

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

API 47 - 009 - 00233 County BROOKE District BUFFALO  
Quad TILTONSVILLE Pad Name BARRY GREATHOUSE B BRK PAD 1 Field/Pool Name PANHANDLE FIELD WET  
Farm name BARRY L. GREATHOUSE & PATRICIA A. GREATHOUSE Well Number BARRY GREATHOUSE B BRK 5H  
Operator (as registered with the OOG) SWN PRODUCTION COMPANY, LLC  
Address PO BOX 12359 City SPRING State TX Zip 77391-2359

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4,448,656.47 Easting 530,544.68  
Landing Point of Curve Northing 4,448,937.90 Easting 530,521.00  
Bottom Hole Northing 4,452,127.46 Easting 528,965.31

Elevation (ft) 1,142.9' 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 11/1/2017 Date drilling commenced 03/20/2019 Date drilling ceased 03/31/2019  
Date completion activities began 06/13/2019 Date completion activities ceased 07/18/2019  
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 281' Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 292' Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 294' Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

Reviewed by: CS 10-16-19  
**Reviewed**  
C. [Signature] 10-16-19

API 47-009 - 00233

Farm name BARRY L. GREATHOUSE & PATRICIA A. GREATHOUSE

Well number BARRY GREATHOUSE B BRK 5H

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	384'	NEW	J-55/54.50#		Y
Coal							
Intermediate 1	12.25	9.625	1,655'	NEW	J-55/36#		Y
Intermediate 2							
Intermediate 3							
Production	8.75/8.50	5.5	18,264'	NEW	HCP-110/20#		Y
Tubing		2.875	6,283'	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	474	15.60	1.20	568.8	SURFACE	8
Coal							
Intermediate 1	CLASS A	660	15.60	1.20	792	SURFACE	8
Intermediate 2							
Intermediate 3							
Production	CLASS A	3,447	15.60	1.19	4,101.93	SURFACE	24
Tubing							

Drillers TD (ft) 18,264'      Loggers TD (ft) 18,264'

Deepest formation penetrated MARCELLUS      Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 5,102'

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 \_\_\_\_\_





# SOUTHWESTERN ENERGY

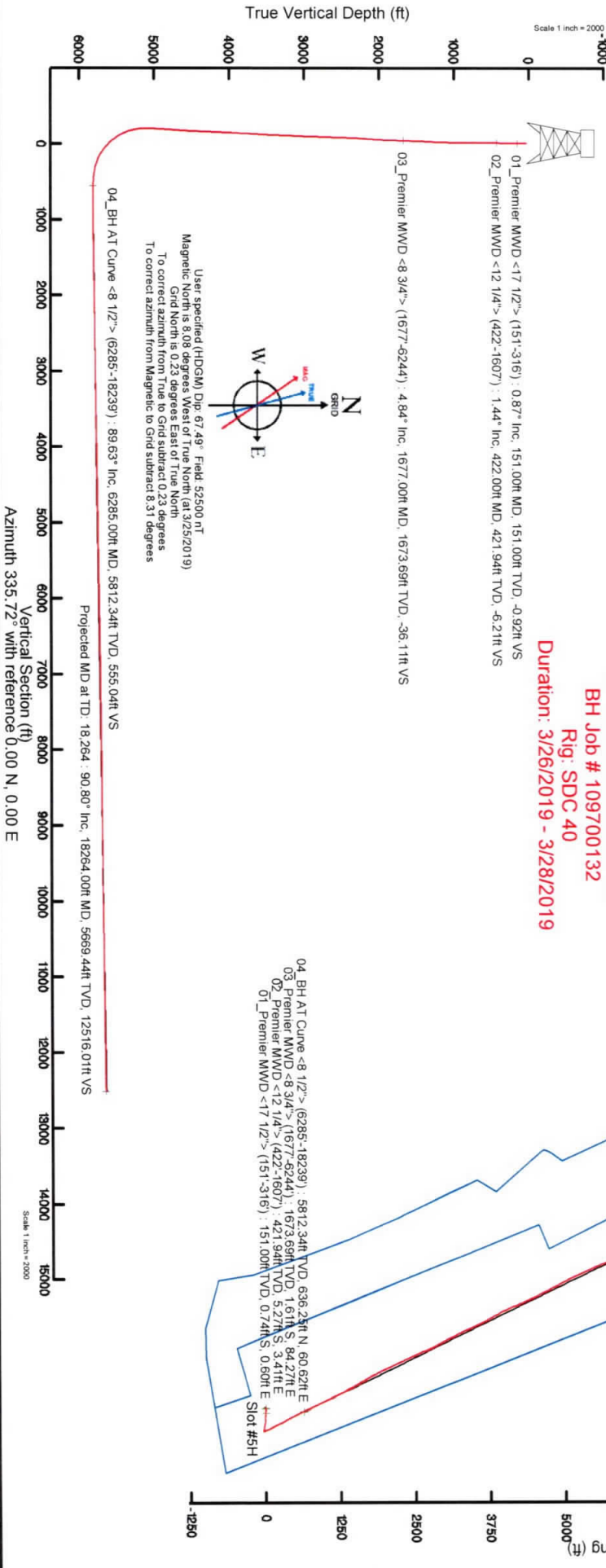
Location: Brooke County, WV  
 Field: Brooke  
 Facility: Barry Greathouse B BRK Pad  
 Slot: Slot #5H  
 Well: Barry Greathouse B BRK 5H  
 Wellbore: Barry Greathouse B BRK 5H PWB

Plot reference wellpath is Barry Greathouse B BRK 5H PWB Rev-B.0	Grid System: NAD83 / UTM Zone 17 North, US feet
True vertical depths are referenced to SDC 40 (RKB)	North Reference: Grid north
Measured depths are referenced to SDC 40 (RKB)	Scale: True distance
SDC 40 (RKB) to Mean Sea Level: 1169.4 feet	Depths are in feet
Mean Sea Level to Ground level (At Slot: Slot #5H): -1143.4 feet	Created by: hiphop on 2019-04-11
Coordinates are in feet referenced to Slot	Database: WA_MPL_EASTERNUS_Defn

Location Information			
Facility Name	Grid East (US ft)	Grid North (US ft)	Longitude
Barry Greathouse B BRK Pad	1740612.720	14595277.430	40°11'15.634"N
Slot	Local E (ft)	Grid East (US ft)	Latitude
Slot #5H	23.01	1740628.657	40°11'15.860"N
SDC 40 (RKB) to Ground level (At Slot: Slot #5H)		14595300.428	Longitude
Mean Sea Level to Ground level (At Slot: Slot #5H)			80°38'28.251"W
SDC 40 (RKB) to Mean Sea Level			26ft
			-1143.4ft
			1169.4ft

Well Profile Data								
Design Comment	MD (ft)	Inc. (")	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (7/100ft)	VS (ft)
The On	6244.00	86.380	335.720	5810.91	599.04	77.77	3.24	514.08
BH Projection	6305.00	88.210	335.720	5813.79	654.61	52.78	3.00	575.01
End of 3D file	6505.23	90.745	334.179	5815.61	836.03	-31.97	1.50	775.19
End of Tangent	18252.03	90.745	334.179	5662.90	11409.11	-5147.92	0.00	12516.75

API 47-009-00233-0000  
 BH Job # 109700132  
 Rig: SDC 40  
 Duration: 3/26/2019 - 3/28/2019



Scale 1 Inch = 2500

Office of Oil and Gas

SE 19 2019

WV Department of Environmental Protection

**BAKER HUGHES**  
a GE company



# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	6/13/2019
Job End Date:	6/30/2019
State:	West Virginia
County:	Brooke
API Number:	47-009-00233-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	BARRY GREATHOUSE B BRK 5H
Latitude:	40.18770000
Longitude:	-80.64118100
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	5,739
Total Base Water Volume (gal):	20,340,766
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	87.20805	Density = 8.34
Ingredients	Listed Above	Listed Above	Water	7732-18-5	100.00000	0.03000	



Sand-Common White-100 Mesh, SSA-2	Halliburton	Proppant		Listed Below				
Sand-Premium White-40/70	Halliburton	Proppant		Listed Below				
FSTI-CI-01	FSTI	Acid Corrosion Inhibitor		Listed Below				
BE-9	Halliburton	Biocide		Listed Below				
LEGEND(TM) LD-7750W	Multichem	Scale Control		Listed Below				
FSTI HCl	FSTI	Acid		Listed Below				
FSTI-IC-001	FSTI	Iron Control Agent		Listed Below				
MC LD-2850	Multichem	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	12.26745			

				Hydrochloric acid	7647-01-0	15.00000	0.06538	
				Hydroreated light petroleum distillate	64742-47-8	30.00000	0.01898	
				Ethaniminium, N,N,N-trimethyl-2-[(1-oxo-2-propen-1-yl)oxy]-chloride (1:1), polymer with 2-propenamide	69418-26-4	30.00000	0.01898	
				Sodium chloride	7647-14-5	10.00000	0.00672	
				Castor oil, ethoxylated	61791-12-6	10.00000	0.00633	
				Ammonium chloride	12125-02-9	10.00000	0.00633	
				Methanol	67-56-1	80.00000	0.00524	
				Alcohols, C12-16, ethoxylated	68551-12-2	5.00000	0.00316	
				9-Octadecenamide, n,n-bis-2(hydroxy-ethyl)-(Z)	93-83-4	5.00000	0.00316	
				Sorbitan monooleate polyoxyethylene derivative	9005-65-6	5.00000	0.00316	
				Tributyl tetradecyl phosphonium chloride	81741-28-8	10.00000	0.00158	
				Acetic acid	64-19-7	60.00000	0.00130	
				Citric acid	77-92-9	40.00000	0.00087	
				Phosphoric Acid Salt	Proprietary	5.00000	0.00039	
				Formaldehyde	50-00-0	0.10000	0.00007	
				Hydroquinone monomethyl ether	150-76-5	0.10000	0.00006	
				1,4-Dioxane	123-91-1	0.10000	0.00006	
				Nitrotriacetic acid, trisodium salt monohydrate	5064-31-3	0.10000	0.00006	
				Diethanolamine	111-42-2	0.10000	0.00006	
				Ethylenediaminetetraacetic acid, tetrasodium salt	64-02-8	0.10000	0.00006	
				Sodium glycollate	2836-32-0	0.10000	0.00006	
				Fatty acids	Trade Secret	10.00000	0.00006	



\* 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)

**BARRY GREATHOUSE B BRK 5H**  
**ATTACHMENT 1**  
**PERF REPORT**

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
1	6/3/2019	18,180	18,080	36
2	6/14/2019	18,045	17,938	42
3	6/14/2019	17,905	17,798	42
4	6/15/2019	17,765	17,658	42
5	6/15/2019	17,625	17,518	42
6	6/3/2019	17,485	17,378	42
7	6/16/2019	17,345	17,238	42
8	6/16/2019	17,205	17,098	42
9	6/3/2019	17,065	16,958	42
10	6/16/2019	16,925	16,818	42
11	6/17/2019	16,785	16,678	42
12	6/17/2019	16,645	16,538	42
13	6/17/2019	16,505	16,398	42
14	6/17/2019	16,365	16,258	42
15	6/17/2019	16,225	16,118	42
16	6/18/2019	16,085	15,978	42
17	6/18/2019	15,945	15,838	42
18	6/18/2019	15,805	15,698	42
19	6/18/2019	15,665	15,558	42
20	6/19/2019	15,525	15,418	42
21	6/19/2019	15,385	15,278	42
22	6/19/2019	15,245	15,138	42
23	6/19/2019	15,105	14,998	42
24	6/20/2019	14,965	14,858	42
25	6/20/2019	14,825	14,718	42
26	6/20/2019	14,685	14,578	42
27	6/21/2019	14,545	14,438	42
28	6/21/2019	14,405	14,298	42
29	6/21/2019	14,265	14,158	42
30	6/21/2019	14,125	14,018	42
31	6/21/2019	13,985	13,878	42
32	6/21/2019	13,845	13,738	42
33	6/22/2019	13,705	13,598	42
34	6/22/2019	13,565	13,458	42
35	6/22/2019	13,425	13,318	42
36	6/22/2019	13,285	13,178	42
37	6/22/2019	13,145	13,038	42
38	6/22/2019	13,005	12,898	42
39	6/23/2019	12,865	12,758	42
40	6/23/2019	12,725	12,618	42
41	6/23/2019	12,585	12,478	42
42	6/23/2019	12,445	12,338	42
43	6/23/2019	12,305	12,198	42

**BARRY GREATHOUSE B BRK 5H**  
**ATTACHMENT 1**  
**PERF REPORT**

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
44	6/24/2019	12,165	12,058	42
45	6/24/2019	12,025	11,918	42
46	6/24/2019	11,885	11,778	42
47	6/24/2019	11,745	11,638	42
48	6/24/2019	11,605	11,498	42
49	6/24/2019	11,465	11,358	42
50	6/25/2019	11,325	11,218	42
51	6/25/2019	11,185	11,078	42
52	6/25/2019	11,045	10,938	42
53	6/25/2019	10,905	10,798	42
54	6/25/2019	10,765	10,658	42
55	6/25/2019	10,625	10,518	42
56	6/26/2019	10,485	10,378	42
57	6/26/2019	10,345	10,238	42
58	6/26/2019	10,205	10,098	42
59	6/26/2019	10,065	9,958	42
60	6/26/2019	9,925	9,818	42
61	6/27/2019	9,785	9,678	42
62	6/27/2019	9,645	9,538	42
63	6/27/2019	9,505	9,398	42
64	6/27/2019	9,365	9,258	42
65	6/27/2019	9,225	9,118	42
66	6/28/2019	9,082	8,978	42
67	6/28/2019	8,945	8,838	42
68	6/28/2019	8,805	8,698	42
69	6/28/2019	8,665	8,558	42
70	6/28/2019	8,525	8,418	42
71	6/28/2019	8,385	8,278	42
72	6/29/2019	8,245	8,138	42
73	6/29/2019	8,105	7,998	42
74	6/29/2019	7,965	7,858	42
75	6/29/2019	7,825	7,718	42
76	6/29/2019	7,685	7,582	42
77	6/29/2019	7,545	7,438	42
78	6/30/2019	7,404	7,298	42
79	6/30/2019	7,265	7,158	42
80	6/30/2019	7,125	7,018	42
81	6/30/2019	6,985	6,878	42
82	6/30/2019	6,845	6,738	42
83	6/30/2019	6,705	6,598	42
84	6/30/2019	6,563	6,458	42
85	6/30/2019	6,425	6,318	42



**BARRY GREATHOUSE B BRK 5H**  
**ATTACHMENT 2**  
**STIM REPORT**

STAGE NUM	Stim Date	Ave Pump Rate	Ave Treatment	Max Breakdown	ISIP (PSI)	Amount of Pro	Amount of wa	Amount of nitr
1	43629	86.8	8212	8604	3296	280080	9533	0
2	43630	99.2	8220	5236	3795	280240	8942	0
3	43630	91.5	8101	5048	4047	279910	8547	0
4	43631	100	8283	4959	3905	279190	8708	0
5	43631	99.6	8066	4751	4026	279760	8829	0
6	43631	99.4	8201	4601	3991	280981	8432	0
7	43632	99.5	8187	4468	4141	279830	8044	0
8	43632	100	8138	4608	4041	270030	8093	0
9	43632	100.2	8073	4463	4193	279380	8256	0
10	43632	99.7	8076	8395	3956	280150	8323	0
11	43633	93.1	8004	4854	3995	282270	6053	0
12	43633	100	7943	4783	4114	280310	6174	0
13	43633	100.3	7626	5028	4037	279710	6247	0
14	43633	95.3	7839	4427	4138	281420	6053	0
15	43633	89.3	7861	5009	3901	282020	6880	0
16	43634	93	7632	4497	3912	282590	6030	0
17	43634	99.9	7752	5099	4220	280650	6013	0
18	43634	100.7	7504	5027	4064	279843	6004	0
19	43634	98.8	7366	5015	4050	281040	5936	0
20	43635	94.3	7202	4719	4031	281481	6030	0
21	43635	100.2	7390	5042	3885	280040	5994	0
22	43635	100.3	7393	4951	3876	280031	6026	0
23	43635	101.1	7521	5526	4025	281160	6020	0
24	43636	100.6	7387	5167	4070	280960	5854	0
25	43636	97.3	7241	5410	4127	279734	5974	0
26	43636	99.2	7680	4880	3970	287050	6345	0
27	43637	101	7320	5271	4122	280360	5856	0
28	43637	100	7284	4907	4212	280645	6024	0
29	43637	100	7262	5187	3938	280550	5850	0
30	43637	100.2	7241	5318	4253	281319	5959	0
31	43637	100.2	7488	5271	4265	281110	5814	0
32	43637	100.4	7518	5073	4041	281410	6028	0
33	43638	100.6	7633	5103	3987	280950	6058	0
34	43638	100.4	7256	5222	4249	280440	5894	0
35	43638	100.2	7129	5308	3912	281261	5781	0
36	43638	99.9	7893	5110	4103	281725	5838	0
37	43638	101	7545	5031	4241	279830	5893	0
38	43639	99.6	7216	8070	4075	280710	5956	0
39	43639	99.9	7250	5094	4301	279075	6010	0
40	43639	98.8	7116	5082	4173	281653	5789	0
41	43639	99.6	7117	5342	4239	280141	5793	0
42	43639	99.3	7427	5019	4296	282411	5642	0
43	43639	97.4	7315	4955	4172	279590	5759	0
44	43640	92.3	7428	5099	4244	279960	6049	0
45	43640	100.2	7318	5064	4152	280090	5868	0
46	43640	98.6	7169	5060	4151	282500	5798	0
47	43640	100	6911	5153	4184	281500	5882	0
48	43640	100.1	7000	5176	4336	282020	5656	0
49	43640	98.9	6910	5789	4323	281060	5299	0
50	43641	99.8	6989	5153	4285	280760	5239	0
51	43641	99.9	6854	5044	4071	280939	5149	0
52	43641	99.8	6782	4939	4155	281830	4614	0
53	43641	94.9	7269	5237	4080	280030	4627	0

**BARRY GREATHOUSE B BRK 5H**  
**ATTACHMENT 2**  
**STIM REPORT**

STAGE NUM	Stim Date	Ave Pump Rate	Ave Treatment	Max Breakdow	ISIP (PSI)	Amount of Pro	Amount of wa	Amount of nitr
54	43641	100.3	6886	5303	4349	280080	4563	0
55	43642	100	6942	5314	4215	280240	4611	0
56	43642	100.1	6936	5315	4570	279990	4544	0
57	43642	100	6790	5299	4504	280730	4633	0
58	43642	100	6503	5226	4418	281130	4584	0
59	43642	100.5	6630	5102	4390	269100	4779	0
60	43642	100	6809	5348	4262	269100	5558	0
61	43643	100.2	6534	5317	4453	282260	4679	0
62	43643	99.4	6538	5281	4440	279910	4519	0
63	43643	99.7	6614	5351	4458	280340	4456	0
64	43643	99.6	6612	5174	4059	281000	4454	0
65	43643	100.6	6621	5225	4175	279720	4419	0
66	43644	100.3	6551	5210	4486	280120	4489	0
67	43644	100.4	6451	5230	4304	279830	4441	0
68	43644	99.7	6433	5221	3990	281030	4429	0
69	43644	94.3	6155	5477	4464	280970	4441	0
70	43644	99.5	6483	5250	4027	280568	4436	0
71	43644	60	7049	5294	4352	280568	4146	0
72	43645	99.9	6459	5238	4288	280000	6019	0
73	43645	98.2	6456	5079	4093	280500	4657	0
74	43645	99.6	6324	5365	4006	280440	4545	0
75	43645	99.5	6622	5314	4126	230410	3989	0
76	43645	99.6	6600	5291	4448	283310	4410	0
77	43645	89.9	7300	5445	4152	280660	5978	0
78	43646	98.6	6392	5818	4267	280660	5473	0
79	43646	99.6	6289	5844	4423	279950	4378	0
80	43646	98.8	6375	5727	4329	281150	4426	0
81	43646	100	6013	5324	4500	280990	4360	0
82	43646	99.2	6002	5438	4029	304170	4601	0
83	43646	99.3	6007	5954	4229	309260	4602	0
84	43646	99.6	6268	5961	4446	297220	4489	0
85	43646	100.3	66081	5845	3906	367330	5234	0



Well Name:

Barry Greathouse B BRK 5H

47009002330000

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	281.00	281.00	
Top of Salt Water	292.00	292.00	NA	NA	
Pittsburgh Coal	294.00	294.00	NA	NA	
Pottsville (ss)	406.00	406.00	787.00	787.00	
Raven Cliff (ss)	787.00	787.00	1156.00	1156.00	
Maxton (ss)	1156.00	1156.00	1407.00	1407.00	
Big Injun (ss)	1407.00	1407.00	1886.00	1886.00	
Berea (siltstone)	1881.00	1877.00	5310.00	5290.00	
Rhinestreet (shale)	5310.00	5290.00	5567.00	5522.00	
Cashagua (shale)	5567.00	5522.00	5628.00	5570.00	
Middlesex (shale)	5628.00	5570.00	5717.00	5633.00	
Burket (shale)	5717.00	5633.00	5793.00	5648.00	
Tully (ls)	5793.00	5648.00	5828.00	5701.00	
Mahantango (shale)	5828.00	5701.00	6094.00	5794.00	
Marcellus (shale)	6094.00	5794.00	NA	NA	Gas



(2,000' SCALE) LATITUDE: 40°15'00" BOTTOM HOLE

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

9686'

4471'

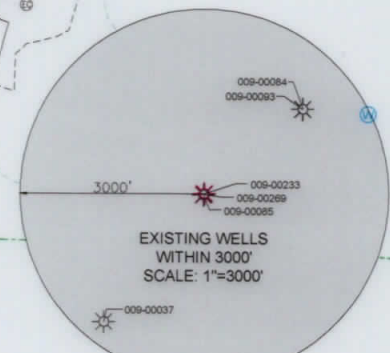
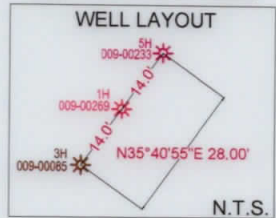
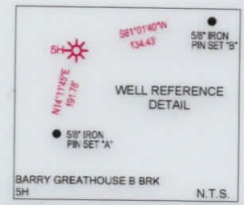
**JHA**  
SURVEYORS  
ENGINEERS  
ENVIRONMENTAL  
GIS MAPPING  
www.jhacompanies.com  
68011 Vineyard Road  
St. Clairsville, Ohio 43950  
740-695-6100

**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. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
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.

LINE	BEARING	DISTANCE
L1	S37°12'48"W	3059.53'
L2	S78°48'56"W	2249.38'

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



<b>SURFACE HOLE LOCATION (SHL):</b> UTM (NAD83, ZONE 17, METERS): NORTHING: 4448656.47 EASTING: 530544.68
<b>LANDING POINT LOCATION (LPL):</b> UTM (NAD83, ZONE 17, METERS): NORTHING: 4448937.90 EASTING: 530521.00
<b>BOTTOM HOLE LOCATION (BHL):</b> UTM (NAD83, ZONE 17, METERS): NORTHING: 4452127.46 EASTING: 528965.31
<b>SURFACE HOLE LOCATION (SHL):</b> UTM (NAD83, ZONE 17, METERS): NORTHING: 4448656.47 EASTING: 530544.68
<b>LANDING POINT LOCATION (LPL):</b> UTM (NAD83, ZONE 17, METERS): NORTHING: 4448824.01 EASTING: 530578.50
<b>BOTTOM HOLE LOCATION (BHL):</b> UTM (NAD83, ZONE 17, METERS): NORTHING: 4452132.62 EASTING: 528976.20



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)	BARRY GREATHOUSE B BRK OPERATOR'S WELL #: 5H API WELL #: 47 009 00233 STATE COUNTY PERMIT
	WELL TYPE: OIL <input type="checkbox"/> WASTE DISPOSAL <input type="checkbox"/> PRODUCTION <input checked="" type="checkbox"/> DEEP <input type="checkbox"/> GAS <input checked="" type="checkbox"/> LIQUID INJECTION <input type="checkbox"/> STORAGE <input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/>	

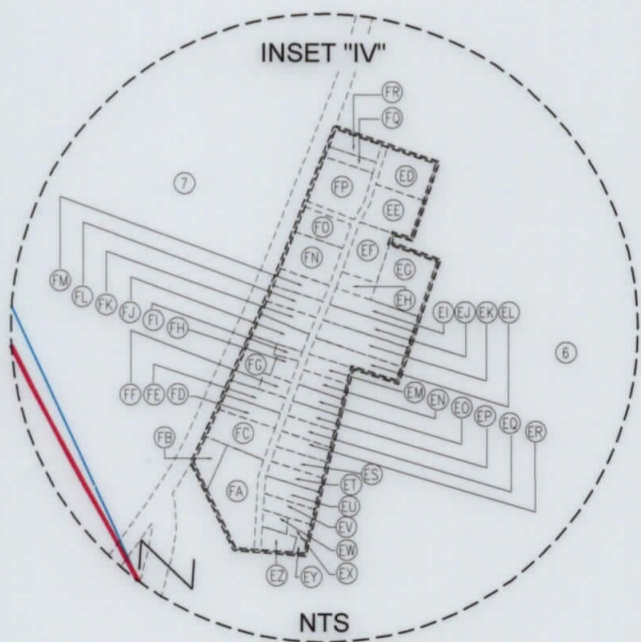
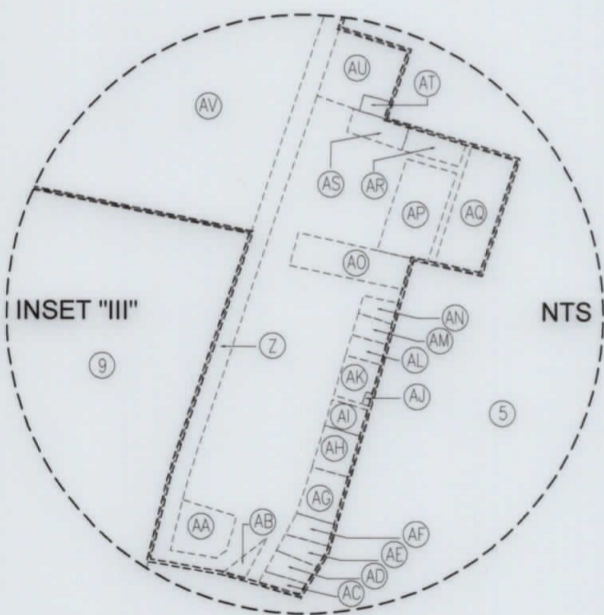
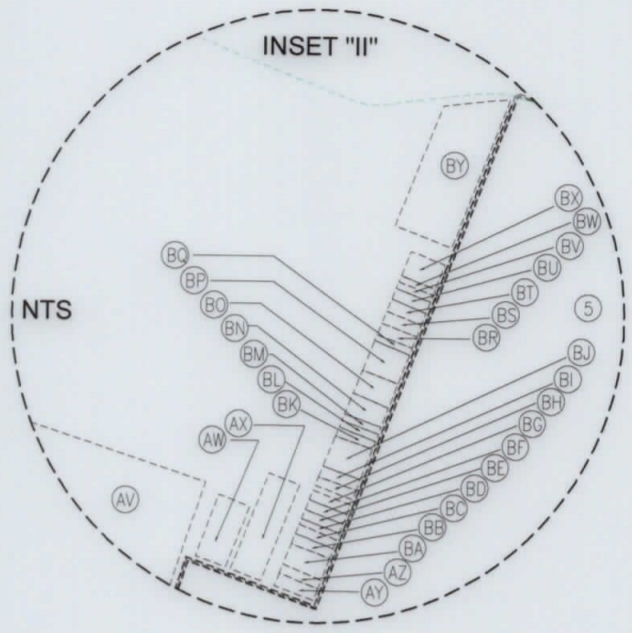
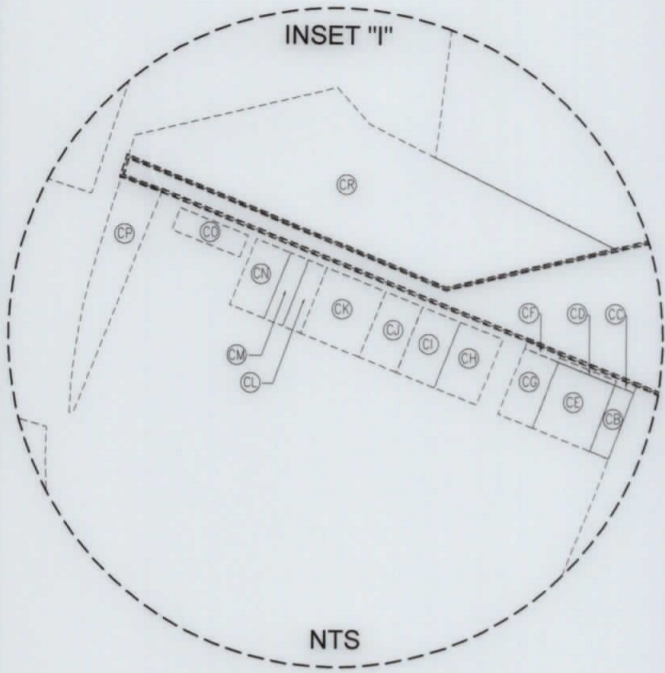
WATERSHED: UPPER OHIO SOUTH DISTRICT: BUFFALO COUNTY: BROOKE SURFACE OWNER: BARRY L. GREATHOUSE & PATRICIA A. GREATHOUSE OIL & GAS ROYALTY OWNER: RAYLE COAL COMPANY	ELEVATION: 1,142.9' QUADRANGLE: TILTONSVILLE, OH-WV ACREAGE: ±229.00 ACREAGE: ±229.00
DRILL <input type="checkbox"/> DRILL DEEPER <input type="checkbox"/> REDRILL <input type="checkbox"/> FRACTURE OR STIMULATE <input type="checkbox"/> PLUG OFF OLD FORMATION <input type="checkbox"/> PERFORATE NEW FORMATION <input type="checkbox"/> CONVERT <input type="checkbox"/> PLUG & ABANDON <input type="checkbox"/> CLEAN OUT & REPLUG <input type="checkbox"/> OTHER CHANGE <input checked="" type="checkbox"/> (SPECIFY) AS-DRILLED	ESTIMATED DEPTH: 5,814' TVD 18,264' TMD

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

<b>LEGEND:</b> ○ EXISTING BOTTOM HOLE * EXISTING / PRODUCING WELLHEAD LPL * EXISTING LANDING POINT LOCATION ○ PROPOSED SURFACE HOLE / BOTTOM HOLE LPL * PROPOSED LANDING POINT LOCATION	— SURVEYED BOUNDARY ===== LEASE BOUNDARY — AS DRILLED PATH — PROPOSED PATH ○ EXISTING WATER WELL ○ EXISTING SPRING	<b>REVISIONS:</b> DATE: 09-09-2019 FILE NO: 47-009-00233 DRAWN BY: D. REED SCALE: 1" = 3000' DRAWING NO: 2017-547 WELL LOCATION PLAT
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(2,000' SCALE) LONGITUDE: -80°37'30" SURFACE HOLE  
(2,000' SCALE) LONGITUDE: -80°37'30" BOTTOM HOLE





REVISIONS:


COMPANY:

**SWN**  
Production Company, LLC

**SWN** *R-V+*  
Production Company™

OPERATOR'S  
WELL #:

BARRY GREATHOUSE B BRK  
5H

DISTRICT:  
BUFFALO

COUNTY:  
BROOKE

STATE:  
WV

DATE: 09-09-2019  
FILE NO: 47-009-00233  
DRAWN BY: D. REED  
SCALE: N/A  
DRAWING NO: 2017-547  
WELL LOCATION PLAT



PROPERTY NUMBER 2501166102  
PAD ID 3001156743



WELL BORE TABLE FOR SURFACE / ROYALTY OWNERS		
TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL
1	BARRY L. GREATHOUSE & PATRICIA A. GREATHOUSE (S) RAYLE COAL COMPANY (R)	03-B41-0082.0000
TRACT	SURFACE OWNER	TAX PARCEL
2	ROBERT J., JR. & LINDA MILLER	03-B41-0047.0000
3	JOY ANN & EBBIE J. SCHUETZ	03-B41-0046.0000
4	WINDSOR COAL COMPANY	03-B41-0039.0000
5	WINDSOR COAL COMPANY	03-B36-0091.0000
6	BUSINESS DEVELOPMENT CORPORATION OF THE NORTHERN PANHANDLE	01-BB36-0023.0001
7	BUSINESS DEVELOPMENT CORPORATION OF THE NORTHERN PANHANDLE	01-BB36-0001.0000
8	BUSINESS DEVELOPMENT CORPORATION OF THE NORTHERN PANHANDLE	01-BB36-0024.0000
9	BUSINESS DEVELOPMENT CORPORATION OF THE NORTHERN PANHANDLE	01-B36K-0013.0000

ADJOINING OWNERS TABLE		
TRACT	SURFACE OWNER	TAX PARCEL
A	DANNY GENE & VIRGINIA MARGARET BRITT (SURVIVOR)	03-B46-0027.0000
B	BOARD OF COMMISSION OHIO COUNTY, C/O WHG OHIO COUNTY AIRPORT AUTHORITY	04-00R5-0010.0000
C	STACY ANN & PATRICIA ANN GREATHOUSE (SURVIVOR)	03-B46-0041.0000
D	BARRY L. & PATRICIA A. GREATHOUSE	03-B41-0032.0000
E	DANNY GENE & VIRGINIA MARGARET BRITT (SURVIVOR)	03-B46-0027.0000
F	CHARLES BELL ESTATE	03-B41-0031.0000
G	ROSEMARY KINDER MOORE	03-B41-0035.0000
H	RAY PAUL NICOLAN	03-B41-0042.0000
I	JAMES HANCHER	03-B41-0044.0000
J	JOY ANN SCHUETZ	03-B41-0043.0000
K	JOY ANN & EBBIE J. SCHUETZ (SURVIVOR)	03-B41-0045.0000
L	SYLVESTER & MARY KELLER (SURVIVOR)	03-B41-0038.0000
M	CHARLES BELL ESTATE	03-B41-0031.0000
N	WINDSOR COAL COMPANY	03-B41-0007.0000
O	WEST PENN POWER CO	01-BB36-0027.0000
P	WINDSOR COAL COMPANY	01-BB36-0026.0000
Q	WINDSOR COAL COMPANY	01-BB36-0025.0000
R	WINDSOR COAL COMPANY	01-BB36-0022.0000
S	MARY LOUISE MCALLISTER	01-BB36-0021.0000
T	MARY LOUISE MCALLISTER	01-BB36-0020.0000
U	LEITHA ADAMSON	01-BB36-0022.0000
V	RALPH & MARY ANN PLANTS	01-BB36-0004.0000
W	ALLEGHENY ENERGY SUPPLY COMPANY, LLC	01-BB36-0030.0000
X	BUSINESS DEVELOPMENT CORP OF THE NORTHERN PANHANDLE	01-BB36-0023.0000
Y	OHIO RIVER (STATE OF WEST VIRGINIA)	OHIO RIVER
Z	STATE ROUTE #2	RIGHT OF WAY
AA	DENNIS RUSCHEL	01-B36K-0002.0000
AB	VILLAGE OF BEECH BOTTOM	01-B36K-0003.0000
AC	DOLORES VIRGINIA COEN	01-B36K-0012.0000
AD	VILLAGE OF BEECH BOTTOM	01-B36K-0011.0000
AE	CURTIS D. & TINA L. OSSMAN (SURVIVOR)	01-B36K-0010.0000
AF	LINDA COX (L CONTRACT); WILLIAM HAROLD JONES	01-B36K-0009.0000
AG	LINDA ANN COX (L CONTRACT); WILLIAM HAROLD JONES	01-B36K-0008.0000
AH	NICHOLAS RYNIWEC	01-B36F-0096.0000
AI	GARY EDWARD & CONSTANCE L. COOPER	01-B36F-0095.0000
AJ	ESTATE OF CHRIS W. KERCHER	01-B36F-0094.0000
AK	WILLIAM E. & DEBRA L. LEONARD (SURVIVOR)	01-B36F-0093.0000
AL	TARA D. SUTER	01-B36F-0092.0000
AM	TARA D. SUTER	01-B36F-0091.0000
AN	JOHN ESKEY	01-B36F-0090.0000
AO	AMY N. FREY	01-B36F-0089.0000
AP	BRUCE & DEBBI SELMON (SURVIVOR)	01-B36F-0088.0000
AQ	BRUCE & DEBBI SELMON (SURVIVOR)	01-B36F-0085.0000
AR	TERRY LYNN LILLY	01-B36F-0084.0000
AS	GEORGE W. & CHARLOTTE BARNHART (SURVIVOR)	01-B36F-0081.0000
AT	GEORGE W. & CHARLOTTE BARNHART (SURVIVOR)	01-B36F-0079.0000
AU	C & P TELEPHONE COMPANY OF WEST VIRGINIA	01-B36F-0078.0000
AV	BUSINESS DEVELOPMENT CORP OF THE NORTHERN PANHANDLE	01-B36F-0077.0000
AW	MARK T. SVETIC	01-B36F-0025.0000
AX	JAC FRED WV, LLC, A NORTH CAROLINA LLC	01-B36F-0026.0000
AY	MICHAEL EDWARD & EMMA FEDCZAK	01-B36F-0076.0000
AZ	MICHAEL EDWARD & EMMA FEDCZAK	01-B36F-0075.0000
BA	SHELBY L. CASTO	01-B36F-0074.0000
BB	SHELBY L. CASTO	01-B36F-0073.0000
BC	PHYLLIS MARKER	01-B36F-0072.0000
BD	GLENN T. & CAROLYN MOORE	01-B36F-0071.0000
BE	CAROLYN K. MOORE	01-B36F-0070.0000
BF	JEFFREY & CHERYL WEEKLEY (JTWS)	01-B36F-0069.0000
BG	JEFFREY L. STOLLAR	01-B36F-0068.0000
BH	JUNE E. MORRELL	01-B36F-0067.0000
BI	JUNE E. MORRELL	01-B36F-0066.0000
BJ	SHIRLEY M. RYNIWEC	01-B36F-0065.0000
BK	ALLEN KEITH & CAROLE YAHRLING	01-B36F-0064.0000
BL	JUNE E. MORRELL	01-B36F-0063.0000
BM	EDWARD A. POLAND	01-B36F-0062.0000
BN	LELAND J. & TRACY A. DICKINSON	01-B36F-0061.0000
BO	THE VILLAGE OF BEECH BOTTOM	01-B36F-0060.0000
BP	JOYCE L. PAINTER	01-B36F-0059.0000
BQ	JANET L. RICHARDSON	01-B36F-0058.0000
BR	JANET L. RICHARDSON	01-B36F-0057.0000
BS	JANET L. RICHARDSON	01-B36F-0056.0000
BT	JANET L. RICHARDSON	01-B36F-0055.0000
BV	JANET L. RICHARDSON	01-B36F-0054.0000
BW	MONONGAHELA POWER COMPANY	01-B36F-0053.0000
BX	LARRY W. GRIMES	01-B36F-0052.0000
BY	LARRY W. GRIMES	01-B36F-0051.0000
BZ	BOARD OF EDUCATION	01-B36B-0106.0000
CA	CLINTON W. & LORRAINE DEWITT	01-B36B-0061.0000
CB	VILLAGE OF BEECH BOTTOM	01-B36B-0017.0000
CC	VILLAGE OF BEECH BOTTOM	01-B36B-0016.0000
CD	VILLAGE OF BEECH BOTTOM	XXXXX
CE	JUSTIN & AMANDA SMART (JTWS)	01-B36B-0013.0000
CF	JUSTIN & AMANDA SMART (JTWS)	01-B36B-0015.0000
CG	GEORGE M. & JUDY LEWIS (SURVIVOR)	01-B36B-0012.0000

ADJOINING OWNERS TABLE		
TRACT	SURFACE OWNER	TAX PARCEL
CG	GEORGE M. & JUDY LEWIS (SURVIVOR)	01-B36B-0014.0000
CH	BELINDA DAUGHERTY & ET AL (L/E: JUNE ANN DAUGHERTY)	01-B36B-0011.0000
CI	BARBARA MCCUTCHEAN	01-B36B-0010.0000
CJ	WILLIAM B., JR. & ELIZABETH N. CAIN	01-B36B-0009.0000
CK	SHEILA ANN LAZEAR	01-B36B-0008.0000
CL	SHEILA LAZEAR	01-B36B-0007.0000
CM	JOHN C. & KELLY A. RICHIE	01-B36B-0006.0000
CN	JOHN C. & KELLY A. RICHIE	01-B36B-0005.0000
CO	PATRICK J. DALBO	01-B36B-0002.0000
CP	VILLAGE OF BEECH BOTTOM	01-B36B-0001.0000
CQ	BROWNLEE LAND VENTURES LP	01-B36B-0115.0000
CR	JOYCE A. SMITH	01-B36B-0120.0000
CS	JOSEPH H. HODGES	01-B36B-0121.0000
CT	LARRY WILLIAM COUCH (L/E: JEAN COUCH)	01-B36B-0124.0000
CU	EDWARD A. CONERY	01-B36B-0125.0000
CV	LOUIS & ARLINE MILLER	03-B36-0005.0000
CW	LOUIS & ARLINE MILLER	03-B36-0006.0000
CX	ELVINA WELLS BUCY & ET AL	03-B31-0074.0000
CY	BERNARD J. LOMBARD, III	03-B31-0081.0000
CZ	STEPHEN A. FODOR & JUDY L. BROWNLEE	03-B36-0176.0000
DA	JOHN R. HOFFMAN & ALICE J. BUCHANAN	03-B36-0175.0000
DB	PAUL D. & KIMBERLY D. LEONARD (SURVIVOR)	03-B36-0173.0000
DC	BRANNON P. & EMILY M. LEONARD (SURVIVOR)	03-B36-0172.0000
DD	BRANNON P. & EMILY M. LEONARD (SURVIVOR)	03-B360171.0000
DE	HARLEY J. LEMASTERS	03-B36-0170.0000
DF	HARLEY J. LEMASTERS	03-B36-0047.0000
DG	HARLEY LEMASTERS	03-B36-0046.0000
DH	HARLEY LEMASTERS	03-B36-0045.0000
DI	HARLEY LEMASTERS	03-B36-0044.0000
DJ	HARLEY LEMASTERS	03-B36-0043.0000
DK	HARLEY J. LEMASTERS	03-B36-0042.0000
DL	HARLEY J. LEMASTERS	03-B36-0041.0000
DM	LESTER & KATHERINE WALLACE (SURVIVOR)	03-B36-0001.0000
DN	TONYA S. LOWE	03-B36L-0011.0000
DO	JEFFREY M. & KRISTINA L. BARR (SURVIVOR)	03-B36L-0011.0001
DP	AMANDA HUFF	03-B36L-0017.0000
DQ	CONNIE WAGNER	03-B36L-0015.0000
DR	BRIAN D. & CASEY K. RICHARDSON	03-B36L-0021.0001
DS	WINDSOR COAL COMPANY	03-B36-0101.0000
DT	WINDSOR COAL COMPANY	03-B36-0102.0000
DV	WINDSOR COAL COMPANY	03-B36-0100.0000
DW	WINDSOR COAL COMPANY	03-B41-0048.0000
DX	SCOTT A. & SANDRA J. SANDRETH (SURVIVOR)	03-B41-0050.0000
DY	FRED W. YOUNG, JR.	03-B41-0054.0001
DZ	DOROTHY S. MOORE	03-B41-0054.0000
EA	KARL DOUGLAS STEPHENS	03-B41-0054.0002
EB	WILLIAM & DAWNA MILLER (SURVIVOR)	03-B41-0061.0000
EC	JAY GLEN COLLINS	03-B41-0080.0000
ED	DALE T. & MARY R. WOOD	03-B41-0084.0000
EE	MARISSA J. FORSHEY	01-B36K-0032.0000
EF	MARISSA J. FORSHEY	01-B36K-0033.0000
EG	DONALD E. & PATRICIA A. GILBERT	01-B36K-0034.0000
EH	MARISSA J. & ROBERT B. FORSHEY (SURVIVOR)	01-B36K-0036.0000
EI	DONALD & PATRICIA GILBERT (SURVIVOR)	01-B36K-0035.0000
EJ	LINDA DARLIN SPENCER	01-B36K-0037.0000
EK	JESSE MCKEE	01-B36K-0038.0000
EL	ALICE M. TAYLOR	01-B36K-0039.0000
EM	MORRIS W. BLEAU	01-B36K-0040.0000
EN	PAUL A. & MARY R. NEGRI, ROGER S. NEGRI	01-B36K-0041.0000
EO	DONALD & ROSEMARIE MEADOWS (SURVIVOR)	01-B36K-0042.0000
EP	JOHN MILLER	01-B36K-0043.0000
EQ	AYLSSA NEGRI	01-B36K-0044.0000
ER	ALYSSA R. NEGRI	01-B36K-0045.0000
ES	JOHN E. & VIOLET E. CORSO (SURVIVOR)	01-B36K-0046.0000
ET	JOHN E. & VIOLET E. CORSO (SURVIVOR)	01-B36K-0047.0000
EU	JOHN E. & VIOLET E. CORSO (SURVIVOR)	01-B36K-0048.0000
EV	MARK JORDAN	01-B36K-0049.0000
EW	MARK L. & SHARON KAY JORDAN	01-B36K-0050.0000
EX	CHARLES G., JR. & CECELIA MOORE (JTWS)	01-B36K-0051.0000
EY	JAMES D. MEADOWS	01-B36K-0050.0002
EZ	JAMES D. MEADOWS	01-B36K-0050.0001
FA	CHARLES G. & CHRISTINE L. HOOD	01-B36K-0050.0003
FB	CHARLES G. & CHRISTINE L. HOOD	01-B36K-0051.0000
FC	CHRISTOPHER DEAN	01-B36K-0030.0000
FD	MORRIS BLEAU	01-B36K-0029.0000
FE	STEPHEN A. POLLOCK, JUDITH HALL & ET AL	01-B36K-0028.0000
FF	ROGER S. NEGRI	01-B36K-0027.0000
FG	ROGER S. NEGRI	01-B36K-0026.0000
FH	KENNETH IVERSON	01-B36K-0023.0000
FI	PAUL A. NEGRI	01-B36K-0025.0000
FJ	ROGER S. NEGRI	01-B36K-0024.0000
FK	ROGER S. NEGRI	01-B36K-0022.0000
FL	ROGER S. NEGRI	01-B36K-0021.0000
FM	ROGER S. NEGRI	01-B36K-0020.0000
FN	LEONARD D., SR. & LORIE K. VARNER	01-B36K-0019.0000
FO	LEONARD & LORIE VARNER	01-B36K-0018.0000
FP	TERRY L. STEWART	01-B36K-0017.0000
FQ	MICHAEL OWEN MATHESS	01-B36K-0016.0000
FR	WANDA S. JONES	01-B36K-0015.0000
FS	WANDA S. JONES	01-B36K-0014.0000
FT	LELAND J. & TRACY A. DICKINSON (SURVIVOR)	01-BB36-0006.0000
FU	DANIEL L. & CATHY J. JOHNSTON (SURVIVOR)	01-BB36-0007.0000
FV	STEVEN ANDREW & DEBBIE LYNN MURDOCK (SURVIVOR)	01-BB36-0008.0000
FW	CHERYL E. SMITH, LINDA CURIA (L/E: ROBERT & JOANN SMITH)	01-BB36-0009.0000
FX	FRANKLIN & CONNIE J. MILLER (SURVIVOR)	01-BB36-0010.0000
FY	FRANKLIN & CONNIE J. MILLER (SURVIVOR)	01-BB36-0011.0000
FZ	FRANKLIN MILLER	01-BB36-0012.0000
GA	FRANKLIN MILLER	01-BB36-0013.0000
GB	FRANKLIN MILLER	01-BB36-0014.0000
GC	FRANKLIN MILLER	01-BB36-0015.0000
GD	PAUL & MARY G. CUNNINGHAM (SURVIVOR)	01-BB36-0016.0000
GE	PAUL & GENEVIEVE CUNNINGHAM	01-BB36-0017.0000

REVISIONS:	COMPANY:	 	
	OPERATOR'S	BARRY GREATHOUSE B BRK	
	WELL #:	5H	
	DISTRICT:	COUNTY:	STATE:
	BUFFALO	BROOKE	WV
		DATE: 09-09-2019	FILE NO: 47-009-00233
		DRAWN BY: D. REED	SCALE: N/A
		DRAWING NO: 2017-547	WELL LOCATION PLAT