

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

API 47 - 009 - 00277 County BROOKE District BUFFALO
Quad BETHANY Pad Name LINDA GREATHOUSE BRK PAD Field/Pool Name PANHANDLE FIELD WET
Farm name LINDA REEVES GREATHOUSE & VIVKI LYNN HAMILTON Well Number LINDA GREATHOUSE BRK 6H
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 4450482.00 Easting 533450.83
Landing Point of Curve Northing 4450369.46 Easting 533275.29
Bottom Hole Northing 4446133.13 Easting 534924.61

Elevation (ft) 1,139.4 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

Date permit issued 2/26/19 Date drilling commenced 10/02/19 Date drilling ceased 10/15/19
Date completion activities began 11/18/19 Date completion activities ceased 12/19/19
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 159' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 454' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 311' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by: _____

RECEIVED
Office of Oil and Gas
MAR 18 2019
WV Department of
Environmental Protection

API 47-009 - 00277 Farm name LINDA REEVES GREATHOUSE & VIVKI LYNN HAMILTON Well number LINDA GREATHOUSE BRK 6H

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	405'	NEW	J-55/54.50#	197, 258.1	Y, 23 BBLs
Coal	SEE SURFACE						
Intermediate 1	12.25	9.625	1,678'	NEW	J-55/36#		Y, 41 BBLs
Intermediate 2							
Intermediate 3							
Production	8.75/8.50	5.5	21,069'	NEW	P-110/20#		Y, 71.25 BBLs Spacer
Tubing		2.875	6,284'	NEW	P-110/6.50#		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	483	15.60	1.20	579.6	SURFACE	8
Coal	SEE SURFACE						
Intermediate 1	CLASS A	675	15.60	1.19	803.25	SURFACE	8
Intermediate 2							
Intermediate 3							
Production	CLASS A	4,024	15.60	1.19	4,788.56	SURFACE	24
Tubing							

Drillers TD (ft) 21,069' Loggers TD (ft) 21,069'
 Deepest formation penetrated Marcellus Shale Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 4,975'

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 _____

RECEIVED
Office of Oil and Gas
MAR 26 2013
WV Department of
Environmental Protection

API 47- 009 - 00277 Farm name LINDA REEVES GREATHOUSE & VIVKI LYNN HAMILTON Well number LINDA GREATHOUSE BRK 6H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
	SEE	ATTACHMENT 1	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	2				

RECEIVED
Office of Oil and Gas

Please insert additional pages as applicable.

MAR 06 2013
WV Department of
Environmental Protection

API 47- 009 - 00277 Farm name LINDA REEVES GREATHOUSE & VIVKI LYNN HAMILTON Well number LINDA GREATHOUSE BRK 6H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus Shale</u>	<u>5,830'</u> TVD	<u>6,088'</u> MD
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 2,305 psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

OPEN FLOW Gas 7,215 mcfpd Oil 1,075 bpd NGL _____ bpd Water 910 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		

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 ROAD City THE WOODLANDS State TX Zip 77380

Cementing Company SCHLUMBERGER WELL SERVICES
Address 1080 US-33 City WESTON State WV Zip 26452

Stimulating Company SWN WELL SERVICES
Address PO BOX 12359 City SPRING State TX Zip 77391-2359

Please insert additional pages as applicable.

Completed by BOBBY WILLIS Telephone 832-796-2884
Signature [Signature] Title SR. REGULATORY ANALYST Date 3/5/2020

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

RECEIVED
Office of Oil and Gas
MAR 06 2020
WV Department of
Environmental Protection

SOUTHWESTERN ENERGY



Southwestern Energy

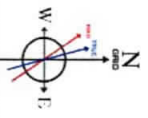


36

Location: Brooke County, WV
 Field: Brooke
 Facility: Linda Greathouse BRK Pad Wellbore: Linda Greathouse BRK 6H PWB
 Well: Linda Greathouse BRK 6H
 Slot: Slot #06
 Well: Linda Greathouse BRK 6H
 Slot: Slot #06
 Grid System: NAD83 / UTM Zone 17 North, US feet
 True vertical depths are referenced to SDC 41 (KB)
 Measured depths are referenced to SDC 41 (KB)
 Scale: True distance
 SDC 41 (KB) to Mean Sea Level: 1165.4 feet
 Mean Sea Level to Ground Level (At Slot: Slot #06): -1139.4 feet
 Created by: ateng on 2019-10-15
 Database: WA_MPL_EASTERNUS_Delm
 Coordinates are in feet referenced to Slot

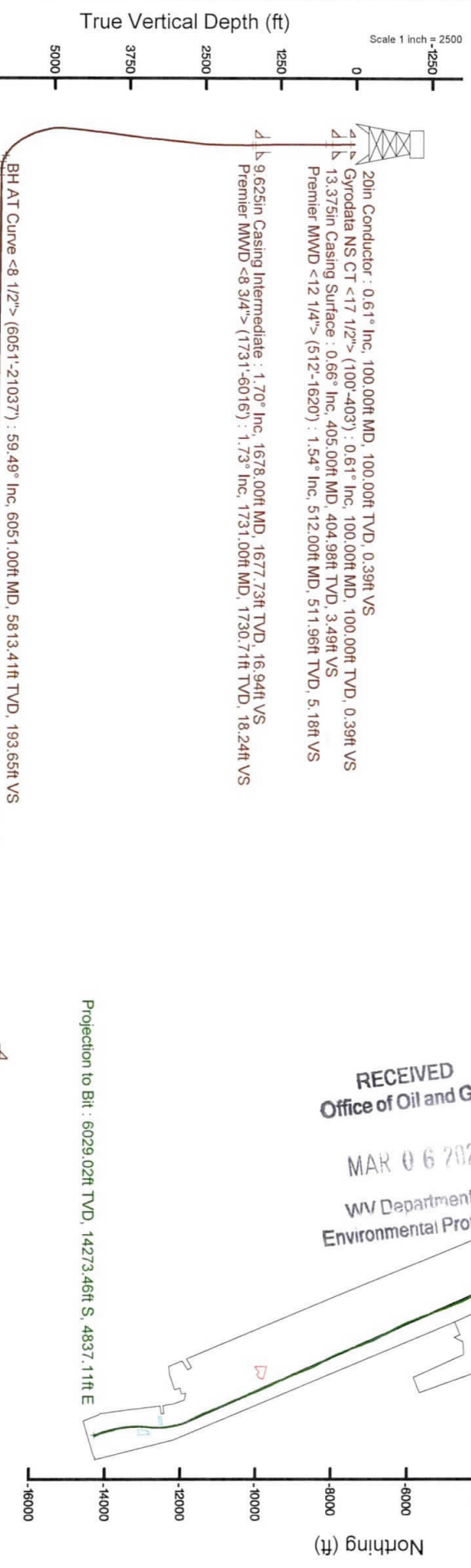
Location Information	
Facility Name	Grid East (US ft) Grid North (US ft)
Linda Greathouse BRK Pad	1750140.330 14601304.930
Slot	Local N (ft) Local E (ft) Grid North (US ft)
Slot #06	-15.25 22.93 1750163.254
Comment	slot 2 on plat
SDC 41 (KB) to Ground level (At Slot: Slot #06)	26ft
Mean Sea Level to Ground level (At Slot: Slot #06)	-1139.4ft
SDC 41 (KB) to Mean Sea Level	1165.4ft
Comments	
API: 47-009-00277-0000	
BH Job #: 110021784A	
Rig: SDC 41	
Duration: 10/08/2019 - 10/14/2019	

User specified Dip: 67.47° Field: 52464 nT
 Magnetic North is 8.20 degrees West of True North (at 08/08/Oct/2019)
 Grid North is 0.25 degrees East of True North
 To correct azimuth from Magnetic to Grid subtract 8.45 degrees



Gyrodatta NS CT <17 1/2"> (100°-403) : 100.00ft TVD, 0.39ft S, 0.06ft E
 Premier MWD <12 1/4"> (512°-1620) : 511.96ft TVD, 5.33ft S, 0.41ft E
 Premier MWD <8 3/4"> (1731°-6016) : 1730.71ft TVD, 16.34ft S, 8.60ft E
 BH AT Curve <8 1/2"> (6051°-21037) : 5813.41ft TVD, 396.73ft S, 564.84ft W

20in Conductor : 0.61° Inc, 100.00ft MD, 100.00ft TVD, 0.39ft VS
 Gyrodatta NS CT <17 1/2"> (100°-403) : 0.61° Inc, 100.00ft MD, 100.00ft TVD, 0.39ft VS
 13.375in Casing Surface : 0.66° Inc, 405.00ft MD, 404.98ft TVD, 3.49ft VS
 Premier MWD <12 1/4"> (512°-1620) : 1.54° Inc, 512.00ft MD, 511.96ft TVD, 5.18ft VS
 Premier MWD <8 3/4"> (1731°-6016) : 1.73° Inc, 1731.00ft MD, 1730.71ft TVD, 18.24ft VS



Projection to Bit : 6029.02ft TVD, 14273.46ft S, 4837.11ft E

Projection to Bit : 89.45° Inc, 21069.00ft MD, 6029.02ft TVD, 15070.80ft VS
 5.5in Casing Production : 89.45° Inc, 21069.00ft MD, 6029.02ft TVD, 15070.80ft VS

RECEIVED
 Office of Oil and Gas
 MAR 06 2020
 WV Department of
 Environmental Protection

Vertical Section (ft)
 Azimuth 161.21° with reference 0.00 N, 0.00 E

Scale 1 inch = 2500

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	11/18/2019
Job End Date:	12/10/2019
State:	West Virginia
County:	Brooke
API Number:	47-009-00277-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	Linda Greathouse BRK 6
Latitude:	40.20407487
Longitude:	-80.60694715
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	5,969
Total Base Water Volume (gal):	21,067,118
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
HCL	SWN Well Services	Solvent					
				Listed Below			
Tolicide PS 50A	SWN Well Services	Biocide					
				Listed Below			



RECEIVED
Office of Oil and Gas

MAR 06 2020

WV Department of
Environmental Protection

Econo-C1200	SWN Well Services	Corrosion Inhibitor		Listed Below					
Base Water	Operator	Base Fluid		Listed Below					
Ecopol-FEAC	SWN Well Services	Iron Control		Listed Below					
Plexaid 655WG	SWN Well Services	Scale Inhibitor		Listed Below					
Sand	SWN Well Services	Proppant		Listed Below					
SWN FRW-11LC	SWN Well Services	Friction Reducer		Listed Below					
Items above are Trade Names with the exception of Base Water. Items below are the individual ingredients.									
		Water		7732-18-5	100.00000	85.13183	Density = 8.345		
		Crystalline Silica, quartz		14808-60-7	100.00000	14.30325			
		Water		7732-18-5	85.00000	0.44156			
		Hydrochloric Acid		7647-01-0	15.00000	0.06486			
		Petroleum Distillates, Hydrotreated		64742-47-8	25.00000	0.02428			
		Tetrakis		55566-30-8	60.00000	0.01571			
		Acrylic acid terpolymer		397256-50-7	30.00000	0.00786			
		Ammonium Chloride		12125-02-9	2.00000	0.00194			

RECEIVED
Office of Oil and Gas
MAR 06 2020
WV Department of
Environmental Protection

**WELL NAME
ATTACHMENT 1
PERF REPORT**

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
1	11/9/2019	20,986	20,896	36
2	11/18/2019	20,862	20,684	36
3	11/19/2019	20,651	20,470	36
4	11/19/2019	20,441	20,263	36
5	11/20/2019	20,230	20,052	36
6	11/20/2019	20,019	19,842	36
7	11/20/2019	19,808	19,631	36
8	11/20/2019	19,598	19,420	36
9	11/21/2019	19,387	19,209	36
10	11/21/2019	19,176	18,999	36
11	11/21/2019	18,966	18,788	36
12	11/21/2019	18,754	18,577	36
13	11/21/2019	18,544	18,366	36
14	11/22/2019	18,333	18,156	36
15	11/22/2019	18,123	17,947	36
16	11/22/2019	17,912	17,734	36
17	11/22/2019	17,696	17,524	36
18	11/23/2019	17,490	17,313	36
19	11/23/2019	17,280	17,100	36
20	11/23/2019	17,074	16,891	36
21	11/23/2019	16,858	16,683	36
22	11/23/2019	16,648	16,470	36
23	11/23/2019	16,435	16,259	36
24	11/24/2019	16,226	16,052	36
25	11/24/2019	16,015	15,838	36
26	11/24/2019	15,805	15,627	36
27	11/24/2019	15,594	15,416	36
28	11/24/2019	15,383	15,206	36
29	11/24/2019	15,173	14,995	36
30	11/25/2019	14,962	14,784	36
31	11/25/2019	14,755	14,574	36
32	11/25/2019	14,540	14,363	36
33	11/25/2019	14,330	14,152	36
34	11/26/2019	14,119	13,939	36
35	11/26/2019	13,908	13,731	36
36	11/26/2019	13,698	13,520	36
37	11/27/2019	13,487	13,309	36
38	11/28/2019	13,276	13,103	36
39	11/29/2019	13,065	12,888	36
40	11/29/2019	12,853	12,677	36
41	11/30/2019	12,644	12,466	36
42	11/30/2019	12,433	12,256	36
43	11/30/2019	12,222	12,042	36

RECEIVED
Office of Oil and Gas

MAR 06 2020

WV Department of
Environmental Protection

**WELL NAME
ATTACHMENT 1
PERF REPORT**

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
44	12/1/2019	12,006	11,834	36
45	12/2/2019	11,801	11,623	36
46	12/2/2019	11,590	11,413	36
47	12/3/2019	11,380	11,202	36
48	12/3/2019	11,165	10,991	36
49	12/3/2019	10,958	10,781	36
50	12/4/2019	10,747	10,570	36
51	12/4/2019	10,537	10,355	36
52	12/4/2019	10,328	10,148	36
53	12/4/2019	10,115	9,938	36
54	12/5/2019	9,905	9,727	36
55	12/5/2019	9,694	9,512	36
56	12/5/2019	9,483	9,306	36
57	12/6/2019	9,272	9,095	36
58	12/6/2019	9,062	8,884	36
59	12/6/2019	8,851	8,677	36
60	12/7/2019	8,640	8,463	36
61	12/7/2019	8,426	8,252	36
62	12/7/2019	8,219	8,041	36
63	12/8/2019	8,005	7,831	36
64	12/8/2019	7,797	7,620	36
65	12/8/2019	7,582	7,409	36
66	12/9/2019	7,376	7,198	36
67	12/9/2019	7,165	6,988	36
68	12/9/2019	6,954	6,777	36
69	12/9/2019	6,741	6,566	36
70	12/10/2019	6,533	6,359	36
71	12/10/2019	6,322	6,145	36

**RECEIVED
Office of Oil and Gas**

MAR 06 2020

WV Department of
Environmental Protection

**WELL NAME
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	11/18/2019	61	7,449	7,447	4,035	238,060	6,747	0
2	11/18/2019	77	7,931	5,685	4,720	418,750	8,399	0
3	11/19/2019	80	7,967	6,007	4,624	417,760	8,706	0
4	11/20/2019	76	7,897	5,712	4,637	430,960	8,093	0
5	11/20/2019	64	7,926	5,995	4,417	432,900	8,419	0
6	11/20/2019	78	7,120	5,327	4,536	413,590	8,855	0
7	11/20/2019	73	8,069	5,310	4,450	410,560	7,694	0
8	11/20/2019	81	8,171	5,145	4,505	417,240	8,003	0
9	11/21/2019	82	8,270	5,090	4,560	420,140	7,886	0
10	11/21/2019	80	8,162	5,337	4,642	428,680	7,604	0
11	11/21/2019	81	8,107	5,642	4,524	418,620	7,831	0
12	11/21/2019	73	8,093	5,455	4,614	415,060	7,994	0
13	11/21/2019	72	7,253	5,450	4,310	420,640	8,443	0
14	11/22/2019	72	7,298	5,559	4,485	411,420	8,177	0
15	11/22/2019	79	7,765	5,777	4,453	419,100	8,227	0
16	11/22/2019	76	7,977	5,628	4,453	419,100	7,594	0
17	11/22/2019	84	8,130	5,645	4,306	418,680	7,345	0
18	11/23/2019	86	8,256	5,555	4,809	412,240	7,086	0
19	11/23/2019	80	7,954	5,264	4,366	434,260	7,817	0
20	11/23/2019	81	7,831	5,571	4,517	417,720	7,612	0
21	11/23/2019	79	8,079	5,448	4,389	414,900	7,146	0
22	11/23/2019	90	8,129	5,735	4,835	411,800	7,419	0
23	11/23/2019	88	8,230	5,637	4,530	421,370	7,262	0
24	11/24/2019	93	8,129	5,820	5,125	430,280	7,028	0
25	11/24/2019	93	7,988	5,531	4,585	417,240	8,223	0
26	11/24/2019	89	7,847	5,871	4,550	418,840	7,249	0
27	11/24/2019	87	7,968	5,594	4,820	414,320	7,293	0
28	11/24/2019	95	8,201	5,009	4,950	416,480	6,916	0
29	11/25/2019	90	7,870	5,310	4,507	414,820	6,682	0
30	11/25/2019	94	8,026	5,460	5,103	417,880	6,482	0
31	11/25/2019	87	7,848	5,776	5,025	414,260	6,871	0
32	11/25/2019	86	7,988	5,524	4,847	413,780	6,767	0
33	11/25/2019	92	8,245	5,550	4,346	411,510	6,518	0
34	11/26/2019	87	7,820	5,555	4,403	413,540	10,229	0
35	11/26/2019	85	8,028	5,377	4,403	418,750	7,028	0
36	11/27/2019	93	8,260	5,366	4,130	407,140	6,598	0
37	11/27/2019	93	7,171	5,751	4,071	411,800	7,245	0
38	11/28/2019	82	7,590	5,308	4,685	415,860	7,024	0
39	11/29/2019	77	7,152	5,460	4,158	417,480	7,393	0
40	11/30/2019	94	8,100	4,888	4,621	417,910	6,359	0
41	11/30/2019	92	7,674	5,549	4,621	414,560	6,837	0
42	11/30/2019	96	8,015	4,946	4,710	414,600	6,322	0
43	12/1/2019	93	7,638	5,568	4,516	417,980	8,224	0
44	12/2/2019	98	7,880	5,186	248	430,560	6,569	0
45	12/2/2019	95	7,738	5,602	4,189	418,260	7,296	0
46	12/2/2019	95	7,526	5,304	4,593	415,790	6,342	0
47	12/3/2019	97	7,821	5,490	4,286	413,480	6,840	0
48	12/3/2019	91	7,668	5,476	4,304	398,100	6,763	0
49	12/4/2019	98	7,622	5,020	4,367	415,120	6,338	0
50	12/4/2019	96	7,288	5,152	4,558	420,180	6,353	0
51	12/4/2019	96	7,290	5,413	4,261	434,590	6,678	0
52	12/4/2019	98	7,687	5,246	4,465	415,680	6,353	0
53	12/5/2019	98	7,365	5,281	4,641	430,310	6,407	0

RECEIVED
Office of Oil and Gas

MAR 06 2020
WV Department of
Natural Protection

WELL NAME
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	12/5/2019	88	7,629	5,352	4,251	410,380	6,681	0
55	12/5/2019	92	7,524	4,865	4,691	416,105	6,275	0
56	12/6/2019	97	7,168	5,125	4,655	423,410	6,344	0
57	12/6/2019	93	7,382	5,546	4,288	415,080	6,735	0
58	12/6/2019	94	7,368	5,126	4,329	428,110	6,693	0
59	12/6/2019	94	7,018	4,918	4,680	432,040	6,419	0
60	12/7/2019	80	6,506	5,172	4,192	409,720	6,285	0
61	12/7/2019	98	6,882	5,339	4,356	412,520	6,717	0
62	12/7/2019	94	6,954	5,335	4,523	420,360	6,153	0
63	12/8/2019	96	6,954	5,515	4,614	420,340	6,147	0
64	12/8/2019	92	7,098	5,224	4,268	412,460	6,400	0
65	12/8/2019	98	6,686	5,000	4,268	428,420	6,287	0
66	12/9/2019	99	6,560	4,898	4,541	417,330	6,218	0
67	12/9/2019	98	6,775	5,380	4,456	413,280	5,375	0
68	12/9/2019	92	6,112	5,217	4,668	429,590	6,190	0
69	12/10/2019	98	6,461	5,075	4,356	420,260	6,201	0
70	12/10/2019	99	6,778	5,542	4,313	422,060	6,523	0
71	12/10/2019	98	6,246	4,981	4,755	431,430	6,750	0

RECEIVED
Office of Oil and Gas
MAR 06 2020
WV Department of
Environmental Protection



Well Name: Linda Greathouse BRK 6H 47009002770000

Well Name: Linda Greathouse BRK 6H

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	159.00	159.00	
Top of Salt Water	454.00	454.00	NA	NA	
Pittsburgh Coal	311.00	311.00	460.00	460.00	
Pottsville (ss)	460.00	460.00	813.00	813.00	
Raven Cliff (ss)	813.00	813.00	1159.00	1159.00	
Maxton (ss)	1159.00	1159.00	1483.00	1483.00	
Big Injun (ss)	1483.00	1483.00	1887.00	1887.00	
Berea (siltstone)	1887.00	1887.00	5410.00	5310.00	
Rhinestreet (shale)	5410.00	5310.00	5683.00	5554.00	
Cashaqua (shale)	5683.00	5554.00	5743.00	5604.00	
Middlesex (shale)	5743.00	5604.00	5821.00	5665.00	
Burket (shale)	5821.00	5665.00	5841.00	5680.00	
Tully (ls)	5841.00	5680.00	5923.00	5737.00	
Mahantango (shale)	5923.00	5737.00	6088.00	5830.00	
Marcellus (shale)	6088.00	5830.00	NA	NA	GAS

RECEIVED
Office of Oil and Gas

MAR 06 2020
WV Department of
Environmental Protection

(2,000' SCALE) LATITUDE: 40°12'30" SURFACE HOLE

6584'

(2,000' SCALE) LATITUDE: 40°10'00" BOTTOM HOLE

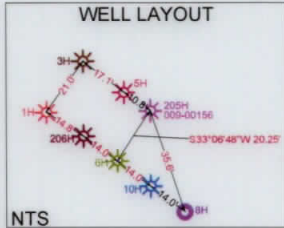
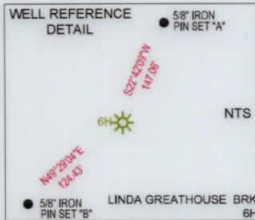
1780'

(2,000' SCALE) LONGITUDE: -80°35'00" BOTTOM HOLE
(2,000' SCALE) LONGITUDE: -80°35'00" SURFACE HOLE



www.jhacompanies.com

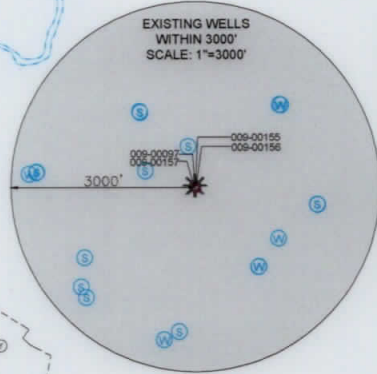
68011 Vineyard Road
St. Clairsville, Ohio 43950
740-695-6100



NOTES ON SURVEY

1. COORDINATE SYSTEM IS UTM NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
2. 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.
3. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
4. NO DWELLINGS OR BUILDINGS WITHIN 625 FEET OF PROPOSED CENTER OF PAD.
5. NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
6. NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF THE LIMITS OF DISTURBANCE.
7. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.

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

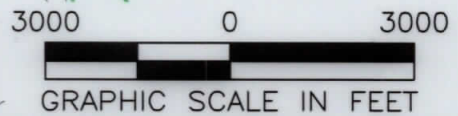


LINE	BEARING	DISTANCE
L1	S71°55'50"E	3939.00'
L2	S81°29'12"E	3741.60'

SURFACE HOLE LOCATION (SHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4450482.00 EASTING: 533450.83
LANDING POINT LOCATION (LPL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4450369.46 EASTING: 533275.29
BOTTOM HOLE LOCATION (BHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4446133.13 EASTING: 534924.61
SURFACE HOLE LOCATION (SHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4450482.00 EASTING: 533450.83
LANDING POINT LOCATION (LPL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4450324.40 EASTING: 533299.45
TURNING POINT LOCATION (TPL1): UTM (NAD83, ZONE 17, METERS): NORTHING: 4446905.32 EASTING: 534808.71
TURNING POINT LOCATION (TPL2): UTM (NAD83, ZONE 17, METERS): NORTHING: 4446581.05 EASTING: 534859.57
BOTTOM HOLE LOCATION (BHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4446134.72 EASTING: 534930.13

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



SWN Production Company, LLC **SWN** Production 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)

LINDA GREATHOUSE BRK
OPERATOR'S WELL #: 6H
API WELL #: 47 009 00277
STATE COUNTY PERMIT

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

WATERSHED: UPPER OHIO SOUTH ELEVATION: 1,139.4'

DISTRICT: BUFFALO COUNTY: BROOKE QUADRANGLE: BETHANY, WV

SURFACE OWNER: LINDA REEVES GREATHOUSE & VICKI LYNN HAMILTON ACREAGE: ±322.84

OIL & GAS ROYALTY OWNER: LINDA REEVES GREATHOUSE & VICKI LYNN HAMILTON ACREAGE: ±322.84

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

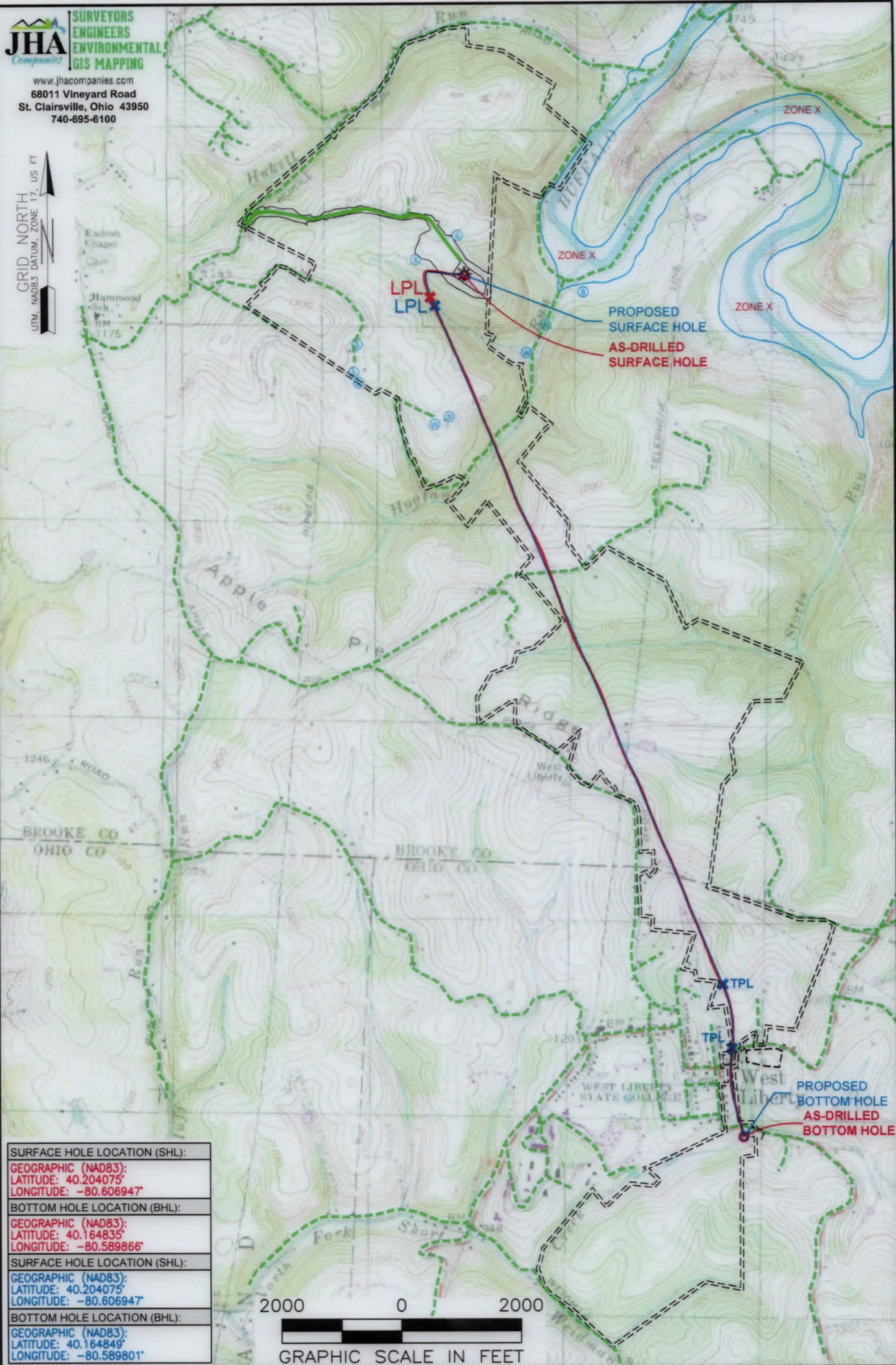
CONVERT PLUG & ABANDON CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY) AS-DRILLED

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 6,029' TVD 21,069' TMD

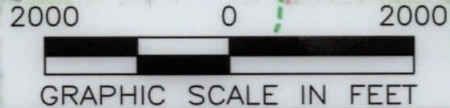
WELL OPERATOR: SWN PRODUCTION COMPANY, LLC DESIGNATED AGENT: BRITTANY WOODY
ADDRESS: 1300 FORT PIERPONT DRIVE, SUITE 201 ADDRESS: 1300 FORT PIERPONT DRIVE, SUITE 201
CITY: MORGANTOWN STATE: WV ZIP CODE: 26508 CITY: MORGANTOWN STATE: WV ZIP CODE: 26508

LEGEND:	REVISIONS:	DATE:
● EXISTING BOTTOM HOLE		02-18-2020
⊙ EXISTING / PRODUCING WELLHEAD		
LPL ⊙ EXISTING LANDING POINT LOCATION		
● PROPOSED SURFACE HOLE / BOTTOM HOLE		
LPL ⊙ PROPOSED LANDING POINT LOCATION		
— ACCESS ROAD		
--- PUBLIC ROAD		
— FLOOD PLAN		
— LEASE BOUNDARY		
— AS DRILLED PATH		
— PROPOSED PATH		

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



SURFACE HOLE LOCATION (SHL):
GEOGRAPHIC (NAD83): LATITUDE: 40.204075° LONGITUDE: -80.606947°
BOTTOM HOLE LOCATION (BHL):
GEOGRAPHIC (NAD83): LATITUDE: 40.164835° LONGITUDE: -80.589866°
SURFACE HOLE LOCATION (SHL):
GEOGRAPHIC (NAD83): LATITUDE: 40.204075° LONGITUDE: -80.606947°
BOTTOM HOLE LOCATION (BHL):
GEOGRAPHIC (NAD83): LATITUDE: 40.164849° LONGITUDE: -80.589801°



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:

- EXISTING BOTTOM HOLE
- ★ EXISTING / PRODUCING WELLHEAD
- EXISTING LANDING POINT LOCATION
- PROPOSED SURFACE HOLE / BOTTOM HOLE
- LPL★ PROPOSED LANDING POINT LOCATION
- ACCESS ROAD
- - - PUBLIC ROAD
- FLOOD PLAIN
- LEASE BOUNDARY
- AS-DRILLED PATH
- PROPOSED PATH

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC	WELL (FARM) NAME: LINDA GREATHOUSE BRK	WELL # 6H	SERIAL # XXXX
ADDRESS: 1300 FORT PIERPONT DRIVE, SUITE 201, MORGANTOWN WV, 26508	COUNTY - CODE BROOKE - 009	DISTRICT: BUFFALO	API # 47-009-00277
SURFACE OWNER: LINDA REEVES GREATHOUSE & VICKI LYNN HAMILTON	USGS 7 1/2 QUADRANGLE MAP NAME: BETHANY, WV		