

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

API 47-103-03197 County WETZEL District PROCTOR  
Quad WILEYVILLE Pad Name MARGARET SUE KELLEY PAD1 Field/Pool Name VICTORY  
Farm name MARGARET SUE KELLEY Well Number MARGARET SUE KELLEY UD-B Wtz 4H  
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 4,393,249.62 Easting 525,890.69  
Landing Point of Curve Northing 4,393,645.85 Easting 525,641.23  
Bottom Hole Northing 4,394,544.00 Easting 524,570.52

Elevation (ft) 1422.6' 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 10/10/2017 Date drilling commenced 01/29/2018 Date drilling ceased 06/07/2018  
Date completion activities began 08/13/2018 Date completion activities ceased 09/29/2018  
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 512' Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 1,930' Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 1,225' Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

Reviewed

Reviewed by:  
DH  
2-21-19

API 47- 103 - 03197 Farm name MARGARET SUE KELLEY Well number MARGARET SUE KELLEY UD-B WTZ 4H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade w/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	630'	NEW	J-55/54.50#		Y
Coal	SEE INTERMEDIATE						
Intermediate 1	12.25	9.625	2,857'	NEW	J-55/36#		Y
Intermediate 2							
Intermediate 3							
Production	8.75/8.50	5.5	12,728'	NEW	P-110/20#		Y
Tubing		2.375	7,453'	NEW	P-110/4.7#		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	661	15.60	1.20	793.2	SURFACE	8
Coal	SEE INTERMEDIATE						
Intermediate 1	CLASS A	1,140	16.00	1.12	1,276.8	SURFACE	8
Intermediate 2							
Intermediate 3							
Production	CLASS A	2,175	15.60	1.19	2,588.25	SURFACE	24
Tubing							

Drillers TD (ft) 12,728' Loggers TD (ft) 12,728'  
 Deepest formation penetrated BURKET Plug back to (ft) N/A  
 Plug back procedure N/A

Kick off depth (ft) 6,227'

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 \_\_\_\_\_

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 \_\_\_\_\_

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API 47- 103 - 03197 Farm name MARGARET SUE KELLEY Well number MARGARET SUE KELLEY UD-8 WTZ 4H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>BURKET</u>	<u>7,025'</u> TVD	<u>7,511'</u> MD
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 1,313 psi Bottom Hole \_\_\_\_\_ psi DURATION OF TEST \_\_\_\_\_ hrs

OPEN FLOW Gas 9858 mcfpd Oil 338 bpd NGL \_\_\_\_\_ bpd Water 406 bpd GAS MEASURED BY  Estimated  Orifice  Pilot

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

Please insert additional pages as applicable.

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

Logging Company WEATHERFORD  
Address 584 HACKERS CREEK RD City JANE LEW State WV Zip 26378

Cementing Company BJ SERVICES  
Address 1036 E MAIN STREET City BRIDGEPORT State WV Zip 26330

Stimulating Company HALLIBURTON  
Address 3000 N SAM HOUSTON PKWY E City HOUSTON State TX Zip 77032

Please insert additional pages as applicable.

Completed by Elizabeth Gee Telephone 832-796-7632  
Signature  Title Staff Regulatory Analyst Date 12/20/2018

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

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MARGARET SUE KELLEY UD-B WTZ 4H

ATTACHMENT 1

PERF REPORT

STAGE NUM	Perf Date	Perf Bottom MI	Perf Top MD2	# SHOTS PER STG
1	7/14/2018	12,639	12,544	33
2	8/14/2018	12,511	12,404	42
3	8/14/2018	12,371	12,264	42
4	8/14/2018	12,231	12,124	42
5	8/14/2018	12,091	11,984	42
6	8/15/2018	11,951	11,844	42
7	8/15/2018	11,811	11,704	42
8	8/15/2018	11,671	11,564	42
9	8/16/2018	11,531	11,424	42
10	8/16/2018	11,391	11,284	42
11	8/16/2018	11,251	11,144	42
12	8/16/2018	11,111	11,004	42
13	8/17/2018	10,971	10,864	42
14	8/17/2018	10,831	10,724	42
15	8/17/2018	10,691	10,584	42
16	8/23/2018	10,546	10,444	42
17	8/23/2018	10,411	10,304	42
18	8/23/2018	10,271	10,164	42
19	8/28/2018	10,131	10,024	42
20	8/28/2018	9,991	9,884	42
21	8/28/2018	9,851	9,744	42
22	8/29/2018	9,711	9,604	42
23	8/30/2018	9,571	9,464	42
24	8/30/2018	9,431	9,324	42
25	8/30/2018	9,291	9,184	42
26	8/31/2018	9,151	9,044	42
27	9/1/2018	9,011	8,904	42
28	9/1/2018	8,871	8,764	42
29	9/1/2018	8,731	8,624	42
30	9/1/2018	8,591	8,484	42
31	9/2/2018	8,451	8,344	42
32	9/2/2018	8,311	8,204	42
33	9/2/2018	8,171	8,064	42
34	9/2/2018	8,031	7,921	42
35	9/3/2018	7,891	7,784	42
36	9/3/2018	7,751	7,644	42
37	9/3/2018	7,611	7,499	42

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**MARGARET SUE KELLEY UD-B WTZ 4H**  
**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/othr
1	8/13/2018	89.2	6,841	8,384	3,158	268,640	4,975	0
2	8/14/2018	91.2	7,033	7,532	3,421	266,380	4,680	0
3	8/14/2018	93.3	7,129	6,979	3,555	271,700	4,495	0
4	8/14/2018	99.6	7,346	7,197	3,421	267,880	4,789	0
5	8/15/2018	87.9	6,855	6,225	3,639	268,000	5,213	0
6	8/15/2018	99.2	7,756	6,639	3,586	276,680	4,146	0
7	8/15/2018	91	7,013	4,665	3,679	271,360	4,368	0
8	8/16/2018	90.1	7,017	6,563	3,761	274,950	4,685	0
9	8/16/2018	99.5	7,394	6,520	3,648	275,980	3,473	0
10	8/16/2018	93.8	7,155	6,748	3,632	278,840	3,878	0
11	8/16/2018	91	6,855	5,957	3,800	275,320	4,522	0
12	8/17/2018	98.1	7,475	6,750	3,717	267,140	3,596	0
13	8/17/2018	100.1	7,538	6,431	3,706	276,280	3,545	0
14	8/17/2018	91.1	6,787	6,201	3,776	270,660	4,305	0
15	8/18/2018	93.1	6,895	5,581	3,746	127,297	3,512	0
16	8/23/2018	83.6	6,774	6,136	3,735	265,180	5,340	0
17	8/23/2018	99.9	7,187	5,232	3,732	282,560	4,179	0
18	8/27/2018	87	5,676	5,676	3,854	279,100	4,795	0
19	8/28/2018	94.8	6,949	6,034	3,861	272,660	4,217	0
20	8/28/2018	95.9	7,331	6,468	3,778	274,720	5,058	0
21	8/29/2018	99.8	6,901	6,326	3,863	270,680	3,755	0
22	8/29/2018	100.1	7,095	6,448	3,884	269,500	3,485	0
23	8/30/2018	99.7	7,105	5,962	3,891	294,940	3,658	0
24	8/30/2018	99.9	7,010	5,870	3,811	281,880	3,513	0
25	8/30/2018	94	7,144	5,987	4,375	272,880	5,173	0
26	8/31/2018	98.7	6,814	5,208	3,722	289,610	4,428	0
27	9/1/2018	95.9	6,644	5,631	3,747	282,020	4,212	0
28	9/1/2018	89.7	6,956	6,174	3,854	277,100	4,758	0
29	9/1/2018	95.6	6,771	5,932	3,723	272,000	4,073	0
30	9/2/2018	96.1	6,688	6,094	3,732	270,940	4,029	0
31	9/2/2018	90.9	6,702	5,862	3,816	279,400	3,993	0
32	9/2/2018	96.1	6,965	6,079	3,804	275,880	3,413	0
33	9/2/2018	99.3	6,846	6,133	3,792	274,180	4,100	0
34	9/2/2018	88.1	6,617	5,935	3,742	276,360	4,119	0
35	9/3/2018	90.7	6,548	6,065	4,065	276,820	4,017	0
36	9/3/2018	94.1	6,774	6,257	3,596	284,680	3,305	0
37	9/3/2018	99.8	6,555	6,199	3,520	274,080	3,452	0

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MARGARET SUE KELLEY UD-B WTZ 4H

47103031970000

Attachment 3

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	512.00	512.00	
Top of Salt Water	1930.00	1930.00	NA	NA	
Pittsburgh Coal	1225.00	1225.00	2225.00	2225.00	
Maxton (ss)	2225.00	2225.00	2424.00	2424.00	
Big Injun (ss)	2424.00	2424.00	2995.00	2995.00	
Berea (siltstone)	2995.00	2995.00	6551.00	6551.00	
Rhinestreet (shale)	6744.00	6676.00	6952.00	6830.00	
Cashaqua (shale)	6952.00	6830.00	7139.00	6939.00	
Middlesex (shale)	7139.00	6939.00	7511.00	7025.00	
Burket (shale)	7511.00	7025.00	NA	NA	GAS

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# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	8/13/2018
Job End Date:	9/3/2018
State:	West Virginia
County:	Wetzel
API Number:	47-103-03197-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	Margaret Sue Kelley UD-B WTZ 4H
Latitude:	39.68869240
Longitude:	-80.69805410
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	7,003
Total Base Water Volume (gal):	6,627,151
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	Operator	Base Fluid					
			Water	7732-18-5	100.00000	83.50808	Density = 8.340
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	1.03041	

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CI-200	Economy Polymers & Chemicals	Corrosion Inhibitor					
				Listed Below			
IC-001	Economy Polymers & Chemicals	Iron Control					
				Listed Below			
CARBONRT CP - 40/70	Carbo Ceramics Inc	Proppant					
				Listed Below			
SAND- PREMIUM WHITE-40/70, BULK	Halliburton	Proppant					
				Listed Below			
SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676)	Halliburton	Proppant					
				Listed Below			
EXCELERATE LX-1	Halliburton	Friction Reducer					
				Listed Below			
NALCO BIOC11139A	NALCO Champion Company	Biocide					
				Listed Below			
HYDROCHLORI AC	Halliburton	Solvent					

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				Listed Below			
NALCO SCAL16486A	NALCO Champion Company	Scale Inhibitor					
				Listed Below			
CARBONRT CP - 100 MESH	Carbo Ceramics Inc.	Proppant					
				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	14.58227	
			Ceramic materials and wares, chemicals	66402-68-4	100.00000	0.81284	
			Hydrochloric acid	7647-01-0	15.00000	0.14691	
			Polyacrylate	Proprietary	30.00000	0.02342	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02342	
			Fatty acid ester	Proprietary	5.00000	0.00781	
			Benzyl-(C12-C16 Alkyl)- Dimethyl-Ammonium Chloride	68424-85-1	30.00000	0.00733	
			Ethoxyalted fatty acid	Proprietary	5.00000	0.00390	
			Ammonium chloride	12125-02-9	5.00000	0.00390	
			Sodium chloride	7647-14-5	5.00000	0.00390	
			Nitriloacetic Acid, Trisodium Salt	5064-31-3	42.00000	0.00292	
			Glutaraldehyde	111-30-8	10.00000	0.00244	
			Methanol	67-56-1	80.00000	0.00218	
			Ethylene Glycol	107-21-1	30.00000	0.00157	
			Amine Triphosphate	Proprietary	30.00000	0.00157	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Ethanol	64-17-5	5.00000	0.00122	

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Margaret Sue Kelley UD-B WTZ 4H  
Wetzel Co, WV  
SDC 40

**Plan vs Actual**

**Plan Data for Margaret Sue Kelley UD-B WTZ 4H**

Plan Point Information: (Scale Factor = 0.999608)  
DogLeg Severity Unit: %/100.00ft Position offsets from Slot centre

MD (USft)	Inc (°)	Az (°)	TVD (USft)	+N/-S (USft)	+E/-W (USft)	VSec (USft)	DLS (DLSU)	Toolface (°)	Comments
0.00	0.00	0.00	-0.00	0.00	0.00	0.00	0.00	0.0	
26.00	0.00	0.00	26.00	0.00	0.00	0.00	0.00	0.0	0.0 KB Offset
1450.00	0.00	0.00	1450.00	0.00	0.00	0.00	0.00	0.0	0.0 Nudge KOP
1600.00	3.00	65.00	1599.93	1.66	3.56	-1.39	2.00	65.0	Build/Turn
1724.12	5.00	43.10	1723.75	6.98	10.20	-2.43	2.00	311.4	Hold
6227.55	5.00	43.10	6218.04	293.59	278.36	5.40	0.00	0.0	Curve KOP 7° DLS
7233.16	70.00	309.49	6982.62	675.33	-105.93	546.83	7.00	264.6	Build/Turn 9° DLS
7461.09	90.51	310.01	7021.00	818.23	-277.70	769.50	9.00	1.5	Landing Point
12774.64	90.51	310.01	6974.00	4234.03	-4347.58	6066.27	0.00	0.0	PBHL MSK4H

Target Set Information: (Scale Factor = 0.999608)  
Name: Margaret Sue Kelley WTZ 4H  
Position offsets from Slot centre

Name	TVD (USft)	+N/-S (USft)	+E/-W (USft)	Northing (USft)	Easting (USft)	Lat (°)	Long (°)
LP MSK4H	7021.00	701.15	-138.30	14414220.73	1725221.46	39.690619	-80.698537
PBHL MSK4H	6974.00	4234.03	-4347.58	14417752.22	1721013.83	39.700355	-80.713454

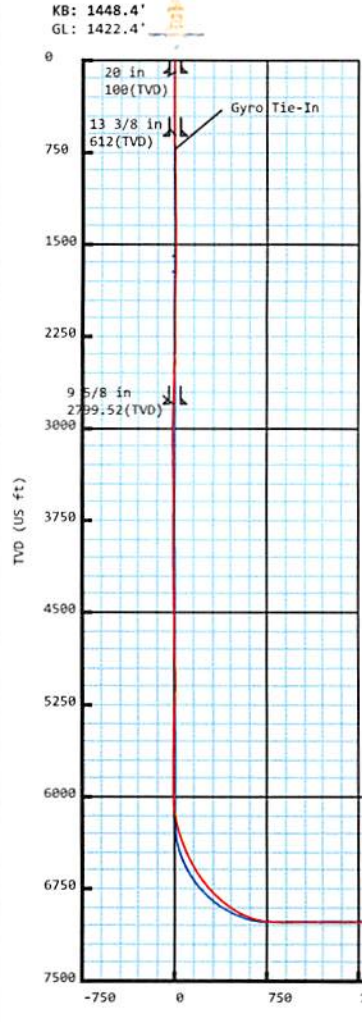


**Plan Data for Margaret Sue Kelley UD-B WTZ 4H**

Formation Point Information:

Name	TVD Elevation (USft)	MD (USft)
Burket 2	7026.00	0.00
Burket 1	7033.00	0.00
Tully	7040.00	0.00
Base Fresh Water	512.00	936.40
Burket Shale	721.00	727.40
Top of Salt Water	962.00	486.40
Pittsburgh Coal	1242.00	206.40
Maxton	2217.00	-768.60
Big Lime	2335.00	-886.60
Big Injun	2416.00	-967.60
Base Big Injun	2659.00	-1210.60
Berea	3008.00	-1559.60
Gordon Sandstone	3173.00	-1724.60
Upper Rhinestreet	6536.00	-5087.60
Lower Rhinestreet	6685.00	-5236.60
Basal Rhinestreet	6748.00	-5299.60
Cashaqua	6824.00	-5375.60
Middlesex	6934.00	-5485.60
Lower Middlesex	6962.00	-5513.60
Geneseo	6988.00	-5539.60
Geneseo 1	7008.00	-5559.60

Drawing By: Vilaphanh (Cot) Sinakone  
Date: 22 May 2018  
Office Name: Weatherford Drilling Services  
Address: 12101 Cutten Road  
Houston, TX 77066  
Phone: 281-701-4760



**Plan Data for Margaret Sue Kelley UD-B WTZ 4H**

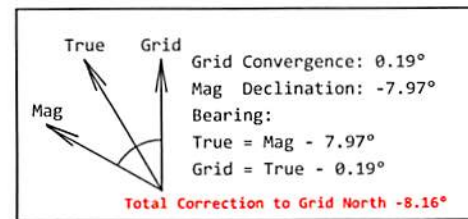
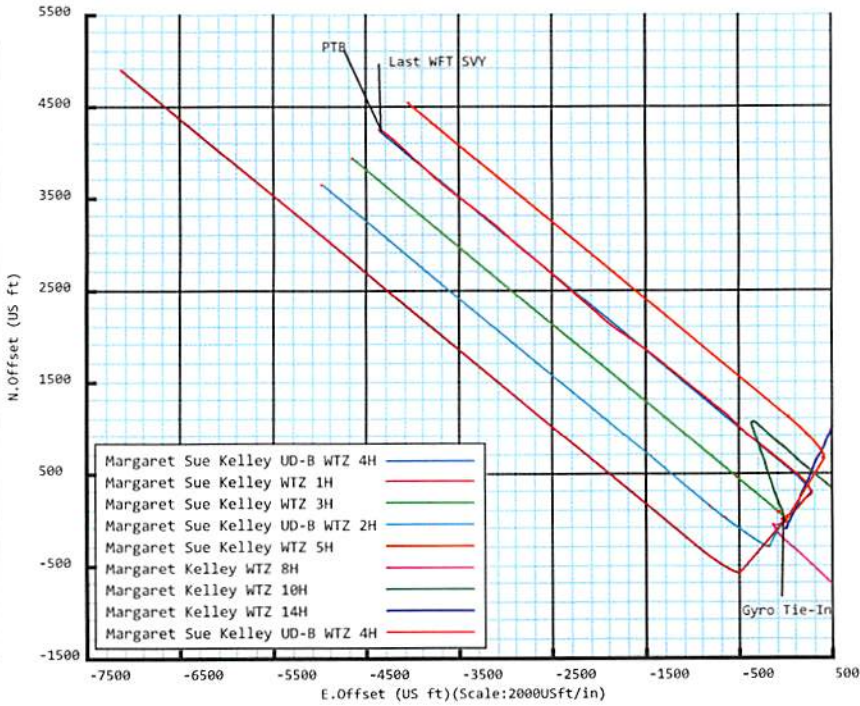
Field: SOUTHWESTERN\_WETZEL CO, WV UTM NAD 83 (17N)  
Map Unit: USFt Vertical Reference Datum (VRD): Mean Sea Level  
Projected Coordinate System: NAD83 / UTM zone 17N

Site: Margaret Sue Kelley WTZ Pad  
Unit: USFeet TVD Reference:  
Company Name: SOUTHWESTERN ENERGY  
Position: Northing: 14413498.28USft Latitude: 39.688633°  
Easting: 1725348.27USft Longitude: -80.698095°  
North Reference: Grid Grid Convergence: 0.19°  
Elevation Above VRD: 1422.40USft

Slot: Margaret Sue Kelley UD-B WTZ 4H  
Position:  
Offset is from Site centre  
+N/-S: 21.58USft Northing: 14413519.85USft Latitude: 39.688692°  
+E/-W: 11.44USft Easting: 1725359.71USft Longitude: -80.698054°  
Elevation Above VRD: 1422.40USft

Well: Margaret Sue Kelley UD-B WTZ 4H  
Type: Main-Well  
File Number: NE-13141526  
Plan Folder: P1 Plan: P1:V3  
Vertical Section: Position offset of origin from Slot centre:  
+N/-S: 0.00USft Azimuth: 314.24°  
+E/-W: 0.00USft  
Magnetic Parameters:  
Model: Field Strength: Declination: Dip: Date:  
M 2016 52277(nT) -7.97° 66.88° 2018-05-25

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# Weatherford®

## Margaret Sue Kelley UD-B WTZ 4H

<b>Field Name:</b> SOUTHWESTER N_WETZEL CO, WV UTM NAD 83 (17N)	<b>Map Units:</b> US ft	<b>Company Name:</b> SOUTHWESTERN ENERGY	
	<b>Vertical Reference Datum (VRD):</b> Mean Sea Level		
	<b>Projected Coordinate System:</b> NAD83 / UTM zone 17N		
<b>Comment:</b>			
<b>Site:</b> Margaret Sue Kelley WTZ Pad	<b>Units:</b> US ft	<b>North Reference:</b> Grid	<b>Convergence Angle:</b> 0.19
	<b>Position:</b>	<b>Northing:</b> 14413498.28 US ft	<b>Latitude:</b> 39.688633
		<b>Easting:</b> 1725348.27 US ft	<b>Longitude:</b> -80.698095
<b>Elevation above MSL:</b> 1422.40 US ft		<b>Comment:</b>	
<b>Slot:</b> Margaret Sue Kelley UD-B WTZ 4H	<b>Position (Relative to Site Centre)</b>		
	<b>+N/-S:</b> 21.58 US ft	<b>Northing:</b> 14413519.85 US ft	<b>Latitude:</b> 39.688692
	<b>+E/-W:</b> 11.44 US ft	<b>Easting:</b> 1725359.71 US ft	<b>Longitude:</b> -80.698054
	<b>Slot TVD Reference:</b> Ground Elevation		
	<b>Elevation above MSL:</b> 1422.40 US ft		
<b>Comment:</b>			
<b>Well:</b> Margaret Sue Kelley UD-B WTZ 4H	<b>Type:</b> Main well	<b>UWI:</b>	
	<b>File Number:</b> NE-13141526	<b>Comment:</b>	
	<b>Closure Distance:</b> 6068.18 US ft	<b>Closure Azimuth:</b> 314.44°	
	<b>Vertical Section: Position of Origin (Relative to Slot centre)</b>		
	<b>+N/-S:</b> 0.00 US ft	<b>+E/-W:</b> 0.00 US ft	<b>Az:</b> 314.24°

### Drill floor: Survey Name: Definitive Survey

<b>Rig Height (Drill Floor):</b> 26.00 US ft	<b>Elevation above MSL:</b> 1448.40 US ft	<b>Inclination:</b> 0.00°	<b>Azimuth:</b> 0.00°
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### Survey Name: Definitive Survey

<b>Date:</b> 29/Mar/2018	<b>Survey Tool:</b> See Survey Tool Ranges below.	<b>Comment:</b>	<b>Company:</b>
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### Magnetic Model:

<b>Model Name:</b> HDGM 2016	<b>Date:</b> 25/May/2018	<b>Field Strength:</b> 52277.0nT	<b>Declination:</b> -7.97°	<b>Dip:</b> 66.88°
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### Tie Point:

<b>MD:</b> 0.00 US ft	<b>Inclination:</b> 0.00°	<b>Azimuth:</b> 0.00°	<b>TVD:</b> -0.00 US ft	<b>North Offset:</b> 0.00 US ft	<b>East Offset:</b> 0.00 US ft
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Survey Tool Ranges:			
Name	Start MD(USft)	End MD(USft)	Source Survey
GYRO_GC_WIR+DPIPE_GYD	0.00	726.00	Gyro
MFAC_US_V2	726.00	1422.00	WFT MWD_01_MFAC
MWD	1422.00	2795.00	WFT MWD_01
MWD	2795.00	6554.00	WFT MWD_02
MWD	6554.00	12728.00	WFT MWD_03

Wellpath created using minimum curvature.

Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor) (Scale factor 0.999608)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Latitude (° ' ")	Longitude (° ' ")	DLS (°/100US ft)	Comment
0.00	0.00	0.00	-0.00	0.00	0.00	0.00	39.688693	-80.698054	0.00	
100.00	0.13	270.96	100.00	0.08	0.00	-0.11	39.688693	-80.698055	0.13	
200.00	0.13	327.24	200.00	0.28	0.10	-0.29	39.688693	-80.698055	0.12	
300.00	0.10	311.41	300.00	0.47	0.25	-0.42	39.688693	-80.698056	0.04	
400.00	0.20	7.93	400.00	0.66	0.48	-0.46	39.688694	-80.698056	0.17	
500.00	0.11	345.94	500.00	0.85	0.75	-0.46	39.688695	-80.698056	0.11	
542.00	0.36	1.23	542.00	0.97	0.92	-0.46	39.688695	-80.698056	0.61	
632.00	0.36	357.32	632.00	1.37	1.49	-0.47	39.688697	-80.698056	0.03	
726.00	0.48	351.52	725.99	1.90	2.17	-0.54	39.688698	-80.698056	0.14	Gyro Tie-In
872.00	0.80	331.53	871.98	3.36	3.67	-1.12	39.688703	-80.698058	0.26	
962.00	1.00	9.27	961.97	4.41	5.00	-1.29	39.688706	-80.698059	0.68	
1054.00	1.72	35.45	1053.95	5.08	6.91	-0.36	39.688711	-80.698055	1.01	
1147.00	2.32	39.63	1146.89	5.45	9.50	1.65	39.688719	-80.698048	0.66	
1237.00	2.26	40.10	1236.82	5.72	12.26	3.95	39.688726	-80.698040	0.07	
1330.00	1.44	42.34	1329.77	5.89	14.53	5.92	39.688732	-80.698033	0.88	
1422.00	0.91	38.70	1421.75	6.00	15.95	7.16	39.688736	-80.698029	0.58	
1515.00	2.19	49.81	1514.71	5.90	17.68	8.98	39.688741	-80.698022	1.41	
1608.00	3.36	53.92	1607.60	5.27	20.43	12.54	39.688748	-80.698009	1.28	
1701.00	3.82	49.13	1700.42	4.55	24.06	17.08	39.688758	-80.697993	0.59	
1793.00	4.42	47.20	1792.18	4.10	28.47	22.00	39.688770	-80.697976	0.67	
1886.00	5.08	47.58	1884.86	3.68	33.69	27.67	39.688785	-80.697955	0.71	
1979.00	5.63	46.30	1977.46	3.27	39.62	34.01	39.688801	-80.697933	0.61	
2072.00	4.77	42.89	2070.07	3.20	45.60	39.94	39.688817	-80.697912	0.98	
2164.00	4.29	41.23	2161.79	3.47	50.99	44.81	39.688832	-80.697894	0.54	
2254.00	3.42	49.14	2251.58	3.42	55.28	49.06	39.688844	-80.697879	1.13	
2347.00	2.85	56.67	2344.44	2.69	58.36	53.09	39.688852	-80.697865	0.75	
2439.00	2.93	63.25	2436.33	1.43	60.68	57.10	39.688859	-80.697851	0.37	
2532.00	3.34	75.93	2529.19	-0.77	62.41	61.85	39.688863	-80.697834	0.86	
2624.00	4.01	78.02	2621.00	-3.97	63.73	67.60	39.688867	-80.697813	0.74	
2714.00	3.96	77.80	2710.78	-7.43	65.04	73.71	39.688870	-80.697791	0.06	
2795.00	3.78	74.91	2791.60	-10.34	66.32	79.02	39.688874	-80.697773	0.33	
2903.00	3.38	70.42	2899.39	-13.56	68.32	85.46	39.688879	-80.697750	0.45	
2995.00	3.51	59.08	2991.22	-15.48	70.67	90.43	39.688886	-80.697732	0.75	
3088.00	4.97	36.37	3083.97	-15.66	75.38	95.26	39.688899	-80.697715	2.36	
3181.00	5.85	27.16	3176.56	-13.72	82.84	99.82	39.688919	-80.697699	1.33	
3273.00	5.69	31.66	3268.09	-11.34	90.89	104.35	39.688941	-80.697682	0.52	
3366.00	5.84	38.25	3360.62	-9.85	98.53	109.70	39.688962	-80.697663	0.73	
3459.00	5.23	34.69	3453.19	-8.65	105.74	115.04	39.688982	-80.697644	0.75	
3552.00	5.31	43.83	3545.80	-7.92	112.32	120.43	39.689000	-80.697625	0.91	
3645.00	6.01	51.56	3638.34	-8.51	118.46	127.23	39.689017	-80.697601	1.11	
3737.00	5.35	51.30	3729.89	-9.65	124.13	134.35	39.689032	-80.697575	0.72	
3830.00	4.92	47.29	3822.52	-10.39	129.55	140.66	39.689047	-80.697553	0.60	
3923.00	4.84	41.82	3915.18	-10.44	135.18	146.21	39.689062	-80.697533	0.51	
4013.00	4.49	43.18	4004.88	-10.21	140.58	151.15	39.689077	-80.697515	0.41	
4105.00	4.82	37.49	4096.58	-9.69	146.27	155.97	39.689093	-80.697498	0.62	
4198.00	5.62	36.19	4189.19	-8.59	153.04	161.03	39.689111	-80.697480	0.87	
4291.00	5.35	35.40	4281.77	-7.29	160.25	166.23	39.689131	-80.697462	0.30	
4384.00	4.99	33.31	4374.39	-5.86	167.17	170.97	39.689150	-80.697445	0.44	

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## 5D Survey Report

Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor) (Scale factor 0.999608)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Latitude (° '' ''')	Longitude (° '' ''')	DLS (%/100US ft)	Comment
4476.00	4.71	31.36	4466.06	-4.26	173.74	175.13	39.689168	-80.697430	0.35	
4569.00	5.35	35.48	4558.70	-2.75	180.53	179.63	39.689186	-80.697414	0.79	
4662.00	6.60	40.24	4651.19	-1.71	188.14	185.60	39.689207	-80.697392	1.44	
4755.00	6.40	38.44	4743.60	-0.82	196.28	192.28	39.689230	-80.697369	0.31	
4847.00	6.18	34.94	4835.04	0.50	204.35	198.30	39.689252	-80.697347	0.48	
4940.00	6.59	31.32	4927.47	2.51	213.02	203.94	39.689275	-80.697327	0.62	
5030.00	6.66	35.76	5016.87	4.43	221.66	209.68	39.689299	-80.697306	0.57	
5122.00	6.59	50.01	5108.26	4.69	229.39	216.84	39.689320	-80.697281	1.78	
5212.00	6.91	60.39	5197.64	2.66	235.38	225.50	39.689337	-80.697250	1.40	
5305.00	5.81	63.47	5290.06	-0.45	240.25	234.58	39.689350	-80.697218	1.24	
5397.00	5.06	55.92	5381.65	-2.80	244.60	242.11	39.689362	-80.697191	1.12	
5490.00	5.59	51.86	5474.25	-4.23	249.70	249.07	39.689376	-80.697166	0.70	
5583.00	5.68	51.45	5566.80	-5.41	255.36	256.23	39.689391	-80.697141	0.11	
5675.00	4.47	55.54	5658.44	-6.68	260.23	262.74	39.689404	-80.697117	1.37	
5768.00	3.56	42.23	5751.21	-7.29	264.42	267.67	39.689416	-80.697100	1.39	
5861.00	3.98	42.78	5844.01	-7.11	268.92	271.81	39.689428	-80.697085	0.45	
5954.00	4.39	40.68	5936.76	-6.81	273.99	276.32	39.689442	-80.697069	0.47	
6000.00	4.63	39.52	5982.62	-6.54	276.76	278.65	39.689450	-80.697061	0.56	
6047.00	4.65	26.70	6029.47	-5.81	279.92	280.71	39.689458	-80.697053	2.20	
6093.00	6.29	357.15	6075.26	-3.41	284.11	281.42	39.689470	-80.697051	6.97	
6139.00	8.71	348.27	6120.87	1.33	290.04	280.59	39.689486	-80.697054	5.82	
6186.00	11.62	340.18	6167.13	8.53	297.97	278.26	39.689508	-80.697062	6.88	
6229.00	13.57	334.98	6209.09	17.15	306.62	274.66	39.689532	-80.697075	5.24	
6275.00	15.79	335.32	6253.59	28.04	317.20	269.76	39.689561	-80.697092	4.83	
6322.00	18.82	334.13	6298.46	41.13	329.83	263.78	39.689596	-80.697113	6.49	
6368.00	20.53	332.88	6341.77	55.76	343.69	256.87	39.689634	-80.697137	3.83	
6414.00	21.53	331.06	6384.70	71.48	358.26	249.11	39.689674	-80.697165	2.60	
6461.00	22.17	326.28	6428.33	88.41	373.18	240.01	39.689715	-80.697197	4.02	
6507.00	24.12	322.58	6470.63	106.20	387.87	229.48	39.689755	-80.697234	5.29	
6554.00	26.58	319.34	6513.10	126.18	403.47	216.79	39.689798	-80.697279	6.01	
6659.00	31.28	314.00	6604.99	176.87	440.26	181.85	39.689899	-80.697403	5.10	
6706.00	33.41	313.05	6644.69	202.01	457.57	163.61	39.689947	-80.697467	4.66	
6752.00	36.30	311.99	6682.44	228.29	475.33	144.23	39.689996	-80.697536	6.42	
6798.00	39.21	309.72	6718.81	256.39	493.73	122.92	39.690047	-80.697611	7.01	
6845.00	41.52	308.65	6754.61	286.71	512.96	99.33	39.690100	-80.697695	5.13	
6891.00	44.22	309.15	6788.33	317.87	532.61	74.98	39.690154	-80.697781	5.92	
6984.00	50.51	310.45	6851.29	386.05	576.41	22.47	39.690275	-80.697967	6.84	
7030.00	52.71	310.76	6879.85	422.03	599.88	-4.90	39.690339	-80.698064	4.81	
7077.00	55.69	310.48	6907.34	460.07	624.69	-33.84	39.690408	-80.698167	6.36	
7120.00	59.85	309.70	6930.27	496.34	648.11	-61.66	39.690472	-80.698266	9.80	
7166.00	63.66	309.35	6952.03	536.72	673.89	-92.92	39.690543	-80.698376	8.31	
7213.00	66.89	309.59	6971.69	579.25	701.02	-125.87	39.690618	-80.698493	6.89	
7259.00	70.70	309.00	6988.33	621.97	728.18	-159.05	39.690693	-80.698611	8.37	
7305.00	75.10	309.09	7001.85	665.75	755.87	-193.19	39.690769	-80.698732	9.57	
7352.00	79.95	309.00	7012.00	711.43	784.77	-228.82	39.690849	-80.698858	10.32	
7398.00	85.00	308.58	7018.02	756.82	813.32	-264.35	39.690928	-80.698984	11.02	
7491.00	87.22	309.11	7024.33	849.19	871.52	-336.61	39.691088	-80.699240	2.45	
7583.00	90.93	310.54	7025.81	940.88	930.42	-407.25	39.691250	-80.699490	4.32	
7676.00	90.62	315.11	7024.56	1033.82	993.61	-475.43	39.691425	-80.699732	4.92	
7769.00	90.55	315.45	7023.61	1126.80	1059.69	-540.87	39.691607	-80.699963	0.37	
7862.00	89.88	313.75	7023.26	1219.79	1124.99	-607.08	39.691786	-80.700198	1.96	
7952.00	89.81	308.64	7023.50	1309.64	1184.25	-674.78	39.691950	-80.700438	5.68	
8044.00	89.32	307.96	7024.20	1401.14	1241.26	-746.98	39.692107	-80.700694	0.91	
8137.00	90.37	311.02	7024.45	1493.81	1300.40	-818.74	39.692270	-80.700948	3.48	
8230.00	89.94	308.39	7024.20	1586.51	1359.80	-890.28	39.692434	-80.701201	2.87	
8323.00	89.88	307.56	7024.34	1678.95	1417.03	-963.59	39.692591	-80.701461	0.89	
8415.00	90.86	309.62	7023.75	1770.50	1474.41	-1035.50	39.692750	-80.701716	2.48	
8508.00	90.80	309.69	7022.40	1863.19	1533.75	-1107.09	39.692913	-80.701970	0.10	
8601.00	90.79	308.47	7021.11	1955.80	1592.37	-1179.27	39.693075	-80.702226	1.31	

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## 5D Survey Report

Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor) (Scale factor 0.999608)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Latitude (° ' ")	Longitude (° ' ")	DLS (°/100US ft)	Comment
8694.00	91.32	309.70	7019.40	2048.41	1650.99	-1251.45	39.693236	-80.702481	1.44	
8786.00	91.30	308.99	7017.30	2140.05	1709.31	-1322.58	39.693397	-80.702733	0.77	
8879.00	91.06	308.47	7015.38	2232.60	1767.48	-1395.11	39.693557	-80.702991	0.62	
8972.00	90.53	308.29	7014.09	2325.10	1825.21	-1468.01	39.693717	-80.703249	0.60	
9065.00	90.56	305.19	7013.21	2417.29	1880.84	-1542.52	39.693870	-80.703513	3.33	
9158.00	91.23	306.88	7011.75	2509.32	1935.54	-1617.71	39.694021	-80.703780	1.95	
9248.00	90.31	305.64	7010.54	2598.44	1988.76	-1690.27	39.694168	-80.704037	1.72	
9340.00	89.88	303.32	7010.39	2689.10	2040.84	-1766.11	39.694311	-80.704306	2.56	
9433.00	90.93	307.19	7009.73	2780.94	2094.51	-1842.03	39.694459	-80.704575	4.31	
9526.00	91.59	310.23	7007.69	2873.48	2152.65	-1914.58	39.694619	-80.704832	3.34	
9619.00	90.44	313.94	7006.04	2966.38	2214.96	-1983.57	39.694791	-80.705076	4.18	
9711.00	90.93	311.95	7004.94	3058.34	2277.63	-2050.91	39.694964	-80.705315	2.23	
9804.00	91.32	310.94	7003.12	3151.21	2339.17	-2120.61	39.695133	-80.705562	1.16	
9897.00	90.74	312.32	7001.44	3244.10	2400.94	-2190.10	39.695304	-80.705808	1.61	
9990.00	90.62	313.51	7000.34	3337.06	2464.26	-2258.21	39.695478	-80.706049	1.29	
10083.00	90.37	311.63	6999.54	3430.02	2527.17	-2326.69	39.695651	-80.706292	2.04	
10175.00	90.44	310.41	6998.89	3521.87	2587.55	-2396.10	39.695818	-80.706538	1.33	
10268.00	90.53	311.12	6998.10	3614.69	2648.27	-2466.54	39.695985	-80.706788	0.77	
10358.00	90.68	311.79	6997.15	3704.58	2707.85	-2533.99	39.696149	-80.707027	0.76	
10451.00	90.62	310.32	6996.09	3797.43	2768.93	-2604.11	39.696318	-80.707275	1.58	
10543.00	90.62	309.18	6995.10	3889.14	2827.75	-2674.84	39.696480	-80.707526	1.24	
10636.00	90.62	309.08	6994.09	3981.77	2886.44	-2746.97	39.696641	-80.707781	0.11	
10726.00	90.62	309.14	6993.12	4071.40	2943.21	-2816.80	39.696798	-80.708029	0.07	
10818.00	90.44	311.64	6992.27	4163.18	3002.82	-2886.87	39.696962	-80.708277	2.72	
10911.00	90.68	312.85	6991.36	4256.12	3065.33	-2955.71	39.697134	-80.708521	1.33	
11004.00	90.68	313.46	6990.25	4349.09	3128.94	-3023.55	39.697310	-80.708761	0.66	
11097.00	90.37	311.17	6989.40	4442.03	3191.54	-3092.31	39.697482	-80.709005	2.48	
11189.00	90.49	308.95	6988.71	4533.78	3250.75	-3162.72	39.697645	-80.709255	2.42	
11282.00	90.68	307.98	6987.76	4626.30	3308.59	-3235.53	39.697805	-80.709513	1.06	
11375.00	90.25	308.42	6987.01	4718.78	3366.10	-3308.61	39.697963	-80.709772	0.66	
11467.00	90.43	307.94	6986.46	4810.26	3422.97	-3380.93	39.698120	-80.710028	0.56	
11560.00	90.62	307.59	6985.61	4902.67	3479.92	-3454.45	39.698277	-80.710289	0.43	
11653.00	90.18	308.70	6984.96	4995.14	3537.36	-3527.58	39.698435	-80.710548	1.28	
11746.00	89.82	308.28	6984.96	5087.67	3595.24	-3600.37	39.698595	-80.710806	0.59	
11838.00	89.88	310.02	6985.20	5179.30	3653.32	-3671.72	39.698755	-80.711059	1.89	
11931.00	89.32	311.78	6985.85	5272.14	3714.21	-3742.01	39.698923	-80.711308	1.99	
12024.00	89.81	313.37	6986.56	5365.09	3777.13	-3810.49	39.699096	-80.711551	1.79	
12117.00	89.82	312.57	6986.86	5458.07	3840.52	-3878.54	39.699271	-80.711792	0.86	
12206.00	90.00	313.67	6987.00	5547.05	3901.35	-3943.50	39.699438	-80.712022	1.25	
12299.00	90.09	313.23	6986.92	5640.04	3965.31	-4011.01	39.699614	-80.712261	0.48	
12389.00	90.00	313.86	6986.85	5730.03	4027.31	-4076.25	39.699785	-80.712492	0.71	
12478.00	90.06	313.11	6986.81	5819.03	4088.56	-4140.82	39.699954	-80.712721	0.85	
12571.00	89.56	310.59	6987.11	5911.94	4150.60	-4210.09	39.700125	-80.712966	2.76	
12664.00	89.88	307.90	6987.57	6004.57	4209.43	-4282.11	39.700287	-80.713222	2.91	
12705.00	90.12	307.43	6987.57	6045.30	4234.48	-4314.56	39.700356	-80.713337	1.29	Last WFT SVY
12728.00	90.12	307.43	6987.52	6068.14	4248.46	-4332.83	39.700394	-80.713402	0.00	PTB

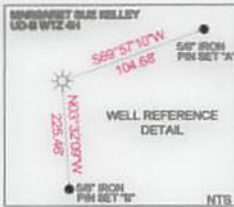
RECEIVED  
Office of Oil and Gas

DEC 21 2018

WV Department of  
Environmental Protection

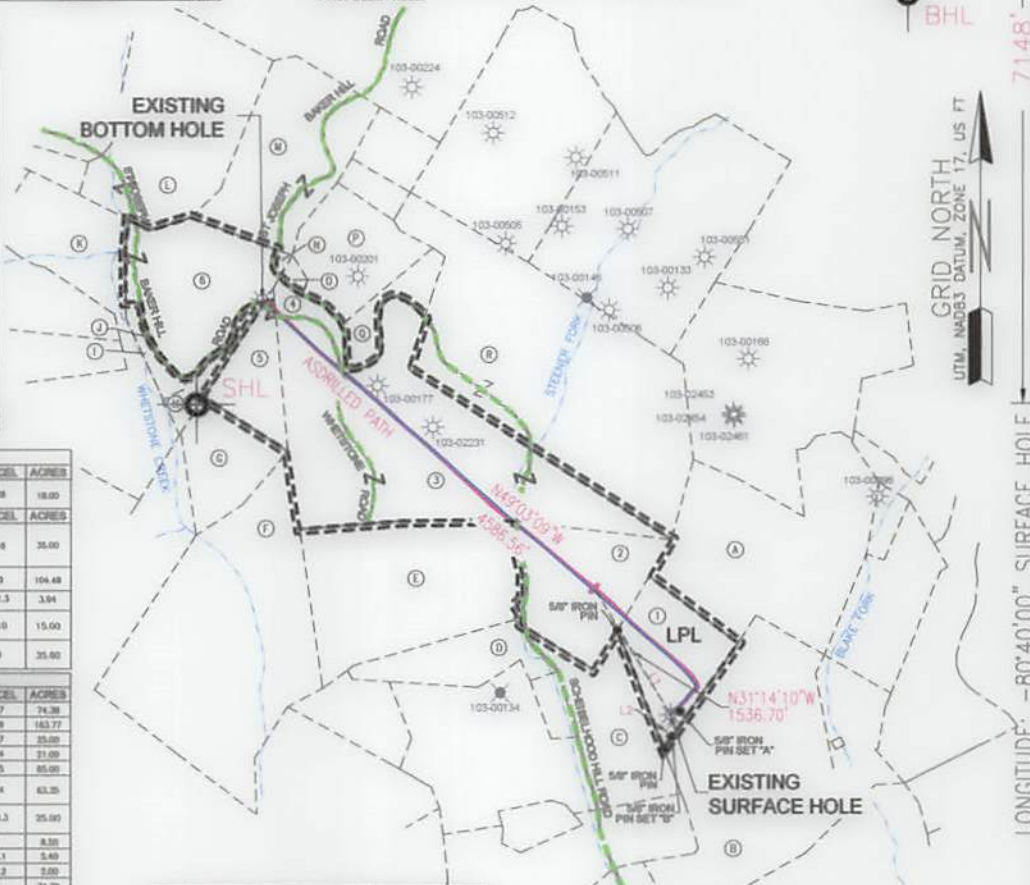


**JHA** SURVEYORS  
ENGINEERS  
ENVIRONMENTAL  
GIS MAPPING  
www.jhacompanies.com  
68011 Vineyard Road  
St. Clairsville, Ohio 43880  
740-695-6100



- NOTES ON SURVEY**
- COORDINATE 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/OR FIELD LOCATIONS.
  - THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
  - NO DWELLINGS OR BUILDINGS WITHIN 625 FEET OF PROPOSED CENTER OF PAD
  - 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 THE LIMITS OF DISTURBANCE.
  - NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.

LINE	BEARING	DISTANCE
L1	S32°20'59"E	1042.78'
L2	N11°48'15"E	353.98'



**WELL BORE TABLE FOR SURFACE / ROYALTY OWNERS**

TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL	ACRES
1	MARGARET SUE KELLEY (S) BLAKE REALTY, L.L.C. (R)	12-9-28	18.00
2	PATRICK A. SCHNEIDER, THERESA M. SCHNEIDER, EDWARD L. SCHNEIDER, THERESA SCHULTZ, CLARA SCHNEIDER, MARGARET SCHNEIDER, MARGARET SCHNEIDER, MARGARET SCHNEIDER, MARGARET SCHNEIDER, MARGARET SCHNEIDER, MARGARET SCHNEIDER	12-9-18	35.00
3	ALBERT L. HORNAM AND MARY L. HORNAM TRUSTEES OF THE HORNAM REVOCABLE TRUST DATED AUGUST 8, 2014	12-9-13	104.48
4	STEVEN HENNING HENNING AND CATHERINE A. HENNING, HUSBAND AND WIFE	12-9-11.5	3.94
5	ALBERT L. HORNAM AND MARY L. HORNAM TRUSTEES OF THE HORNAM REVOCABLE TRUST DATED AUGUST 8, 2014	12-9-10	15.00
6	STEVEN HENNING HENNING AND CATHERINE A. HENNING, HUSBAND AND WIFE	12-9-9	35.00

**ADJOINING OWNERS TABLE**

TRACT	SURFACE OWNER	TAX PARCEL	ACRES
A	MARGARET SUE KELLEY	12-9-17	74.38
B	MARGARET SUE KELLEY	12-9-29	143.77
C	JOSEPH A. HORNAM	12-9-27	25.00
D	JOSEPH A. HORNAM	12-9-24	21.00
E	LOG J. ESTEP, A SINGLE WOMAN	12-9-25	85.00
F	ALBERT L. HORNAM AND MARY L. HORNAM TRUSTEES OF THE HORNAM REVOCABLE TRUST DATED AUGUST 8, 2014, JOSEPH A. HORNAM AND MARY L. HORNAM TRUSTEES OF THE HORNAM REVOCABLE TRUST DATED AUGUST 8, 2014, JOSEPH A. HORNAM AND MARY L. HORNAM TRUSTEES OF THE HORNAM REVOCABLE TRUST DATED AUGUST 8, 2014, JOSEPH A. HORNAM AND MARY L. HORNAM TRUSTEES OF THE HORNAM REVOCABLE TRUST DATED AUGUST 8, 2014, JOSEPH A. HORNAM AND MARY L. HORNAM TRUSTEES OF THE HORNAM REVOCABLE TRUST DATED AUGUST 8, 2014	12-9-24	63.35
G	ALBERT L. HORNAM AND MARY L. HORNAM TRUSTEES OF THE HORNAM REVOCABLE TRUST DATED AUGUST 8, 2014, JOSEPH A. HORNAM AND MARY L. HORNAM TRUSTEES OF THE HORNAM REVOCABLE TRUST DATED AUGUST 8, 2014, JOSEPH A. HORNAM AND MARY L. HORNAM TRUSTEES OF THE HORNAM REVOCABLE TRUST DATED AUGUST 8, 2014, JOSEPH A. HORNAM AND MARY L. HORNAM TRUSTEES OF THE HORNAM REVOCABLE TRUST DATED AUGUST 8, 2014	12-9-24.3	25.00
H	MATHEW J. ROSE	12-9-8	8.30
I	JERRY S. GOSWAMI AND ERIN P. GOSWAMI, HUSBAND AND WIFE	12-9-5.1	5.40
J	JERRY S. GOSWAMI AND ERIN P. GOSWAMI, HUSBAND AND WIFE	12-9-5.2	2.00
K	JERRY S. GOSWAMI AND ERIN P. GOSWAMI, HUSBAND AND WIFE	12-9-7	74.38
L	ALBERT F. ESTEP, TRUSTEE OF THE ALBERT F. ESTEP REVOCABLE TRUST DATED MARCH 21, 2010	12-3-35	60.00
M	ALBERT F. ESTEP, TRUSTEE OF THE ALBERT F. ESTEP REVOCABLE TRUST DATED MARCH 21, 2010	12-3-30	48.70
N	JOHN BERNARD MILLER AND LORNA REBECCA MILLER, HIS WIFE	12-9-8.1	1.00
O	JOHN B. MILLER AND LORNA R. MILLER, HIS WIFE	12-9-11.2	1.10
P	JOSEPH AND SARAH WILSON (LIFE ESTATE) AND ROBERT FRANK WILSON (TRUSTEES)	12-9-11	22.50
Q	JOSEPH AND SARAH WILSON (LIFE ESTATE) AND ROBERT FRANK WILSON (TRUSTEES)	12-9-11.1	12.00
R	PATRICK A. SCHNEIDER, THERESA M. SCHNEIDER, EDWARD L. SCHNEIDER, THERESA SCHULTZ, CLARA SCHNEIDER, MARGARET SCHNEIDER, MARGARET SCHNEIDER, MARGARET SCHNEIDER, MARGARET SCHNEIDER, MARGARET SCHNEIDER, MARGARET SCHNEIDER	12-9-1	115.4

**SURFACE HOLE LOCATION (SHL):**  
UTM (NAD83, ZONE 17, METERS):  
NORTHING: 4393249.62  
EASTING: 525890.69

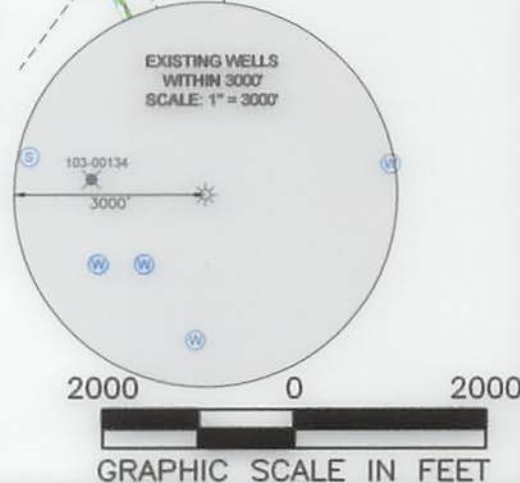
**LANDING POINT LOCATION (LPL):**  
UTM (NAD83, ZONE 17, METERS):  
NORTHING: 4393645.85  
EASTING: 525641.23

**BOTTOM HOLE LOCATION (BHL):**  
UTM (NAD83, ZONE 17, METERS):  
NORTHING: 4394544.00  
EASTING: 524570.52

**SURFACE HOLE LOCATION (SHL):**  
UTM (NAD83, ZONE 17, METERS):  
NORTHING: 4393249.62  
EASTING: 525890.69

**LANDING POINT LOCATION (LPL):**  
UTM (NAD83, ZONE 17, METERS):  
NORTHING: 4393463.26  
EASTING: 525848.56

**BOTTOM HOLE LOCATION (BHL):**  
UTM (NAD83, ZONE 17, METERS):  
NORTHING: 4394539.65  
EASTING: 524566.07



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. 2041

(+) 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

OPERATOR'S WELL #: MARGARET SUE KELLEY UD-B WTZ 4H

API WELL #: **47** **103** **03197**  
STATE COUNTY PERMIT

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

WATERSHED: FISH CREEK  
DISTRICT: PROCTOR COUNTY: WETZEL  
SURFACE OWNER: MARGARET SUE KELLEY  
OIL & GAS ROYALTY OWNER: BLAKE REALTY, L.L.C.

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: BURKET SHALE ESTIMATED DEPTH: 7,026' TVD 12,728' TMD

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

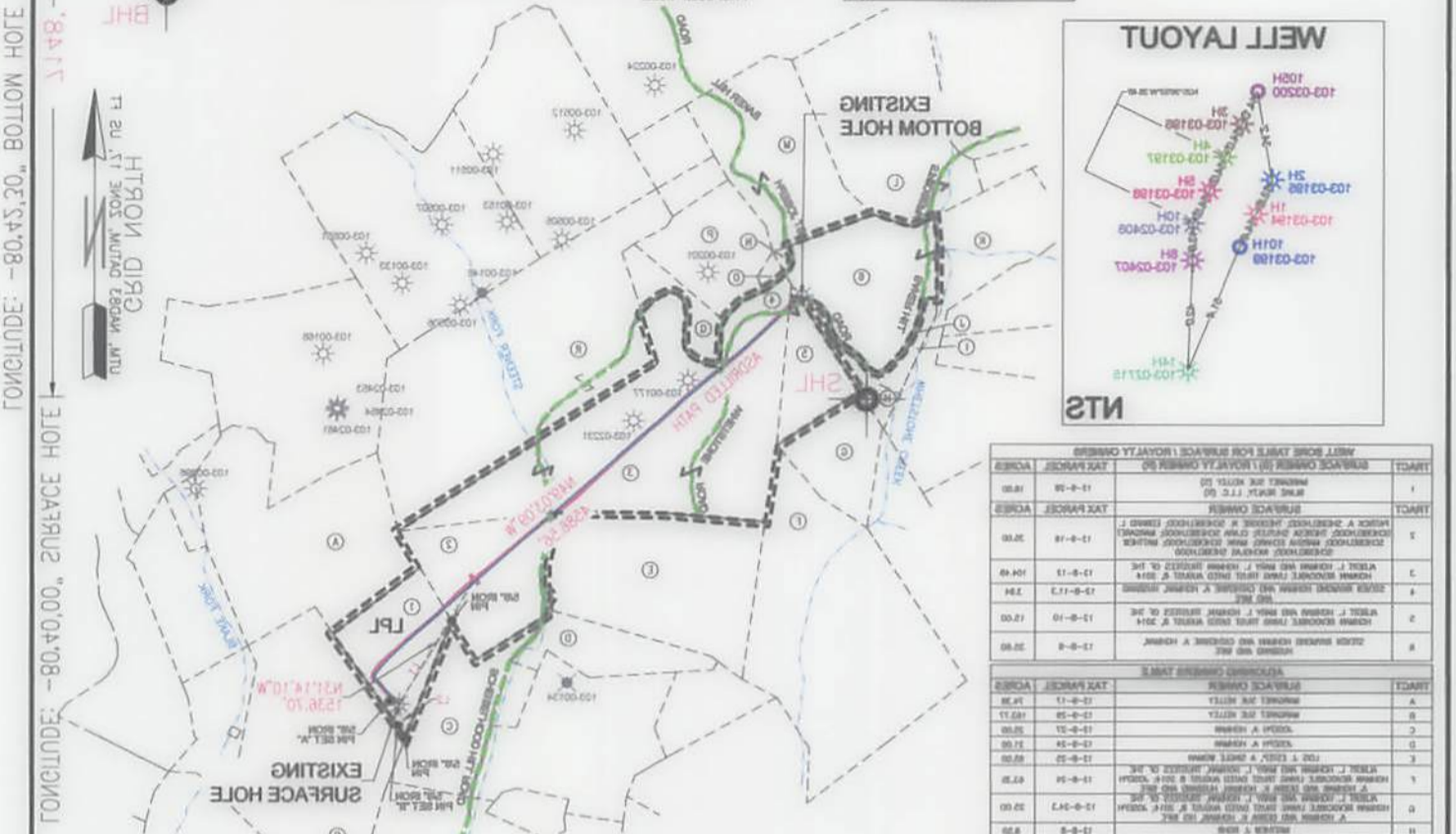
DESIGNATED AGENT: BRITTANY WOODY  
ADDRESS: P.O. BOX 1300  
CITY: JANE LEW STATE: WV ZIP CODE: 26378

LEGEND:	REVISIONS:	DATE:
⊙ PROPOSED SURFACE HOLE / BOTTOM HOLE		12-06-2018
⊙ EXISTING / PRODUCING WELLHEAD		
LPL* LANDING POINT LOCATION	— SURVEYED BOUNDARY	DRAWN BY: D. REED
⊙ EXISTING WATER WELL	===== LEASE BOUNDARY	SCALE: 1" = 2000'
⊙ EXISTING SPRING	— AS-DRILLED PATH	DRAWING NO: 2016-622
	— PROPOSED PATH	WELL LOCATION PLAT



LATITUDE: 39.45.30" SURFACE HOLE  
 LATITUDE: 39.45.30" SURFACE HOLE  
 8840'  
 1412'

LONGITUDE: -80.45.30", BOTTOM HOLE  
 1148'  
 3882'



TRACT	ACRES	DATE	OWNER
1	13.98	11-9-78	BLAKE REALTY, L.L.C.
2	20.00	11-9-78	BLAKE REALTY, L.L.C.
3	10.49	11-9-78	BLAKE REALTY, L.L.C.
4	2.84	11-9-78	BLAKE REALTY, L.L.C.
5	12.00	11-9-78	BLAKE REALTY, L.L.C.
6	20.00	11-9-78	BLAKE REALTY, L.L.C.
7	20.00	11-9-78	BLAKE REALTY, L.L.C.
8	20.00	11-9-78	BLAKE REALTY, L.L.C.
9	20.00	11-9-78	BLAKE REALTY, L.L.C.
10	20.00	11-9-78	BLAKE REALTY, L.L.C.
11	20.00	11-9-78	BLAKE REALTY, L.L.C.
12	20.00	11-9-78	BLAKE REALTY, L.L.C.
13	20.00	11-9-78	BLAKE REALTY, L.L.C.
14	20.00	11-9-78	BLAKE REALTY, L.L.C.
15	20.00	11-9-78	BLAKE REALTY, L.L.C.
16	20.00	11-9-78	BLAKE REALTY, L.L.C.
17	20.00	11-9-78	BLAKE REALTY, L.L.C.
18	20.00	11-9-78	BLAKE REALTY, L.L.C.
19	20.00	11-9-78	BLAKE REALTY, L.L.C.
20	20.00	11-9-78	BLAKE REALTY, L.L.C.

**BOTTOM HOLE LOCATION (BHL):**  
 UTM (NAD83, ZONE 17, METERS):  
 NORTHING: 4384239.82  
 EASTING: 524586.07

**LANDING POINT LOCATION (LPL):**  
 UTM (NAD83, ZONE 17, METERS):  
 NORTHING: 4382483.28  
 EASTING: 525848.28

**SURFACE HOLE LOCATION (SH):**  
 UTM (NAD83, ZONE 17, METERS):  
 NORTHING: 4382489.82  
 EASTING: 525880.88

**BOTTOM HOLE LOCATION (BHL):**  
 UTM (NAD83, ZONE 17, METERS):  
 NORTHING: 4384244.00  
 EASTING: 524570.22

**LANDING POINT LOCATION (LPL):**  
 UTM (NAD83, ZONE 17, METERS):  
 NORTHING: 4382482.82  
 EASTING: 525841.23

**SURFACE HOLE LOCATION (SH):**  
 UTM (NAD83, ZONE 17, METERS):  
 NORTHING: 4382489.82  
 EASTING: 525880.88



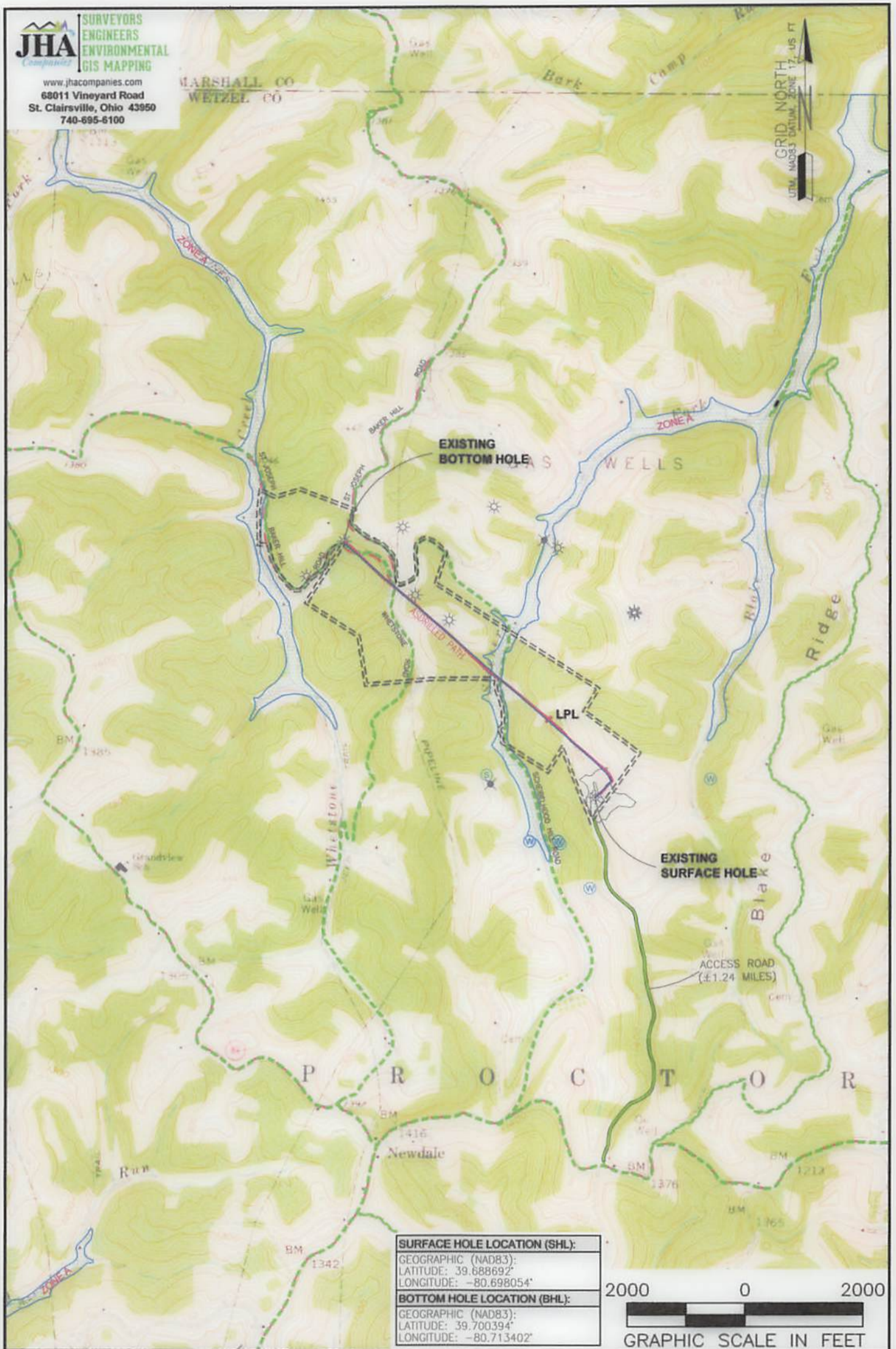
I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAN IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL INFORMATION RECORDED BY LAW AND RELEVANT BEING AND FILED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND FILED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

12/19/19

COMPANY: **SWN** Production Company, L.L.C.  
**SWN** Production Company, L.L.C.

WELL TYPE: OIL <input type="checkbox"/> WASTE DISPOSAL <input type="checkbox"/> PRODUCTION <input checked="" type="checkbox"/> DEEP <input type="checkbox"/>	WATERSHED: FISH CREEK	DISTRICT: PROCTOR	SURFACE OWNER: MARGARET SUE KELLEY	OIL & GAS ROYALTY OWNER: BLAKE REALTY, L.L.C.	ACREAGE: ±18.0	ACREAGE: ±18.0	QUADRANGLE: WILKEYVILLE, WV	ELEVATION: 1433.8'	WELL TYPE: OIL <input type="checkbox"/> WASTE DISPOSAL <input type="checkbox"/> PRODUCTION <input checked="" type="checkbox"/> DEEP <input type="checkbox"/>
WELL OPERATOR: SWN PRODUCTION COMPANY, L.L.C.	DESIGNATED AGENT: BRITANNY WOODY	ESTIMATED DEPTH: 7,056' TVD 13,738' TMD	OTHER CHANGE <input checked="" type="checkbox"/> (SPECIFY) A2-DRILLED	PERFORATE NEW FORMATION <input type="checkbox"/>	PLUG OFF OLD FORMATION <input type="checkbox"/>	FRACURE OR STIMULATE <input type="checkbox"/>	REDRILL <input type="checkbox"/>	DRILL DEEPER <input type="checkbox"/>	CONVERT <input type="checkbox"/>
CITY: JANE LEW STATE: WV ZIP CODE: 26278	CITY: JANE LEW STATE: WV ZIP CODE: 26278	ADDRESS: P.O. BOX 1300	ADDRESS: P.O. BOX 1300	DATE: 12-06-2018	REVISIONS:	DRAWN BY: D. REED	SCALE: 1" = 3000'	DRAWING NO: 2018-633	PROPERTY NUMBER 2501160356
CITY: JANE LEW STATE: WV ZIP CODE: 26278	CITY: JANE LEW STATE: WV ZIP CODE: 26278	ADDRESS: P.O. BOX 1300	ADDRESS: P.O. BOX 1300	DATE: 12-06-2018	REVISIONS:	DRAWN BY: D. REED	SCALE: 1" = 3000'	DRAWING NO: 2018-633	PROPERTY NUMBER 2501160356





<b>SURFACE HOLE LOCATION (SHL):</b>
GEOGRAPHIC (NAD83):
LATITUDE: 39.688692°
LONGITUDE: -80.698054°
<b>BOTTOM HOLE LOCATION (BHL):</b>
GEOGRAPHIC (NAD83):
LATITUDE: 39.700394°
LONGITUDE: -80.713402°



**NOTES ON SURVEY**

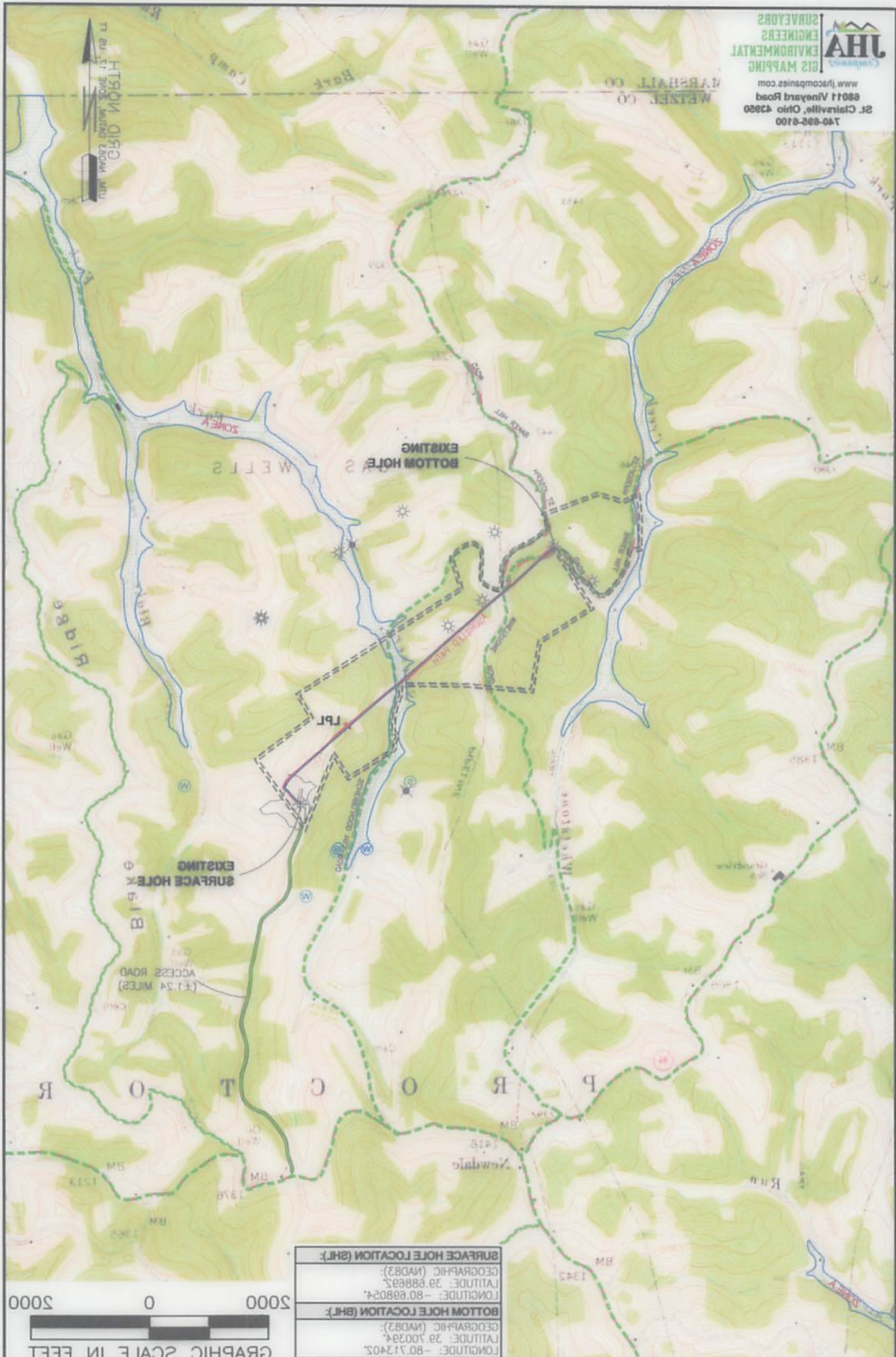
1. SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND/OR FIELD LOCATIONS.
2. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
3. ALL INSETS ARE GRID NORTH UNLESS OTHERWISE DEPICTED.

**LEGEND:**

- PROPOSED SURFACE HOLE / BOTTOM HOLE
- ⊙ EXISTING / PRODUCING WELLHEAD
- LPL\* LANDING POINT LOCATION
- FLOOD PLAN
- ACCESS ROAD
- - - PUBLIC ROAD
- - - ACCESS ROAD TO PREV. SITE
- ===== LEASE BOUNDARY
- PROPOSED PATH
- ASDRILLED PATH

<b>WELL OPERATOR:</b> SWN PRODUCTION COMPANY, LLC	<b>WELL (FARM) NAME:</b> MARGARET SUE KELLEY UD-B WTZ	<b>WELL #</b> 4H	<b>SERIAL #</b> XXXX
<b>ADDRESS:</b> P.O. BOX 1300 JANE LEW, WV 26378	<b>COUNTY - CODE</b> WETZEL - 103	<b>DISTRICT:</b> PROCTOR	
<b>SURFACE OWNER:</b> MARGARET SUE KELLEY	<b>USGS 7 1/2 QUADRANGLE MAP NAME:</b> WILEYVILLE, WV		





**NOTES ON SURVEY**

1. SURFACE AND BOTTLE 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 PLAN DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
3. ALL INSETS ARE GRID NORTH UNLESS OTHERWISE DEPICTED.

**LEGEND:**

- FLOOD PLAIN
- L.P.L. LANDING POINT LOCATION
- EXISTING \ PRODUCING WETHEAD
- PROPOSED SURFACE HOLE \ BOTTOM HOLE
- ACCESS ROAD TO PREV. SITE
- PUBLIC ROAD
- ACCESS ROAD
- PROPOSED PATH
- LEASE BOUNDARY
- ADRIPTED PATH

SURFACE OWNER: <b>MARGARET SUE KELLEY</b>		WELL OPERATOR: <b>SUN PRODUCTION COMPANY, L.T.C.</b>	
ADDRESS: <b>P.O. BOX 1300 JANE LEW. WV 26278</b>		WELL (FARM) NAME: <b>MARGARET SUE KELLEY UD-B-WTS</b>	
SURFACE MAP NAME: <b>USGS 7 1/2 QUADRANGLE MAP NAME:</b>		COUNTY - CODE <b>WETZEL - 103</b>	WELL # <b>4H XXXX</b>
WILEMITE, WV		DISTRICT: <b>PROCTOR</b>	SERIAL #