

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

API 47 - 051 - 02298 County MARSHALL District SAND HILL  
Quad MOUNDSVILLE Pad Name BETTY SCHAFFER MSH PAD Field/Pool Name PANHANDLE FIELD WET  
Farm name BETTY JANE SCHAFFER Well Number BETTY SCHAFFER MSH 10H  
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 4,426,816.700 Easting 531,110.239  
Landing Point of Curve Northing 4,426,629.589 Easting 531,630.250  
Bottom Hole Northing 4,422,670.521 Easting 533,727.839

Elevation (ft) 848.4' 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

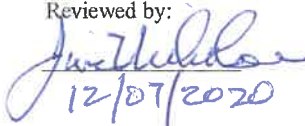
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Date permit issued 2/19/2020 Date drilling commenced 2/29/2020 Date drilling ceased 3/19/2020  
Date completion activities began 7/13/2020 Date completion activities ceased 8/16/2020  
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 280' Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 802' Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 352' Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

Reviewed by:  
  
12/07/2020

API 47-051 - 02298

Farm name BETTY JANE SCHAFER

Well number BETTY SCHAFER MSH 10H

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	332	NEW	J-55/54.50#		Y, 18 BBLS
Coal	SEE INTERMEDIATE						
Intermediate 1	12.25	9.625	1710	NEW	J-55/36#		Y, 49 BBLS
Intermediate 2							
Intermediate 3							
Production	8.75/8.50	5.5	21397	NEW	P-110/20#		Y, 5 BBLS
Tubing		2.875	6552	NEW	P-110/6.5#		N
Packer type and depth set							

Comment Details \_\_\_\_\_

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	CLASS A	GROUT TO SURFACE				SURFACE	24
Surface	CLASS A	341	15.60	1.20	416.4	SURFACE	8
Coal	SEE INTERMEDIATE						
Intermediate 1	CLASS A	685	15.60	1.19	815.15	SURFACE	8
Intermediate 2							
Intermediate 3							
Production	CLASS A	4,035	15.60	1.21	4,882.35	SURFACE	24
Tubing							

Drillers TD (ft) 21,399'

Loggers TD (ft) 21,399'

Deepest formation penetrated MARCELLUS

Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 5,518'

Check all wireline logs run

- caliper     density     deviated/directional     induction  
 neutron     resistivity     gamma ray     temperature     sonic

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Well cored  Yes  No

Conventional    Sidewall

Were cuttings collected  Yes  No

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DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING \_\_\_\_\_

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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 47-051-02298

Farm name BETTY JANE SCHAFER

Well number BETTY SCHAFER MSH 10H

PRODUCING FORMATION(S)	DEPTHS		
MARCELLUS	5,978'	TVD	6,383' MD

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 2779 psi Bottom Hole \_\_\_\_\_ psi DURATION OF TEST \_\_\_\_\_ hrs

OPEN FLOW Gas 7,027 mcfpd Oil 360 bpd NGL \_\_\_\_\_ bpd Water 667 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 <sub>2</sub> S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	0		0		
	SEE	ATTACHMENT	3		

Please insert additional pages as applicable.

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

Logging Company BAKER HUGHES  
Address 9110 GROGANS MILL RD City THE WOODLANDS State TX Zip 77380

Cementing Company C&J ENERGY SERVICES, INC  
Address 3990 ROGERDALE RD City HOUSTON State TX Zip 77042

Stimulating Company HALLIBURTON ENERGY SERVICES  
Address 4851 MILNER ROAD, GATE 5A City HOUSTON State TX Zip 77032

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Please insert additional pages as applicable.

Completed by BOBBY WILLIS Telephone 832-796-2884  
Signature [Signature] Title SENIOR REGULATORY ANALYST Date 10/22/2020

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

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# Hydraulic Fracturing Fluid Product Component Information Disclosure

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Job Start Date:	7/13/2020
Job End Date:	8/9/2020
State:	West Virginia
County:	Marshall
API Number:	47-051-02298-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	Betty Schafer MSH 10H
Latitude:	39.99095300
Longitude:	-80.63558800
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,145
Total Base Water Volume (gal):	22,116,474
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
Fresh Water	Halliburton	Base Fluid					
			Water	7732-18-5	100.00000	76.20816	Density = 8.34
Produced Water	Halliburton	Base Fluid					
			Water	7732-18-5	100.00000	14.18545	Density = 8.50

Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.48525	
LEGEND(TM) LD-7750W	MultiChem	Scale Control					
				Listed Below			
HAI-501	Halliburton	Acid Corrosion Inhibitor					
				Listed Below			
Sand-Common White-100 Mesh, SSA-2	Halliburton	Proppant					
				Listed Below			
HYDROCHLORI C ACID, 22 BAUME	Halliburton	Solvent					
				Listed Below			
LD-2950	MultiChem	Friction Reducer					
				Listed Below			
FE-2A	Halliburton	Additive					
				Listed Below			
MC MX 8-4743	MultiChem	Additive					
				Listed Below			
Sand-Premium White-40/70	Halliburton	Proppant					

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				Listed Below			
Excelerate LX-15	Halliburton	Friction Reducer					
				Listed Below			

Items above are Trade Names with the exception of Base Water. Items below are the individual ingredients.

			Crystalline silica, quartz	14808-60-7	100.00000	8.94175	
			Hydrochloric acid	7647-01-0	30.00000	0.05397	
			Complex Amine Compound	Proprietary	60.00000	0.05367	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02829	
			Sodium nitrate	7631-99-4	60.00000	0.02228	
			Methanol	67-56-1	100.00000	0.00557	
			Ethoxylated alcohols	Proprietary	5.00000	0.00447	
			Complex Amine Compound	Proprietary	60.00000	0.00292	
			Citric acid	77-92-9	60.00000	0.00263	
			Sodium molybdate	10102-40-6	5.00000	0.00186	
			Adipic acid	124-04-9	1.00000	0.00089	
			Poly(oxy-1,2-ethanediyl), alpha-tridecyl-omega-hydroxy-, branched	69011-36-5	1.00000	0.00089	
			Sodium chloride	7647-14-5	5.00000	0.00048	
			Phosphoric Acid Salt	Proprietary	5.00000	0.00044	
			Sorbitan, mono-9-octadecenoate, (Z)	1338-43-8	5.00000	0.00024	
			Surfactant	Proprietary	5.00000	0.00024	
			Mixture of dimer and trimer fatty acids of indefinite composition derived from tall oil	61790-12-3	30.00000	0.00009	
			Modified thiourea polymer	Proprietary	30.00000	0.00009	
			Ethoxylated alcohols	Proprietary	5.00000	0.00006	



			Organic chloride compound	Proprietary	1.00000	0.00005	RECEIVED Office of Oil and Gas OCT 26 2020 WV Department of Environmental Protection
			Alkoxylated polyhydric alcohol	Proprietary	1.00000	0.00005	
			Sodium acetate	127-09-3	0.10000	0.00004	
			Sodium lactate	72-17-3	0.10000	0.00004	
			Yeast extract	8013-01-2	0.10000	0.00004	
			Monopotassium phosphate	7778-77-0	0.10000	0.00004	
			Propargyl alcohol	107-19-7	5.00000	0.00002	
			Hexadecene	629-73-2	5.00000	0.00002	
			Formaldehyde	50-00-0	0.10000	0.00001	
			Organic salt #1	Proprietary	0.01000	0.00000	
			Nitrated acetate salt	Proprietary	0.01000	0.00000	
			Sodium hydroxide	1310-73-2	0.01000	0.00000	
			Acrylamide	79-06-1	0.01000	0.00000	
			Organic salt #2	Proprietary	0.01000	0.00000	
			Sodium glycolate	2836-32-0	0.01000	0.00000	

\* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water

\*\* Information is based on the maximum potential for concentration and thus the total may be over 100%

\*\*\* If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

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)

**BETTY SCHAFER MSH 10H  
ATTACHMENT 1  
PERF REPORT**

STAGE NUM	Perf Date	Perf Bottom MD	Perf Top MD2	# SHOTS PER STG
1	7/1/2020	21,351	21,257	36
2	7/13/2020	21,221	21,043	36
3	7/14/2020	21,010	20,836	36
4	7/14/2020	20,799	20,621	36
5	7/16/2020	20,587	20,407	36
6	7/16/2020	20,376	20,198	36
7	7/16/2020	20,165	19,987	36
8	7/17/2020	19,952	19,776	36
9	7/18/2020	19,743	19,565	36
10	7/19/2020	19,531	19,353	36
11	7/19/2020	19,320	19,142	36
12	7/20/2020	19,109	18,931	36
13	7/21/2020	18,898	18,720	36
14	7/21/2020	18,687	18,509	36
15	7/22/2020	18,475	18,297	36
16	7/22/2020	18,264	18,086	36
17	7/23/2020	18,053	17,880	36
18	7/23/2020	17,842	17,660	36
19	7/23/2020	17,631	17,453	36
20	7/24/2020	17,419	17,241	36
21	7/24/2020	17,206	17,030	36
22	7/24/2020	16,997	16,819	36
23	7/25/2020	16,786	16,608	36
24	7/25/2020	16,575	16,397	36
25	7/25/2020	16,363	16,185	36
26	7/26/2020	16,152	15,974	36
27	7/26/2020	15,941	15,763	36
28	7/26/2020	15,730	15,552	36
29	7/27/2020	15,519	15,341	36
30	7/27/2020	15,307	15,129	36
31	7/28/2020	15,096	14,918	36
32	7/28/2020	14,885	14,702	36
33	7/28/2020	14,674	14,496	36
34	7/28/2020	14,463	14,285	36
35	7/29/2020	14,247	14,073	36
36	7/29/2020	14,038	13,862	36
37	7/29/2020	13,829	13,651	36
38	7/30/2020	13,618	13,440	36
39	7/30/2020	13,407	13,229	36
40	7/30/2020	13,195	13,017	36
41	7/31/2020	12,984	12,806	36
42	7/31/2020	12,773	12,595	36
43	7/31/2020	12,562	12,380	36

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**BETTY SCHAFFER MSH 10H  
ATTACHMENT 1  
PERF REPORT**

STAGE NUM	Perf Date	Perf Bottom MD	Perf Top MD2	# SHOTS PER STG
44	7/31/2020	12,351	12,173	36
45	8/1/2020	12,139	11,961	36
46	8/1/2020	11,926	11,750	36
47	8/1/2020	11,717	11,539	36
48	8/1/2020	11,506	11,328	36
49	8/2/2020	11,295	11,117	36
50	8/2/2020	11,083	10,907	36
51	8/2/2020	10,872	10,694	36
52	8/2/2020	10,661	10,483	36
53	8/3/2020	10,450	10,277	36
54	8/3/2020	10,239	10,061	36
55	8/3/2020	10,047	9,849	36
56	8/3/2020	9,816	9,638	33
57	8/4/2020	9,605	9,427	33
58	8/4/2020	9,394	9,216	33
59	8/4/2020	9,183	9,005	33
60	8/5/2020	8,971	8,793	33
61	8/5/2020	8,760	8,582	33
62	8/6/2020	8,549	8,371	33
63	8/6/2020	8,338	8,161	33
64	8/6/2020	8,127	7,949	33
65	8/7/2020	7,915	7,737	33
66	8/7/2020	7,701	7,526	33
67	8/7/2020	7,493	7,315	33
68	8/7/2020	7,282	7,104	33
69	8/8/2020	7,071	6,893	33
70	8/8/2020	6,859	6,681	33
71	8/8/2020	6,648	6,470	33

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BETTY SCHAFFER MSH 10H  
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/other
1	7/13/2020	68.7	7,917	7,674	3,993	180,110	6,448	0
2	7/13/2020	70.8	7,891	6,084	4,133	279,020	9,871	0
3	7/14/2020	69.3	7,835	6,185	4,252	281,360	8,721	0
4	7/16/2020	78.2	8,176	5,546	4,545	263,050	7,947	0
5	7/16/2020	81.3	8,206	6,333	4,482	259,440	8,260	0
6	7/16/2020	83.9	8,043	5,945	4,370	260,740	7,359	0
7	7/17/2020	87	8,230	5,774	4,471	258,780	7,369	0
8	7/18/2020	78.3	7,985	5,170	4,479	280,840	7,890	0
9	7/19/2020	77.9	7,922	5,981	4,310	281,160	8,414	0
10	7/19/2020	81	8,116	5,930	4,462	260,210	6,769	0
11	7/20/2020	82.3	8,179	6,024	4,252	261,240	7,178	0
12	7/20/2020	80.4	7,998	5,926	4,473	260,150	7,123	0
13	7/21/2020	74.1	8,137	6,206	4,201	259,990	7,059	0
14	7/22/2020	77.5	7,855	6,294	4,337	254,290	7,352	0
15	7/22/2020	75.6	7,897	6,276	4,423	249,260	7,039	0
16	7/23/2020	90	8,226	6,310	4,400	259,720	7,256	0
17	7/23/2020	91.6	8,521	6,383	4,399	259,910	7,256	0
18	7/23/2020	82.6	8,126	6,470	4,349	259,170	8,126	0
19	7/23/2020	82.6	8,053	5,781	4,355	258,110	7,177	0
20	7/24/2020	88.4	8,301	6,118	4,444	260,380	7,540	0
21	7/24/2020	86.9	8,425	6,047	3,986	261,070	7,454	0
22	7/25/2020	78.8	8,155	6,155	4,331	260,280	7,636	0
23	7/25/2020	82.7	8,387	6,120	4,036	261,370	7,356	0
24	7/25/2020	78.8	8,072	5,912	4,043	260,510	7,570	0
25	7/26/2020	83.3	8,057	5,859	4,397	260,410	7,225	0
26	7/26/2020	73.9	8,230	6,280	4,005	260,160	7,406	0
27	7/26/2020	77.4	8,134	6,377	3,979	259,610	7,049	0
28	7/27/2020	75.7	7,979	6,239	4,159	259,970	7,093	0
29	7/27/2020	80	7,982	6,263	3,992	266,290	7,119	0
30	7/27/2020	84.2	8,009	5,910	3,950	259,830	9,400	0
31	7/28/2020	86.1	7,827	6,235	4,035	258,500	7,135	0
32	7/28/2020	94.1	8,263	6,043	4,014	260,150	7,093	0
33	7/28/2020	92.2	8,002	5,972	4,110	200,220	7,179	0
34	7/29/2020	87.5	7,604	5,827	3,898	260,640	6,984	0
35	7/29/2020	96.7	8,105	6,078	4,029	259,470	7,213	0
36	7/29/2020	93.1	8,031	5,801	4,096	258,240	7,990	0
37	7/29/2020	85	7,433	5,778	4,117	260,640	7,009	0
38	7/30/2020	95.4	8,084	5,971	4,285	261,410	6,957	0
39	7/30/2020	95.8	8,137	5,929	4,180	260,130	7,425	0
40	7/30/2020	87.3	7,968	5,726	4,173	260,510	7,054	0
41	7/31/2020	80.6	7,785	6,038	4,178	256,830	6,954	0
42	7/31/2020	85.1	8,168	6,061	4,069	258,570	7,250	0
43	7/31/2020	84.7	8,125	6,569	4,072	259,100	7,112	0
44	7/31/2020	91	7,217	5,073	4,351	260,290	7,430	0
45	8/1/2020	99.6	7,830	6,534	4,200	258,860	7,609	0
46	8/1/2020	99.1	7,699	5,817	4,411	259,100	8,040	0
47	8/1/2020	99.3	7,764	6,044	4,055	259,670	8,610	0
48	8/2/2020	90.2	7,536	6,192	4,364	258,580	8,396	0
49	8/2/2020	95.7	7,605	5,691	4,379	259,720	8,241	0
50	8/2/2020	99.3	7,673	5,980	4,367	260,980	7,368	0
51	8/2/2020	96.5	7,640	4,720	4,247	258,400	7,308	0
52	8/3/2020	85.9	6,805	5,964	4,310	249,040	7,292	0
53	8/3/2020	99.3	7,593	5,978	4,169	257,720	7,351	0

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**BETTY SCHAFFER MSH 10H  
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/other
54	8/3/2020	98.7	7,690	6,294	4,129	261,280	7,185	0
55	8/3/2020	95.8	7,342	5,924	4,245	259,810	7,336	0
56	8/4/2020	88.3	7,360	5,829	4,291	261,470	7,320	0
57	8/4/2020	88.1	7,180	6,355	4,118	259,840	7,325	0
58	8/4/2020	93.1	7,425	6,370	4,106	260,160	7,349	0
59	8/4/2020	93.1	7,368	6,322	4,176	261,940	7,213	0
60	8/5/2020	93.1	7,128	5,895	4,157	257,820	7,303	0
61	8/5/2020	90.1	7,529	6,467	4,273	259,900	7,183	0
62	8/6/2020	88.5	6,790	5,940	4,196	259,160	7,565	0
63	8/6/2020	97	7,532	5,960	3,954	256,650	7,224	0
64	8/6/2020	77	7,803	5,990	4,358	177,000	6,012	0
65	8/7/2020	78.3	7,277	5,835	4,015	256,390	7,333	0
66	8/7/2020	84.1	7,328	5,923	4,072	255,570	7,024	0
67	8/7/2020	97.5	7,290	5,900	4,089	262,800	7,208	0
68	8/8/2020	89.2	7,607	6,179	4,249	265,680	7,168	0
69	8/8/2020	94.1	7,471	5,983	3,985	263,280	7,286	0
70	8/8/2020	99	7,040	5,813	4,174	265,250	7,178	0
71	8/9/2020	85.6	6,373	5,511	4,157	262,320	8,682	0

**RECEIVED**  
 Office of Oil and Gas  
  
**OCT 26 2020**  
  
 WV Department of  
 Environmental Protection



RECEIVED  
Office of Oil and Gas

OCT 26 2020

WV Department of  
Environmental Protection

Well Name: BETTY SCHAFER MSH 10H

47051022980000

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	280.00	280.00	
Top of Salt Water	802.00	802.00	NA	NA	
Pittsburgh Coal	352.00	352.00	358.00	358.00	
Raven Cliff (ss)	1012.00	1010.00	1517.00	1511.00	
Big Injun (ss)	1517.00	1511.00	1951.00	1941.00	
Berea (siltstone)	1956.00	1940.00	5481.00	5319.00	
Rhinestreet (shale)	5481.00	5319.00	5871.00	5673.00	
Cashaqua (shale)	5871.00	5673.00	6077.00	5824.00	
Burket (shale)	6077.00	5824.00	6109.00	5845.00	
Tully (ls)	6109.00	5845.00	6162.00	5877.00	
Mahantango (shale)	6162.00	5877.00	6383.00	5978.00	
Marcellus (shale)	6383.00	5978.00	NA	NA	GAS

Latitude: 40°00'00"

SURFACE HOLE 2971'

Latitude: 39°57'30"

BOTTOM HOLE 6114'

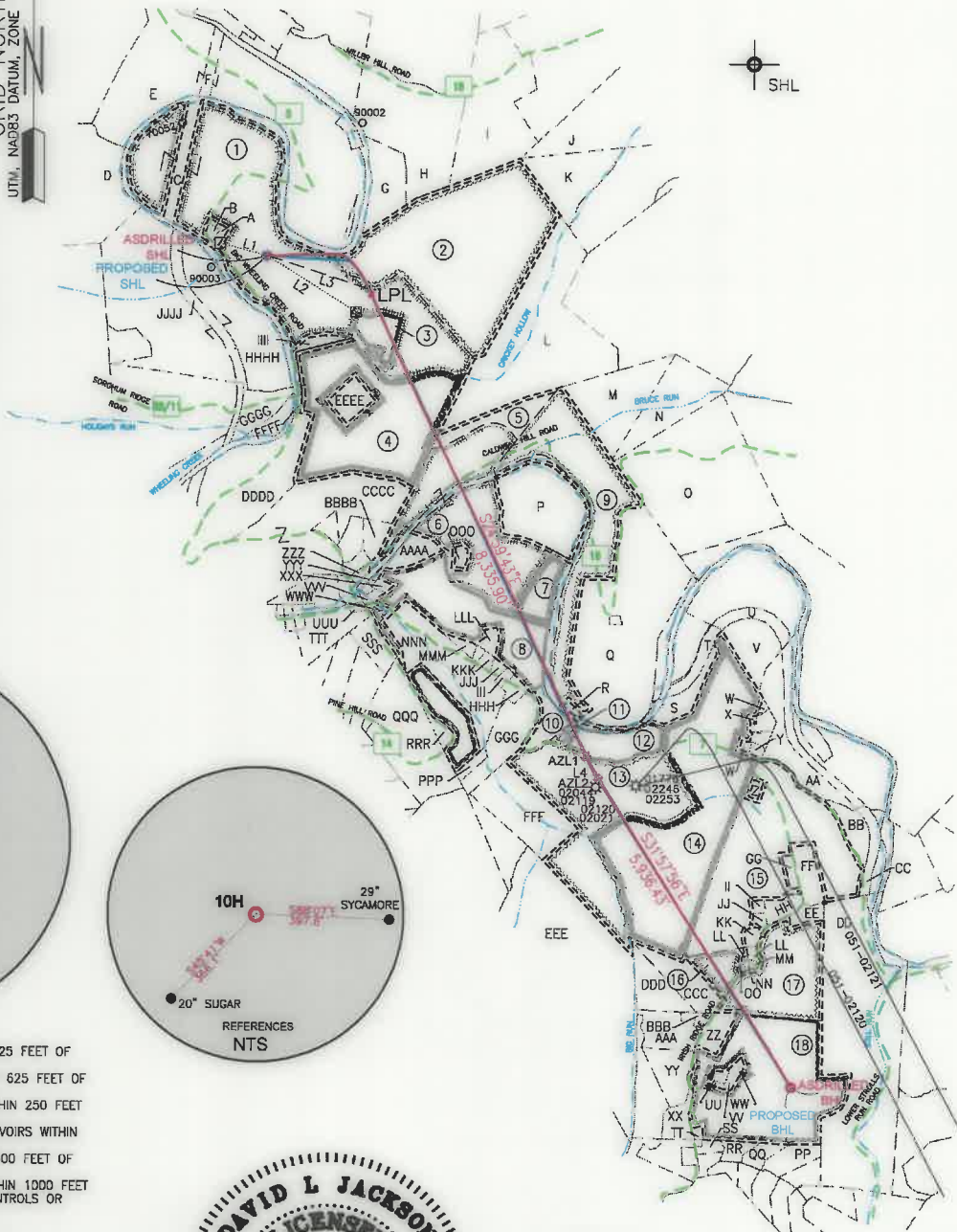
# JACKSON SURVEYING INC.

2413 EAST PIKE ST. # 112  
Clarksburg, WV 26302  
304-623-5851

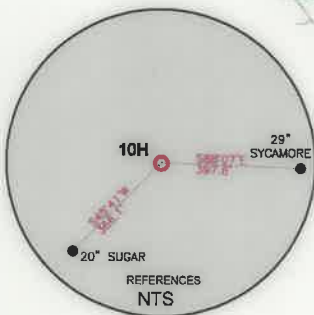
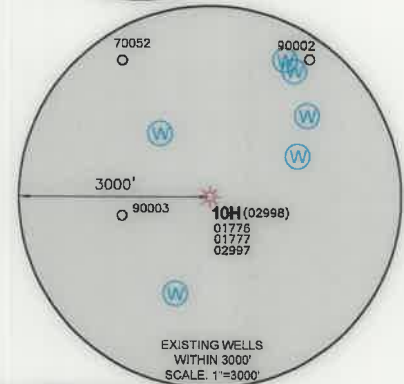
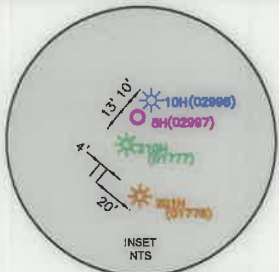
LINE	BEARING	DISTANCE	DESCRIPTION	MONUMENT
L1	N 74°49'04" W	805.36'	SHL TO LANDMARK	FD. 5/8" REBAR
L2	S 57°58'11" E	1710.65'	SHL TO LANDMARK	FD. 5/8" REBAR
LINE	BEARING	DISTANCE	CURVE LENGTH	DESCRIPTION
L3	S 70°12'37" E	1813.15'	2044.61'	SHL TO LPL
L4	S 28°35'51" E	452.83'	352.96'	AZL1 TO AZL2

SURFACE HOLE LOCATION (SHL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,426,816.700	
EASTING: 531,110.239	
LANDING POINT LOCATION (LPL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,426,629.589	
EASTING: 531,630.250	
AZIMUTH POINT LOCATION-1 (AZL1):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,424,326.765	
EASTING: 532,703.845	
AZIMUTH POINT LOCATION-2 (AZL2):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,424,205.579	
EASTING: 532,769.911	
BOTTOM HOLE LOCATION (BHL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,422,670.521	
EASTING: 533,727.839	

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



Longitude: 80°35'00" BOTTOM HOLE 1762'  
Longitude: 80°37'30" SURFACE HOLE 3295'



### WELL RESTRICTIONS

1. NO OCCUPIED DWELLINGS > 2500 SQ. FT. WITHIN 625 FEET OF CENTER OF PAD.
2. NO AGRICULTURE BUILDINGS > 2500 SQ. FT. WITHIN 625 FEET OF CENTER OF PAD.
3. NO WATER WELLS OR DEVELOPED SPRINGS ARE WITHIN 250 FEET OF PROPOSED WELL.
4. NO PERENNIAL STREAMS, LAKES, PONDS, OR RESERVOIRS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
5. NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.
6. NO GROUND INTAKE OR PUBLIC WATER SUPPLY WITHIN 1000 FEET OF WELL PAD, LIMITS OF DISTURBANCE, E & S CONTROLS OR PUBLIC WATER SUPPLY.

### NOTES ON SURVEY

1. SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND/OR FIELD LOCATIONS.
2. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
4. ALL INSETS ARE GRID NORTH UNLESS OTHERWISE DEPICTED.

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. 708

*David L. Jackson*

COMPANY:



(+) 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)

BETTY SCHAFER MSH

OPERATOR'S WELL #: 10H

API WELL #: 47 051 02998

STATE COUNTY PERMIT

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

WATERSHED: WHEELING CREEK (HUC-10) ELEVATION: 848.4'

DISTRICT: SAND HILL COUNTY: MARSHALL QUADRANGLE: MOUNDSVILLE, WV

SURFACE OWNER: BETTY JANE SCHAFER ACREAGE: ±205.06

OIL & GAS ROYALTY OWNER: BETTY JANE SCHAFER ACREAGE: ±205.06

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

CONVERT  PLUG & ABANDON  CLEAN OUT & REPLUG  OTHER CHANGE  (SPECIFY) ASDRILLED

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 6,147' TVD 21,399' TMD

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC DESIGNATED AGENT: BRITTANY WOODY

ADDRESS: 1300 FORT PIERPONT ROAD, SUITE 200 ADDRESS: 1300 FORT PIERPONT ROAD, SUITE 200

CITY: MORGANTOWN STATE: WV ZIP CODE: 26508 CITY: MORGANTOWN STATE: WV ZIP CODE: 26508



LEGEND:	REVISIONS:	DATE:
○ PROPOSED SURFACE HOLE / BOTTOM HOLE		10-14-2020
⊙ EXISTING / PRODUCING WELLHEAD		
LPL* LANDING POINT LOCATION		
⊙ EXISTING WATER WELL		
⊙ EXISTING SPRING		
— SURVEYED BOUNDARY		
— DRILLING UNIT		
— LEASE BOUNDARY		
— ASDRILLED PATH		
— PROPOSED PATH		
		DRAWN BY: N. MANO
		SCALE: 1" = 3000'
		DRAWING NO:
		WELL LOCATION PLAT





**JACKSON SURVEYING**  
**INC.**  
 2413 EAST PIKE ST. # 112  
 Clarksburg, WV 26302  
 304-623-5851

ADJOINING OWNERS TABLE		
TRACT	SURFACE OWNER	TAX PARCEL
LL	ISKCON NEW VRINDABAN, INC.	15-2-3.3
MM	ANDY FRAENKEL & RUTH FRAENKEL	15-2-3.4
NN	ANDY FRAENKEL & RUTH FRAENKEL	15-2-3.2
OO	ANDY FRAENKEL & RUTH FRAENKEL	15-2-3.7
PP	VRINDA D. CLOTHIER ET AL	15-2-12.11
QQ	JESSE S. HANSON & JOY HANSON	15-2-12.13
RR	GREGORY D. CARLSON & MADRI CARLSON	15-2-12.12
SS	TARAN SINGH & SABITREE S. SINGH	15-2-12
TT	TARAN SINGH & SABITREE S. SINGH	15-2-5.2
UU	L. ONE LLC	15-2-5.6
VV	LEON LANE	15-2-5.8
WW	SPIRIT GARDEN CHARITABLE FOUNDATION	15-2-5.9
XX	ADITYA SATSANGI & KONISHA SATSANGI	15-2-5.4
YY	GIRIDHARI D. WEBER	15-2-5.5
ZZ	CARLOS ORDONEZ	15-2-5.3
AAA	RAMESH PATEL & VINA PATEL	15-2-5.7
BBB	DIAN F. ALPERT	15-2-5.1
CCC	SHAM SHADEEN GAFFOOR AND VIDYA RAMKAREE, HUSBAND AND WIFE, AS JOINT TENANTS WITH THE RIGHT OF SURVIVORSHIP AND NOT AS TENANTS IN COMMON	15-2-3.8
DDD	ISKCON NEW VRINDABAN, INC.	15-2-3
EEE	ISKCON NEW VRINDABAN, INC.	15-2-2
FFF	ECO-VRINDABAN, INC.	15-1-20
GGG	STATE OF W VA THE CONSERVATION COMMISSION	15-1-5.1
HHH	GERALD H. ROBSON & THEODORA J. ROBSON	15-1-4.8
III	TERRY RAY SHELDON	15-1-4.12
JJJ	PHILLIP E. NEWBERRY	15-1-4.9
KKK	PHILLIP E. NEWBERRY	15-1-4.16
LLL	PURE GHEE, INC.	15-1-4.15
MMM	ECO-VRINDABAN, INC.	15-1-4.11
NNN	STATE OF W VA THE CONSERVATION COMMISSION	15-1-4.1
OOO	ROBERT D. VINCILIONE ET UX	15-1-4.14
PPP	MELINDA DAWN WISELKA	15-1-4.3
QQQ	BRENDA J. HARRIS; DEBORAH S. WHITLATCH; JAMES W. PLANTS; AND PLANTS FAMILY IRREVOCABLE TRUST, DATED OCTOBER 2, 2008	13-9-18
RRR	TINA HERCULES	15-1-4.2
SSS	JOHN T. LYNSKEY	13-9-17
TTT	JOHN T. LYNSKEY, ET UX	13-9-16.1
UUU	ECO-VRINDABAN, INC.	13-9A-29
VVV	PHILIP C. WILSON & NANCY L. WILSON	15-1-4.6
WWW	PHILIP C. WILSON & NANCY L. WILSON	15-1-4.13
XXX	PHILIP C. WILSON & NANCY L. WILSON	15-1-4.4
YYY	PHILIP C. WILSON & NANCY L. WILSON	15-1-4.7
ZZZ	CHARLOTTE RAE WILSON CHANEY; DAVID MATTHEW DAWSON; REBECCA SUE WILSON WALTERS; AND PHILIP CHARLES WILSON	12-10-4.2
AAAA	ECO-VRINDABAN, INC.	15-1-3
BBBB	PHILIP C. WILSON, ET UX	12-10-4.3
CCCC	RUSSELL ROBERT WILSON II, ET AL	12-10-4
DDDD	MEADOW LAKE CLUB CO.	12-10-2
EEEE	CONSOLIDATION COAL COMPANY/MURRAY ENERGY	12-10-1.1
FFFF	CONSOLIDATION COAL COMPANY/MURRAY ENERGY	12-10-1.3
GGGG	CONSOLIDATION COAL COMPANY/MURRAY ENERGY	13-8-3.2
HHHH	LUCILLE M. HOGG - LIFE ESTATE	13-8-3
IIII	JEWELL L. ROMAN	12-10-01
JJJJ	LUCILLE M. HOGG - LIFE ESTATE	13-8-4

REVISIONS:	COMPANY:			 	
	OPERATOR'S	BETTY SCHAFER MSH	API #	02298	DATE: 10-14-2020
	WELL #:	10H		47-051-02998	DRAWN BY: N. MANO
	DISTRICT:	SAND HILL	COUNTY:	MARSHALL	SCALE: N/A
			STATE:	WV	DRAWING NO:
					WELL LOCATION PLAT 3





**JACKSON SURVEYING  
INC.**

2413 EAST PIKE ST. # 112  
Clarksburg, WV 26302  
304-623-5851

WELL BORE TABLE FOR SURFACE / ROYALTY OWNERS		
TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL
1	BETTY JANE SCHAFER (S)/(R)	12-9-22
TRACT	SURFACE OWNER	TAX PARCEL
2	CHARLES B. FISHER & CARLA S. FISHER (S)	12-9-20
3	CONSOLIDATION COAL COMPANY/MURRAY ENERGY (S)	12-9-22.2
4	PATRICIA A. FISH & FREDERICK W. FISH (S)	12-10-1.2
5	CALVIN C. MERINAR (S)	12-10-7
6	ECO-VRINDABAN, INC. (S)	15-1-2
7	DEBRA RAE BAUER AND WILLIAM E. WHITE, HER HUSBAND, AS JOINT TENANTS WITH THE RIGHT OF SURVIVORSHIP(S)	15-1-2.2
8	ECO-VRINDABAN, INC. (S)	15-1-4
9	KENNETH L. MERINAR ET AL (S)	12-10-9
10	THOMAS LORENCE & SILVIA LAU (S)	15-1-5
11	KENNETH L. MERINAR ET AL (S)	15-1-6.2
12	KENNETH L. MERINAR ET AL (S)	15-1-6.3
13	ECO-VRINDABAN, INC. (S)	15-1-6
14	TATIA JOSEPHINE ROSE (S)	15-1-19
15	ISKCON NEW VRINDABAN, INC. (S)	15-1-16
16	ELICIA N. HELLER (S)	15-2-3.9
17	ECO-VRINDABAN, INC. (S)	15-2-3.5
18	ISKCON NEW VRINDABAN, INC. (S)	15-2-5

ADJOINING OWNERS TABLE		
TRACT	SURFACE OWNER	TAX PARCEL
A	BETTY JANE SCHAFER	12-9-23
B	BETTY JANE SCHAFER	12-9-22.1
C	BETTY JANE SCHAFER	12-9-24
D	MILDRED LOUISE BLACK	13-8-2.1
E	JOHN ALVIN GRAY	13-3-14
F	JOHN ALVIN GRAY	13-3-13
G	JOHN ALVIN GRAY	12-9-21
H	PIKEWOOD ENERGY CORP	12-9-10
I	JOHN ALVIN GRAY	12-9-11
J	JAMES MARTIN MERINAR ET UX	12-9-15.1
K	CALVIN C. MERINAR	12-9-15
L	CALVIN C. MERINAR	12-9-19
M	CALVIN C. MERINAR	12-11-1
N	CHARLES W. CLAYTON ET AL	12-11-2
O	APP MINERALS LLC, A DELAWARE LIMITED LIABILITY COMPANY	12-11-3
P	DOUGLAS FINTEL	15-1-2.1
Q	GLENN M. HICKEY	12-10-8
R	BETTY HICKEY; JAMES HICKEY AND BETTY HICKEY, HUSBAND AND WIFE; AND JEFFREY T. MERINAR	12-10-8.2
S	GLENN M. HICKEY; STANLEY L. MERINAR AND DOROTHY MERINAR, HUSBAND AND WIFE, AS JOINT TENANTS WITH RIGHT OF SURVIVORSHIP; AS TENANTS IN COMMON	15-1-6.1
T	GLEN M. HICKEY	15-1-7
U	ISKCON NEW VRINDABAN, INC.	15-1-9
V	ISKCON NEW VRINDABAN, INC.	15-1-8
W	TATIA JOSEPHINE ROSE	15-1-10
X	JEREMY ALAN PRETTYMAN	15-1-19.1
Y	ELEANORE BROWN	15-1-11
Z	ISKCON NEW VRINDABAN, INC.	15-1-16.2
AA	ISKCON NEW VRINDABAN, INC.	15-1-12
BB	ISKCON NEW VRINDABAN, INC.	15-1-15
CC	ISKCON NEW VRINDABAN, INC.	15-1-14
DD	SARA JO ANDERSON	15-2-4
EE	ISKCON NEW VRINDABAN, INC.	15-2-3.6
FF	ISKCON NEW VRINDABAN, INC.	15-1-16.1
GG	ISKCON NEW VRINDABAN, INC.	15-1-17
HH	ISKCON NEW VRINDABAN, INC.	15-1-18
II	JOHN H. MOWEN, JR.	15-1-18.1
JJ	ISKCON NEW VRINDABAN, INC.	15-1-18.2
KK	ISKCON NEW VRINDABAN, INC.	15-1-16.3

<b>SURFACE HOLE LOCATION (SHL):</b> UTM (NAD83, ZONE 17, METERS): NORTHING: 4,426,817.023 EASTING: 531,108.823
<b>LANDING POINT LOCATION (LPL):</b> UTM (NAD83, ZONE 17, METERS): NORTHING: 4,426,653.394 EASTING: 531,617.258
<b>AZIMUTH POINT LOCATION-1 (AZL1):</b> UTM (NAD83, ZONE 17, METERS): NORTHING: 4,424,312.931 EASTING: 532,704.460
<b>AZIMUTH POINT LOCATION-2 (AZL2):</b> UTM (NAD83, ZONE 17, METERS): NORTHING: 4,424,216.812 EASTING: 532,756.663
<b>BOTTOM HOLE LOCATION (BHL):</b> UTM (NAD83, ZONE 17, METERS): NORTHING: 4,422,671.796 EASTING: 533,725.890

REVISIONS:	COMPANY:	 		
	OPERATOR'S	BETTY SCHAFER MSH	API #	DATE: 10-14-2020
	WELL #:	10H	47-051-02998	DRAWN BY: N. MANO
	DISTRICT:	COUNTY:	STATE:	SCALE: N/A
	SAND HILL	MARSHALL	WV	DRAWING NO: WELL LOCATION PLAT 2

