
SCAL16486A	Nalco Champion	Scale Inhibitor					
			Ethylene Glycol	107-21-1	30.00000	0.00163	
			Amine Triphosphate	Proprietary	30.00000	0.00146	
AI-303	U.S. Well Services, LLC	Acid Corrosion Inhibitors					
			Ethylene glycol	107-21-1	40.00000	0.00029	
			Cinnamaldehyde	104-55-2	20.00000	0.00011	
			Formic acid	64-18-6	20.00000	0.00010	
			Butyl cellosolve	111-76-2	20.00000	0.00009	
			Polyether	60828-78-6	10.00000	0.00005	
			Acetophenone, thiourea, formaldehyde polymer	68527-49-1	5.00000	0.00003	
CALCIUM CHLORIDE	U.S. Well Services, LLC	Other					
			Calcium chloride	10043-52-4	90.00000	0.00040	
OPTI-FLEX	U.S. Well Services, LLC	Friction Reducer					
			Trade Secret	Proprietary	50.00000	0.00007	
			Distillates, petroleum, hydrotreated light	64742-47-8	50.00000	0.00006	

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)

**THURMAN SPEECE BRK 1H
ATTACHMENT 1
PERF REPORT**

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
1	1/23/2018	12,384	12,456	33
2	3/3/2018	12,279	12,351	33
3	3/3/2018	12,178	12,246	33
4	3/3/2018	12,069	12,141	33
5	3/4/2018	11,960	12,036	33
6	3/4/2018	11,859	11,931	33
7	3/4/2018	11,754	11,826	33
8	3/5/2018	11,649	11,723	33
9	3/5/2018	11,544	11,616	33
10	3/5/2018	11,439	11,514	33
11	3/6/2018	11,334	11,406	35
12	3/6/2018	11,229	11,301	31
13	3/6/2018	11,124	11,196	33
14	3/7/2018	11,019	11,091	33
15	3/7/2018	10,914	10,986	33
16	3/7/2018	10,809	10,881	33
17	3/7/2018	10,704	10,776	33
18	3/8/2018	10,599	10,671	33
19	3/8/2018	10,494	10,569	33
20	3/8/2018	10,389	10,461	33
21	3/9/2018	10,284	10,356	33
22	3/9/2018	10,179	10,251	33
23	3/9/2018	10,074	10,141	33
24	3/9/2018	9,969	10,041	33
25	3/10/2018	9,864	9,936	33
26	3/10/2018	9,759	9,831	33
27	3/10/2018	9,654	9,726	33
28	3/10/2018	9,549	9,621	33
29	3/11/2018	9,444	9,516	33
30	3/11/2018	9,339	9,411	33
31	3/11/2018	9,238	9,306	33
32	3/11/2018	9,129	9,201	33
33	3/12/2018	9,024	9,096	33
34	3/12/2018	8,919	8,991	33
35	3/12/2018	8,814	8,886	33
36	3/13/2018	8,709	8,781	33
37	3/13/2018	8,604	8,678	35
38	3/13/2018	8,499	8,568	31
39	3/14/2018	8,394	8,466	33
40	3/14/2018	8,286	8,361	33
41	3/14/2018	8,184	8,259	33
42	3/14/2018	8,079	8,151	33
43	3/14/2018	7,974	8,046	33

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PERF REPORT

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
44	3/15/2018	7,866	7,941	33
45	3/15/2018	7,764	7,833	33
46	3/15/2018	7,659	7,731	33
47	3/16/2018	7,554	7,628	33
48	3/16/2018	7,449	7,521	33
49	3/16/2018	7,344	7,416	33
50	3/16/2018	7,239	7,311	33
51	3/16/2018	7,134	7,206	33
52	3/17/2018	7,029	7,101	33
53	3/17/2018	6,929	6,996	33
54	3/17/2018	6,819	6,891	33
55	3/17/2018	6,714	6,786	33
56	3/18/2018	6,609	6,681	33
57	3/18/2018	6,508	6,576	33
58	3/18/2018	6,399	6,471	33
59	3/18/2018	6,294	6,366	33

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THURMAN SPEECE BRK 1H

ATTACHMENT 2

STIM REPORT

STAGE NUM	Stim Date	Ave Pump Rate (BPM)	Ave Treatment	Max Breakdown	ISIP (PSI)	Amount of Proppant (lbs)	Amount of water bbls	Amount of nitrogen/othe
1	3/3/2018	78	7,841	9,290	4,047	376,220	8,571	
2	3/3/2018	88	7,416	8,158	4,327	373,940	5,988	
3	3/3/2018	85	7,559	7,965	4,325	374,925	5,847	
4	3/4/2018	85	7,697	8,702	4,179	375,225	5,770	
5	3/4/2018	85	7,467	8,002	4,345	375,150	5,789	
6	3/4/2018	88	7,664	8,122	4,805	374,160	5,859	
7	3/5/2018	85	7,616	8,183	4,774	375,150	5,730	
8	3/5/2018	86	7,721	8,133	4,647	375,660	5,869	
9	3/5/2018	88	7,573	8,005	4,315	377,020	5,801	
10	3/5/2018	86	7,633	8,760	4,310	374,925	5,683	
11	3/6/2018	88	7,384	7,859	4,527	376,160	5,757	
12	3/6/2018	86	7,717	8,344	4,308	374,260	5,726	
13	3/7/2018	86	7,540	8,005	4,484	375,275	5,696	
14	3/7/2018	86	7,485	8,350	4,723	376,120	5,744	
15	3/7/2018	90	7,922	8,557	4,282	374,880	5,671	
16	3/7/2018	87	7,622	7,995	4,330	374,650	5,735	
17	3/8/2018	88	7,550	8,297	4,389	374,760	5,689	
18	3/8/2018	90	7,953	8,941	4,629	378,380	5,734	
19	3/8/2018	89	7,603	8,038	4,869	374,650	5,627	
20	3/8/2018	87	7,587	8,508	4,161	375,525	5,690	
21	3/9/2018	88	7,684	8,132	4,256	375,950	5,677	
22	3/9/2018	90	7,558	8,559	4,596	374,540	5,672	
23	3/9/2018	90	7,662	8,408	4,661	375,525	5,598	
24	3/10/2018	89	7,478	7,853	4,062	374,970	5,629	
25	3/10/2018	91	7,709	8,806	4,738	375,140	5,619	
26	3/10/2018	90	7,525	8,009	4,568	376,720	5,579	
27	3/10/2018	89	7,339	8,143	4,308	375,925	5,585	
28	3/11/2018	89	7,255	7,815	4,479	375,185	5,536	
29	3/11/2018	91	7,422	8,887	4,301	374,860	5,568	
30	3/11/2018	90	7,516	8,759	4,237	378,480	5,525	
31	3/11/2018	88	7,626	8,191	4,266	375,325	5,552	
32	3/12/2018	89	7,415	7,781	4,318	375,325	5,507	
33	3/12/2018	87	7,271	7,588	4,233	375,225	5,501	
34	3/12/2018	89	7,540	8,908	4,399	377,880	5,524	
35	3/12/2018	89	7,174	7,892	5,195	375,920	5,452	
36	3/13/2018	89	6,904	7,521	4,432	375,990	5,559	
37	3/13/2018	90	7,147	8,176	4,725	375,100	5,453	
38	3/13/2018	89	7,072	8,235	4,292	375,640	5,471	
39	3/14/2018	89	7,135	7,867	4,755	376,850	5,509	
40	3/14/2018	89	6,986	8,053	4,631	374,980	5,493	
41	3/14/2018	90	6,851	7,433	4,895	377,020	5,436	
42	3/14/2018	90	7,227	7,919	4,263	375,910	5,346	
43	3/15/2018	89	7,085	8,382	5,072	375,130	5,479	
44	3/15/2018	90	7,179	8,905	4,533	373,780	5,368	
45	3/15/2018	90	6,806	7,346	4,458	375,550	5,443	
46	3/15/2018	90	6,988	8,051	4,297	378,240	5,410	
47	3/16/2018	91	6,919	7,965	5,261	375,290	5,405	
48	3/16/2018	90	6,840	7,943	4,432	376,560	5,348	
49	3/16/2018	90	6,806	7,427	4,165	376,080	5,414	
50	3/16/2018	90	7,059	7,757	4,960	375,150	5,757	
51	3/17/2018	90	6,751	8,163	4,504	375,220	4,844	
52	3/17/2018	90	6,827	7,858	4,138	376,740	4,851	
53	3/17/2018	91	6,972	7,668	5,106	375,920	4,817	

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ATTACHMENT 2
STIM REPORT**

STAGE NUM	Stim Date	Ave Pump Rate (BPM)	Ave Treatment	Max Breakdown	ISIP (PSI)	Amount of Proppant (lbs)	Amount of water bbls	Amount of nitrogen/othe
54	3/17/2018	90	6,595	7,761	4,699	374,130	4,874	
55	3/18/2018	90	6,529	8,643	4,321	375,240	4,810	
56	3/18/2018	90	6,916	8,783	4,692	250,390	3,903	
57	3/18/2018	91	6,653	7,689	4,918	371,660	4,816	
58	3/18/2018	91	6,972	8,151	4,532	375,210	4,807	
59	3/19/2018	89	6,684	7,932	4,339	375,150	4,775	

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Well Name: Thurman Speece BRK 1H

47009001940000

LITHOLOGY/FORMATION	TOP DEPTH, MD (FT)	TOP DEPTH, TVD (FT)	BOTTOM DEPTH, MD (FT)	BOTTOM DEPTH, TVD (FT)	QUANTITY AND TYPE OF FLUID
Base of Fresh Water	0.00	0.00	264.00	264.00	
Top of Salt Water	475.00	475.00	NA	NA	
Pittsburgh Coal	320.00	320.00	401.00	401.00	
Pottsville (ss)	463.00	463.00	559.00	559.00	
Mauch Chunk (shale)	629.00	629.00	1220.00	1220.00	
Raven Cliff (ss)	838.00	838.00	1012.00	1012.00	
Maxton (ss)	1120.00	1120.00	1220.00	1220.00	
Greenbriar (ls)	1286.00	1286.00	1560.00	1557.00	
Big Injun (ss)	1560.00	1557.00	1636.00	1633.00	
Berea (siltstone)	NA	NA	NA	NA	
Rhinestreet (shale)	NA	NA	NA	NA	
Cashaqua (shale)	NA	NA	NA	NA	
Middlesex (shale)	5764.00	5698.00	5856.00	5765.00	
Burket (shale)	5856.00	5765.00	5876.00	5778.00	
Tully (ls)	5876.00	5778.00	5967.00	5832.00	
Mahantango (shale)	5967.00	5832.00	6322.00	5942.00	
Marcellus (shale)	6322.00	5942.00	NA	NA	Gas

THRASHER

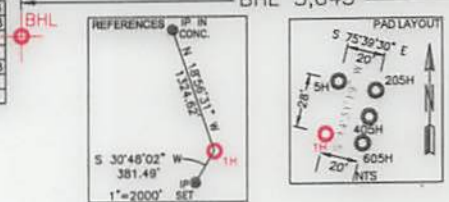
THE THRASHER GROUP, INC.
600 WHITE OAKS BLVD.
BRIDGEPORT, WV 26330
PHONE 304-624-4108

NOTES ON SURVEY

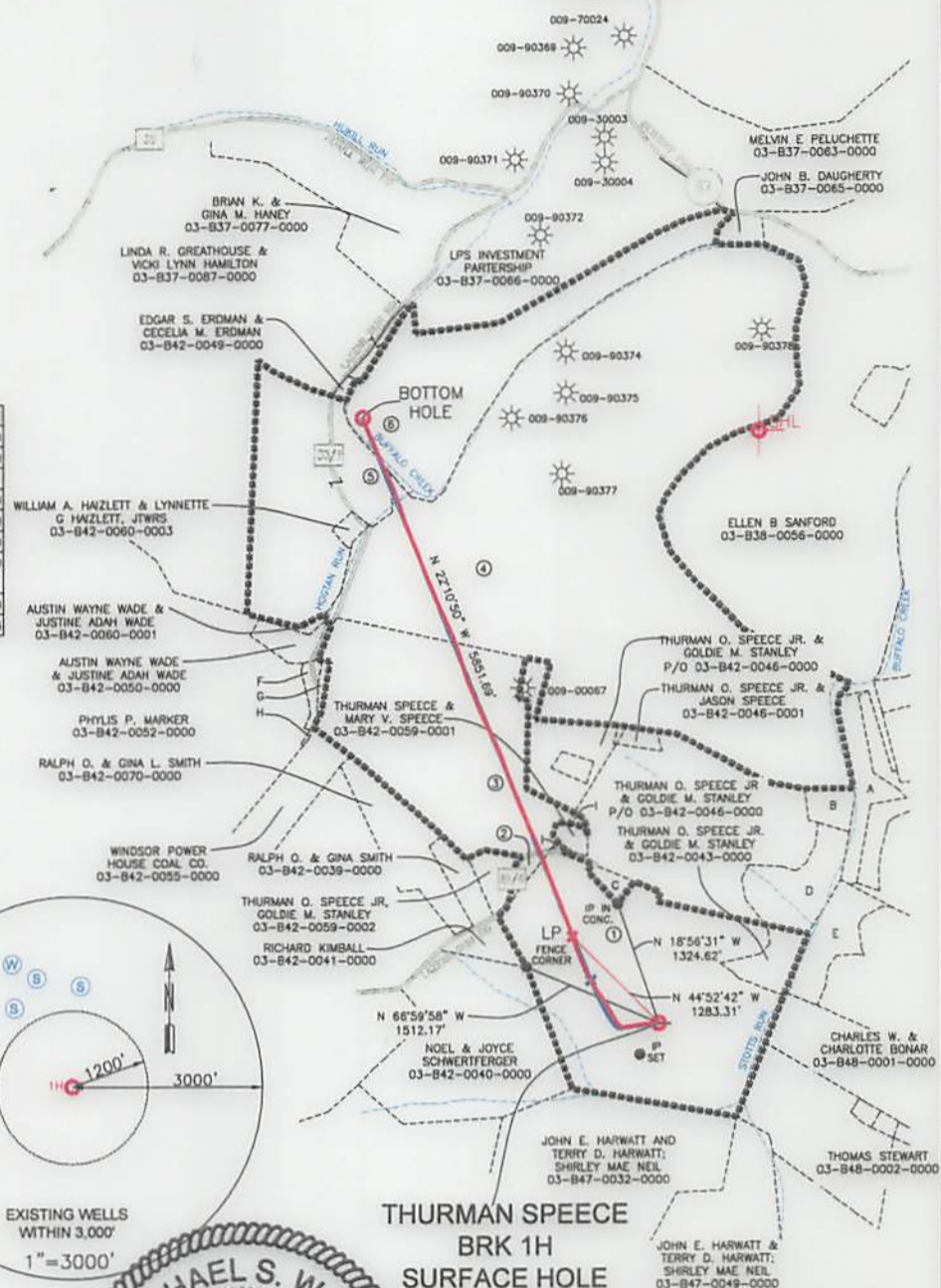
- COORDINATES SYSTEM IS UTM, NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
- SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND FIELD LOCATIONS.
- THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
- NO DWELLINGS AND BUILDINGS WITHIN 625 FEET OF PROPOSED CENTER OF PAD.
- NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
- NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
- NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.

GRID NORTH
UTM, NAD83 DATUM, ZONE 17, US FT

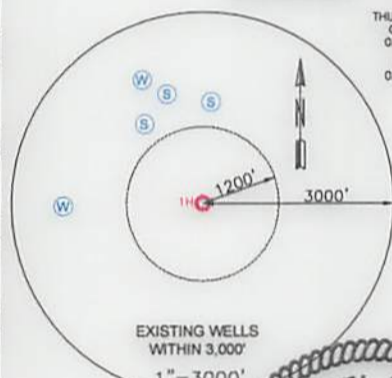
TRACT	SURFACE OWNER	TAX PARCEL	ACRES
1	THURMAN O. SPEECE JR. & GOLDIE M. STANLEY	03-0842-0042-0000	115.23
2	THURMAN O. SPEECE JR. & GOLDIE M. STANLEY	03-0842-0059-0003	2.722
3	JEFFREY S. WARD & DAWNNA J. WARD	03-0842-0059-0004	97.17
4	LABELLE FARMS INC.	03-0842-0080-0000	349.88
5	JAMES HAZLETT & JO ELLEN HAZLETT	03-0842-0080-0002	65.47
6	ELLEN B. SANFORD	03-0837-0076-0000	66.00



ID	ADJOINER	TAX PARCEL
A	WINDSOR POWER HOUSE COAL CO.	03-042-0048-0000
B	THURMAN O. SPEECE JR. & GOLDIE M. STANLEY	03-042-0047-0000
C	RICHARD A. STANLEY JR.	03-042-0042-0001
D	THURMAN O. SPEECE JR. & GOLDIE M. STANLEY	03-042-0045-0000
E	THURMAN O. SPEECE JR. & GOLDIE M. STANLEY	03-042-0044-0000
F	WINDSOR POWER HOUSE COAL CO.	03-042-0051-0000
G	TRUMAN A. & MARY SPEECE, THURMAN SPEECE, DOROTHY SPEECE	03-042-0058-0000
H	WINDSOR POWER HOUSE COAL CO.	03-042-0056-0000
I	JEFFREY S. WARD & DAWNNA J. WARD	P/O 03-042-0059-0004



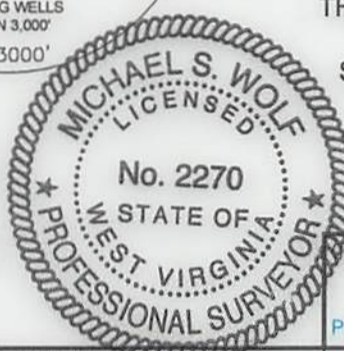
SURFACE HOLE LOCATION (SHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,448,878.839 EASTING: 534,887.217
LANDING POINT LOCATION (LPL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,449,015.867 EASTING: 534,670.624
BOTTOM HOLE LOCATION (BHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,450,809.543 EASTING: 533,935.349
SURFACE HOLE LOCATION (SHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,448,878.839 EASTING: 534,887.217
LANDING POINT LOCATION (LPL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,449,156.012 EASTING: 534,611.217
BOTTOM HOLE LOCATION (BHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,450,807.620 EASTING: 533,937.857



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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 2270

M.S.W. 5/3/18



COMPANY: **SWN** Production Company, LLC

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25034	MINIMUM DEGREE OF ACCURACY: 1/200 PROVEN SOURCE OF ELEVATION: SURVEY GRADE GPS (NAVD 88, US FT)	OPERATOR'S WELL #: THURMAN SPEECE BRK 1H API WELL #: 47 009 00194
	STATE: WV COUNTY: BROOKE PERMIT:	STATE: WV COUNTY: BROOKE PERMIT:

WELL TYPE: OIL <input type="checkbox"/> WASTE DISPOSAL <input type="checkbox"/> PRODUCTION <input checked="" type="checkbox"/> DEEP <input type="checkbox"/> GAS <input checked="" type="checkbox"/> LIQUID INJECTION <input type="checkbox"/> STORAGE <input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/>	WATERSHED: BUFFALO CREEK	ELEVATION: 1139.5'
DISTRICT: BUFFALO	COUNTY: BROOKE	QUADRANGLE: BETHANY
SURFACE OWNER: THURMAN O. SPEECE JR. & GOLDIE M. STANLEY	ACREAGE: 115.23	ACREAGE: 115.23
OIL & GAS ROYALTY OWNER: THURMAN O. SPEECE JR. & GOLDIE M. STANLEY	ACREAGE: 115.23	
DRILL <input checked="" type="checkbox"/> DRILL DEEPER <input type="checkbox"/> REDRILL <input type="checkbox"/> FRACTURE OR STIMULATE <input checked="" type="checkbox"/> PLUG OFF OLD FORMATION <input type="checkbox"/> PERFORATE NEW FORMATION <input type="checkbox"/>	CONVERT <input type="checkbox"/> PLUG & ABANDON <input type="checkbox"/> CLEAN OUT & REPLUG <input type="checkbox"/> OTHER CHANGE <input checked="" type="checkbox"/> (SPECIFY) AS-DRILLED	ESTIMATED DEPTH: 5,874' TVD 12,584' TMD

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC	DESIGNATED AGENT: DEE SOUTHALL
ADDRESS: P.O. BOX 1300	ADDRESS: P.O. BOX 1300
CITY: JANE LEW STATE: WV ZIP CODE: 26378	CITY: JANE LEW STATE: WV ZIP CODE: 26378

LEGEND: ○ PROPOSED SURFACE HOLE / BOTTOM HOLE * EXISTING / PRODUCING WELLHEAD LPL * LANDING POINT LOCATION W EXISTING WATER WELL S EXISTING SPRING	--- SURVEYED BOUNDARY --- DRILLING UNIT --- LEASE BOUNDARY --- PROPOSED PATH --- AS-DRILLED PATH	REVISIONS: DATE: 05-03-2018 DRAWN BY: K. POTH SCALE: 1" = 2000' DRAWING NO: 030-2888 WELL LOCATION PLAT
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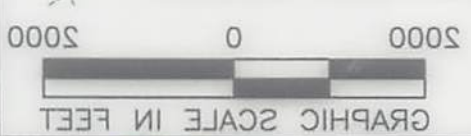
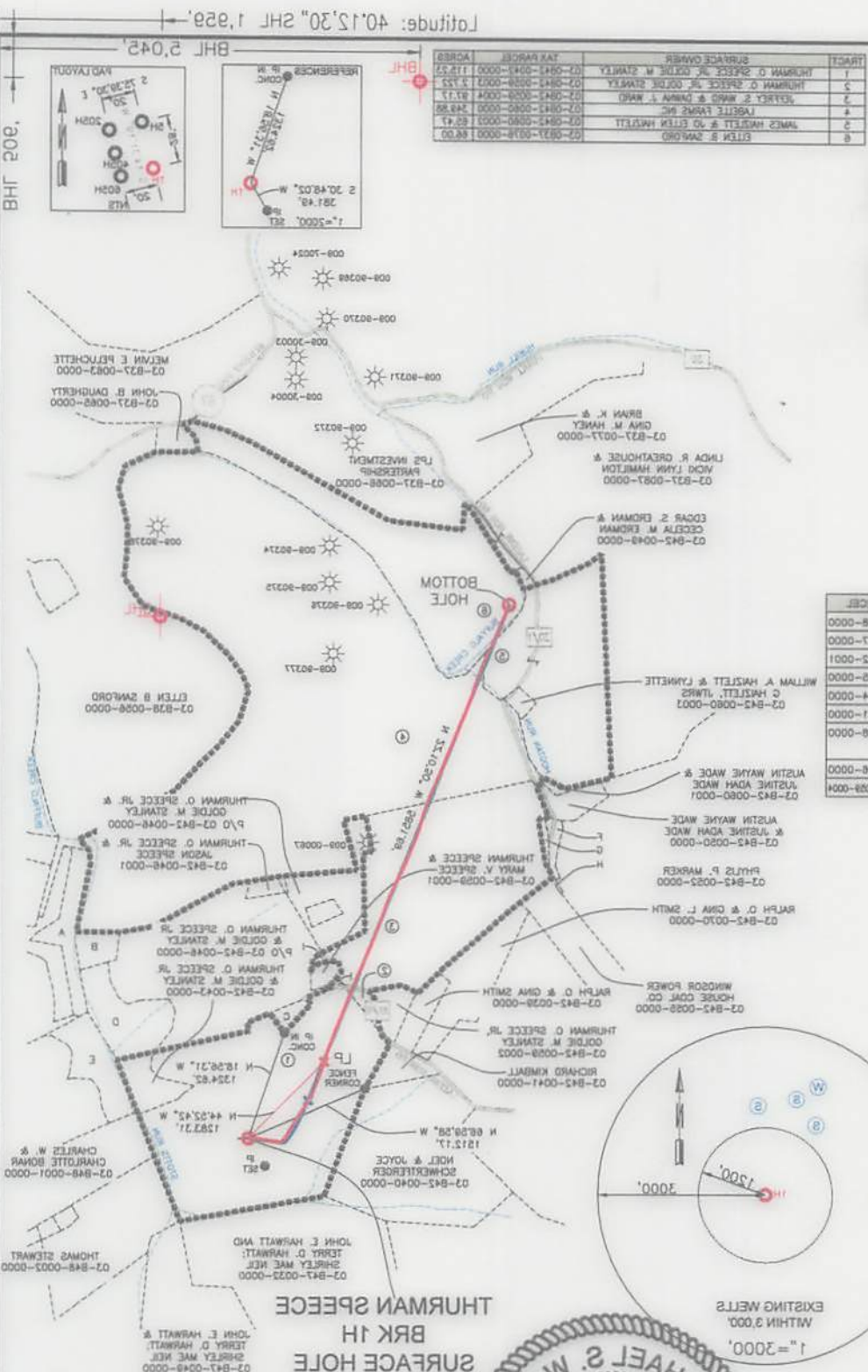
THRASHER

THE THRASHER GROUP, INC.
600 WHITE OAKS BLVD.
BRIDGEPORT, WV 26330
PHONE 304-624-4108
FAX 304-624-4109

- NOTES ON SURVEY**
- COORDINATES SYSTEM IS UTM, NAD 83, DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
 - SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND FIELD LOCATIONS.
 - THIS PLAN DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
 - NO DWELLINGS AND BUILDINGS WITHIN 825 FEET OF PROPOSED CENTER OF PAD.
 - NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
 - NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
 - NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.

ID	ADJOINER	TAX PARCEL
A	WINDSOR POWER HOUSE COAL CO.	02-843-0048-0000
B	THURMAN O. SPEECE JR. & GOLDIE M. STANLEY	02-843-0047-0000
C	RICHARD A. STANLEY JR.	02-843-0045-0001
D	THURMAN O. SPEECE JR. & GOLDIE M. STANLEY	02-843-0045-0000
E	THURMAN O. SPEECE JR. & GOLDIE M. STANLEY	02-843-0044-0000
F	WINDSOR POWER HOUSE COAL CO.	02-843-0051-0000
G	THURMAN A. & MARY SPEECE, THURMAN SPEECE, DOROTHY SPEECE	02-843-0050-0000
H	WINDSOR POWER HOUSE COAL CO.	02-843-0056-0000
I	LETTER Y 2 WARD & DAWNA J. WARD	02-843-0059-0004

LOCATION	EASTING	NORTHING	UTM (NAD83, ZONE 17, METERS)
BOTTOM HOLE LOCATION (B.H.L.)	234,873.217	448,878.839	17M (NAD83, ZONE 17, METERS)
SURFACE HOLE LOCATION (S.H.L.)	234,873.217	448,878.839	17M (NAD83, ZONE 17, METERS)
LANDING POINT LOCATION (L.P.L.)	234,873.217	448,878.839	17M (NAD83, ZONE 17, METERS)
BOTTOM HOLE LOCATION (B.H.L.)	233,937.857	448,807.820	17M (NAD83, ZONE 17, METERS)



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WELL OPERATOR: SWN PRODUCTION COMPANY, LLC ADDRESS: P.O. BOX 1300 CITY: JANE LEW STATE: WV ZIP CODE: 26378		OFFICE OF OIL & GAS 601 27TH STREET CHARLESTON, WV 25034	
WELL TYPE: <input type="checkbox"/> OIL <input type="checkbox"/> WASTE DISPOSAL <input checked="" type="checkbox"/> PRODUCTION <input type="checkbox"/> DEEP <input type="checkbox"/> GAS <input checked="" type="checkbox"/> LIQUID INJECTION <input type="checkbox"/> STORAGE <input checked="" type="checkbox"/> SHALLOW		WATERSHED: BUFFALO CREEK DISTRICT: BUFFALO COUNTY: BROOKE	
WELL OPERATOR'S WELL #: BRK 1H API WELL #: 47 STATE: WV COUNTY: THURMAN SPEECE		SURFACE OWNER: THURMAN O. SPEECE JR. & GOLDIE M. STANLEY ACREAGE: 112.23 QUADRANGLE: BETHANY ELEVATION: 1139.5'	
DESIGNATED AGENT: DEE SOUTHAH ADDRESS: P.O. BOX 1300 CITY: JANE LEW STATE: WV ZIP CODE: 26378		WELL OPERATOR: SWN PRODUCTION COMPANY, LLC ADDRESS: P.O. BOX 1300 CITY: JANE LEW STATE: WV ZIP CODE: 26378	
REVISIONS: DATE: 02-03-2018 DRAWN BY: K. POTH SCALE: 1" = 2000' DRAWING NO: 030-2888		LEGEND: ○ PROPOSED SURFACE HOLE / BOTTOM HOLE * EXISTING / PRODUCING WELLS L.P.L. LANDING POINT LOCATION * EXISTING WATER WELL * EXISTING SPRING --- SURVEYED BOUNDARY --- DRILLING UNIT --- LEASE BOUNDARY --- PROPOSED PATH --- AS-DRILLED PATH	

THRASHER

THE THRASHER GROUP, INC.
600 WHITE OAKS BLVD.
BRIDGEPORT, WV 26330
PHONE 304-624-4108
NOTES ON SURVEY

- COORDINATES SYSTEM IS UTM, NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
- SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND FIELD LOCATIONS.
- THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
- NO DWELLINGS AND BUILDINGS WITHIN 625 FEET OF PROPOSED OF CENTER OF PAD.
- NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
- NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
- NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.

GRID NORTH
UTM, NAD83 DATUM, ZONE 17, US FT



TRACT	SURFACE OWNER	TAX PARCEL	ACRES
1	THURMAN O. SPEECE JR. & GOLDIE M. STANLEY	03-0842-0042-0000	115.23
2	RICHARD A. STANLEY JR.	03-0842-0042-0001	2.00
3	THURMAN O. SPEECE JR. & GOLDIE M. STANLEY	97/0 03-0842-0046-0000	73.29
4	THURMAN O. SPEECE JR. & GOLDIE M. STANLEY	97/0 03-0842-0046-0000	15.85
5	THURMAN O. SPEECE JR. & ADAM (SURV)	03-0842-0048-0000	2.00
6	ELEEN B. SANFORD	03-0837-0078-0000	349.88
7	LABELLE FARMS INC.	03-0837-0078-0000	66.00
8	LINDA REIVES GREATHOUSE & VICKI LYNN GREATHOUSE HAMILTON	03-0837-0087-0000	322.84
9	BRIAN K. & CINA M. HANEY	03-0837-0077-0000	45.75
10	VENURE HOME & GARDENS LLC.	03-0837-0082-0000	1.00
11	ROBERT O. BONE	03-0837-0081-0000	81.99
12	DEBRA CYPHER, MATTHEW FAIR, SUSAN FAIR & RICHARD HENTHORN	03-0837-0088-0000	59.95

SURFACE HOLE LOCATION (SHL):
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,448,882.978 EASTING: 534,888.287
LANDING POINT LOCATION (LPL):
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,449,097.948 EASTING: 534,888.088
BOTTOM HOLE LOCATION (BHL):
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,452,002.292 EASTING: 533,683.084
SURFACE HOLE LOCATION (SHL):
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,448,882.978 EASTING: 534,888.287
LANDING POINT LOCATION (LPL):
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,449,222.946 EASTING: 534,837.531
BOTTOM HOLE LOCATION (BHL):
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,452,000.287 EASTING: 533,683.809

ID	ADJOINER	TAX PARCEL
A	BRIAN K. & CINA M. HANEY	03-0837-0077-0000
B	TERRANCE & SUSAN BONE	03-0837-0080-0000
C	BENJAMIN M. MOISA & CHRISTINE L. HESE	03-0837-0079-0000
D	BENJAMIN M. MOISA & CHRISTINE L. HESE	03-0837-0075-0000
E	WILLIAM A. II & JENNA L. SPERRINGER	03-0837-0078-0000
F	WILLIAM A. II & JENNA L. SPERRINGER	03-0837-0078-0000
G	WINDSOR POWER HOUSE COAL CO.	03-0842-0048-0000
H	THURMAN O. SPEECE & GOLDIE M. STANLEY	03-0842-0047-0000
I	THURMAN O. SPEECE & GOLDIE M. STANLEY	03-0842-0045-0000
J	THURMAN O. SPEECE & GOLDIE M. STANLEY	03-0842-0043-0000
K	LINDA R. GREATHOUSE & VICKI L. HAMILTON	03-0837-0087-0000
L	KEVIN CHUMNEY	03-0837-0093-0000
M	ROBERT BONE	03-0837-0089-0000
N	CARL R. & SANDRA S. CLARK	03-0837-0086-0000
O	MICHAEL ARACICH	03-0837-0085-0000
P	KAREN K. TOGER	03-0837-0084-0000
Q	EUGENE EDWARD FRIDERER	03-0837-0083-0000
R	BRIAN K. & CINA M. HANEY	03-0837-0077-0000

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P.S. 2270 *M.S. Wolf 5/3/18*



THURMAN SPEECE
BRK 3H
SURFACE HOLE



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

WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25034

MINIMUM DEGREE OF ACCURACY: 1/200

PROVEN SURVEY SOURCE OF GRADE GPS ELEVATION: (NAVD 88, US FT)

COMPANY: SWN Production Company, LLC

THURMAN SPEECE OPERATOR'S WELL #: BRK 3H

API WELL #: 47 STATE COUNTY PERMIT 009 00192

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

WATERSHED: BUFFALO CREEK ELEVATION: 1139.5'

DISTRICT: BUFFALO COUNTY: BROOKE QUADRANGLE: BETHANY

SURFACE OWNER: THURMAN O. SPEECE JR & GOLDIE M. STANLEY ACREAGE: 115.23

OIL & GAS ROYALTY OWNER: THURMAN O. SPEECE JR & GOLDIE M. STANLEY ACREAGE: 115.23

DRILL DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION

CONVERT PLUG & ABANDON CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY) AS-DRILLED

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 5,846' TVD 16,505' TMD

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC DESIGNATED AGENT: DEE SOUTHALL

ADDRESS: P.O. BOX 1300 ADDRESS: P.O. BOX 1300

CITY: JANE LEW STATE: WV ZIP CODE: 26378 CITY: JANE LEW STATE: WV ZIP CODE: 26378

LEGEND:	— SURVEYED BOUNDARY	— DRILLING UNIT	— LEASE BOUNDARY
⊙ PROPOSED SURFACE HOLE / BOTTOM HOLE	⊙ EXISTING / PRODUCING WELLHEAD	⊙ PROPOSED PATH	— AS-DRILLED PATH
LPL * LANDING POINT LOCATION	⊙ EXISTING WATER WELL	⊙ EXISTING SPRING	

BHL 11,750'
SHL 21,997'
Longitude: 80°35'00"

THE THRASHER GROUP, INC.
600 WHITE OAK BLVD.
BRIDGEPORT, WV 26330
PHONE 304-624-4108

NOTES ON SURVEY

- COORDINATES SYSTEM IS TUM, NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
- SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND FIELD LOCATIONS.
- THIS PLAN DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
- NO DWELLINGS AND BUILDINGS WITHIN 525 FEET OF PROPOSED CENTER OF PAD.
- NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
- NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
- NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.

HIRON CREEK
1/2 MI. W. 1/2 MI. S. 1/2 MI. W. 1/2 MI. S.



TRACT	SURFACE OWNER	ACRES
1	THURMAN O SPEECE JR & GOLDIE M STANLEY	112.23
2	THURMAN O SPEECE JR & GOLDIE M STANLEY	3.00
3	THURMAN O SPEECE JR & GOLDIE M STANLEY	17.28
4	THURMAN O SPEECE JR & GOLDIE M STANLEY	12.88
5	THURMAN O SPEECE JR & GOLDIE M STANLEY	3.00
6	JABETTE FARMS INC	24.88
7	LETTER B SPANCO	88.00
8	LINDA KEENE DRISCOLL & DONI FINE DRISCOLL HAMILTON	221.84
9	SHIRAZ K & CHIA M HANLEY	42.28
10	AMMARI HOME & CONCRETE LLC	1.00
11	ROBERT O ROBE	81.88
12	DEAN CHRISTMATTER FOR DEAN FAR & BOWEN HOLDING	29.28

LOCATION	EASTING	NORTHING	UTM (NAD83, ZONE 17, METERS)
BOTTOM HOLE LOCATION (B.H.)	524,888.088	4,442,087.948	UTM (NAD83, ZONE 17, METERS): 524,888.088 EASTING, 4,442,087.948 NORTHING
SURFACE HOLE LOCATION (S.H.)	524,888.287	4,448,882.978	UTM (NAD83, ZONE 17, METERS): 524,888.287 EASTING, 4,448,882.978 NORTHING
BOTTOM HOLE LOCATION (B.H.)	523,883.084	4,452,000.282	UTM (NAD83, ZONE 17, METERS): 523,883.084 EASTING, 4,452,000.282 NORTHING
SURFACE HOLE LOCATION (S.H.)	524,888.287	4,448,882.978	UTM (NAD83, ZONE 17, METERS): 524,888.287 EASTING, 4,448,882.978 NORTHING
LANDING POINT LOCATION (L.P.)	524,832.831	4,448,222.948	UTM (NAD83, ZONE 17, METERS): 524,832.831 EASTING, 4,448,222.948 NORTHING
LANDING POINT LOCATION (L.P.)	524,888.287	4,448,882.978	UTM (NAD83, ZONE 17, METERS): 524,888.287 EASTING, 4,448,882.978 NORTHING
SURFACE HOLE LOCATION (S.H.)	524,888.287	4,448,882.978	UTM (NAD83, ZONE 17, METERS): 524,888.287 EASTING, 4,448,882.978 NORTHING

ID	ADJACENT	TAX PARCEL
A	BRAN K & DAN M HANLEY	02-843-0017-0000
B	TRENTICE & SHIRAZ BONE	02-843-0020-0000
C	DEANAM M HANLEY & CHRISTINE L HANLEY	02-843-0018-0000
D	DEANAM M HANLEY & CHRISTINE L HANLEY	02-843-0019-0000
E	WILLIAM A B & DEAN L SPENNER	02-843-0016-0000
F	WILLIAM A B & DEAN L SPENNER	02-843-0018-0000
G	WHORR POWER HOUSE CARL CO	02-843-0028-0000
H	THURMAN O SPEECE & GOLDIE M STANLEY	02-843-0017-0000
I	THURMAN O SPEECE & GOLDIE M STANLEY	02-843-0018-0000
J	THURMAN O SPEECE & GOLDIE M STANLEY	02-843-0019-0000
K	LINDA R GENTHOUR & VICKI L HAMILTON	02-843-0027-0000
L	KEVIN CHENEY	02-843-0022-0000
M	ROBERT BONE	02-843-0029-0000
N	CARL R & SHIRAZ E CLARK	02-843-0026-0000
O	MICHAEL WOLFE	02-843-0025-0000
P	WALTER K TUBER	02-843-0024-0000
Q	ELDRED EDWARDS HANLEY	02-843-0023-0000
R	BRAN K & DAN M HANLEY	02-843-0017-0000

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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P. 2. 2270

CHARLESTON, WV 25034
601 27TH STREET
OFFICE OF OIL & GAS
WDPE
UNITED STATES TOPOGRAPHIC MAPS
(+) DENOTES LOCATION OF WELL ON DEGREE OF ACCURACY: 1/2000
MINIMUM

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC
ADDRESS: P.O. BOX 1300
CITY: JANE LEW STATE: WV ZIP CODE: 26378

SURFACE OWNER: THURMAN O SPEECE JR & GOLDIE M STANLEY
OIL & GAS ROYALTY OWNER: THURMAN O SPEECE JR & GOLDIE M STANLEY

DISTRICT: BUFFALO COUNTY: BROOKE
WATERSHED: BUFFALO CREEK

WELL TYPE: OIL WASTE DISPOSAL PRODUCTION DEEP SHALLOW

WATER: DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION

CONVERT PLUG & ABANDON CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY) AS-DRILLED

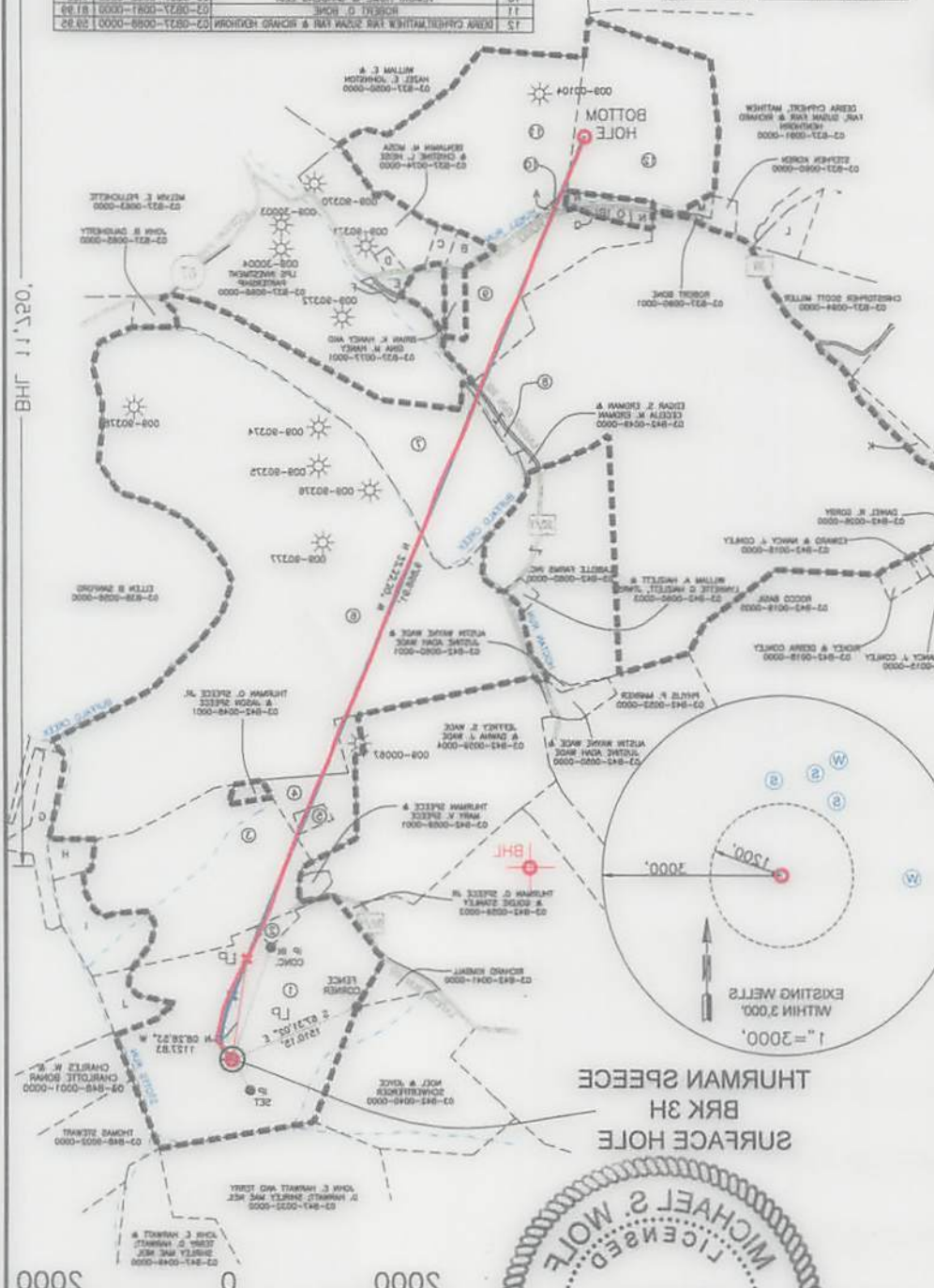
TARGET FORMATION: MARCELLUS

ESTIMATED DEPTH: 5,846' TVD 16,502' TMD

DESIGNATED AGENT: DEE SOUTHALL
ADDRESS: P.O. BOX 1300
CITY: JANE LEW STATE: WV ZIP CODE: 26378

DATE: 02-03-2018

LEGEND:
EXISTING SPRING
EXISTING WATER WELL
LANDING POINT LOCATION
EXISTING PRODUCING WELLS
PROPOSED SURFACE HOLE / BOTTOM HOLE
AS-DRILLED PATH
PROPOSED PATH
LEASE BOUNDARY
DRILLING UNIT
SURVEYED BOUNDARY



THURMAN SPEECE
BRK 3H
SURFACE HOLE

PROFESSIONAL SURVEYOR
WEST VIRGINIA
STATE OF
MICHAEL S. WOLFE
LICENSED
No. 2270

GRAPHIC SCALE IN FEET
0 2000 2000

SWN COMPANY
Production Company, LLC

WELL LOCATION PLAN
DRAWING NO: 030-2888
SCALE: 1" = 2000'
DRAWN BY: K. POTH

REVISIONS:

DATE: 02-03-2018