

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

API 47 - 009 - 00265 County BROOKE District BUFFALO DISTRICT
Quad BETHANY Pad Name SANDRA PARR BRK PAD Field/Pool Name PANHANDLE FIELD WET
Farm name ANTHONY BRUCE PARR, ET AL Well Number SANDRA PARR BRK 401H
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 4,447,793.450 Easting 540,726.840
Landing Point of Curve Northing 4,447,764.972 Easting 540,071.464
Bottom Hole Northing 4,450,553.435 Easting 539,223.804

Elevation (ft) 1276.1 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 11/02/2018 Date drilling commenced 01/25/2019 Date drilling ceased 02/07/2019
Date completion activities began 03/30/2019 Date completion activities ceased 05/09/2019
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 336 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 759 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 613 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed
C. Ad 9-9-19

Reviewed by:
939919

API 47-009 - 00265 Farm name ANTHONY BRUCE PARR, ET AL Well number SANDRA PARR BRK 401H

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	450	NEW	J-55/54.50#		Y
Coal	SEE INTERMEDIATE						
Intermediate 1	12.25	9.625	2059	NEW	J-55/36#		Y
Intermediate 2							
Intermediate 3							
Production	8.75/8.50	5.5	16794	NEW	P-110/20#		Y
Tubing		2.375	7161	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 ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	CLASS A	GROUT TO SURFACE				SURFACE	24
Surface	CLASS A	410	15.60	1.20	492	SURFACE	8
Coal	SEE INTERMEDIATE						
Intermediate 1	CLASS A	794	15.60	1.19	944.86	SURFACE	8
Intermediate 2							
Intermediate 3							
Production	CLASS A	3217	15.60	1.19	3828.23	SURFACE	24
Tubing							

Drillers TD (ft) 16,794' Loggers TD (ft) 16,794'

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

Plug back procedure N/A

Kick off depth (ft) 5,872'

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 _____

Hydraulic Fracturing Fluid Product Component Information Disclosure



Job Start Date:	4/10/2019
Job End Date:	4/26/2019
State:	West Virginia
County:	Brooke
API Number:	47-009-00265-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	Sandra Parr BRK 401H
Latitude:	40.17950000
Longitude:	-80.52160000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,316
Total Base Water Volume (gal):	13,068,804
Total Base Non Water Volume:	65,888

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	85.01670	Density = 8.34
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.27545	

			Hydrochloric acid	7647-01-0	15.00000	0.03316
			Polyacrylate	Proprietary	30.00000	0.02338
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02338
			Propylene glycol	57-55-6	60.00000	0.00458
			Acetic Acid	64-19-7	60.00000	0.00410
			Sodium chloride	7647-14-5	5.00000	0.00390
			Ammonium chloride	12125-02-9	5.00000	0.00390
			Fatty acid ester	Proprietary	5.00000	0.00390
			Ethoxylated fatty acid	Proprietary	5.00000	0.00390
			Citric Acid	77-92-9	40.00000	0.00274
			Ethylene glycol	107-21-1	30.00000	0.00190
			Amine Triphosphate	Proprietary	30.00000	0.00190
			Methanol	67-56-1	80.00000	0.00153
			Tributyl tetradecyl phosphonium chloride	81741-28-8	10.00000	0.00076
			Fatty acids	Trade Secret	10.00000	0.00019

* 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)

**SANDRA PARR BRK 401H
ATTACHMENT 1
PERF REPORT**

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
1	3/24/2019	16,749	16,654	36
2	4/10/2019	16,621	16,444	24
3	4/11/2019	16,411	16,234	24
4	4/11/2019	16,196	16,024	23
5	4/11/2019	15,988	15,814	18
6	4/12/2019	15,779	15,604	18
7	4/13/2019	15,568	15,394	18
8	4/14/2019	15,361	15,184	18
9	4/14/2019	15,151	14,974	18
10	4/14/2019	14,941	14,768	18
11	4/15/2019	14,731	14,554	18
12	4/15/2019	14,521	14,344	18
13	4/15/2019	14,304	14,134	18
14	4/15/2019	14,096	13,924	18
15	4/16/2019	13,891	13,714	33
16	4/16/2019	13,681	13,502	18
17	4/16/2019	13,471	13,294	18
18	4/17/2019	13,260	13,084	18
19	4/18/2019	13,051	12,874	18
20	4/18/2019	12,840	12,664	18
21	4/18/2019	12,631	12,454	18
22	4/19/2019	12,421	12,244	18
23	4/20/2019	12,210	12,034	18
24	4/20/2019	12,001	11,824	18
25	4/21/2019	11,791	11,614	18
26	4/21/2019	11,580	11,404	18
27	4/22/2019	11,371	11,194	18
28	4/22/2019	11,160	10,984	18
29	4/22/2019	10,950	10,774	36
30	4/22/2019	10,740	10,564	36
31	4/22/2019	10,531	10,354	18
32	4/23/2019	10,321	10,144	18
33	4/23/2019	10,110	9,934	18
34	4/23/2019	9,900	9,724	18
35	4/23/2019	9,691	9,514	18
36	4/24/2019	9,481	9,304	18
37	4/24/2019	9,270	9,094	18
38	4/24/2019	9,060	8,884	18
39	4/24/2019	8,850	8,674	18
40	4/25/2019	8,640	8,464	18
41	4/25/2019	8,430	8,254	18
42	4/25/2019	8,220	8,044	18
43	4/25/2019	8,010	7,834	18
44	4/25/2019	7,800	7,624	18
45	4/25/2019	7,590	7,379	21
46	4/25/2019	7,345	7,204	15

**SANDRA PARR BRK 401H
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	4/10/2019	87.5	8,016	8,640	4,042	279,650	6,774	0
2	4/10/2019	80.6	8,197	5,423	4,336	416,850	11,861	0
3	4/11/2019	88.2	8,561	4,768	4,206	424,100	10,785	0
4	4/11/2019	78.5	8,553	5,020	4,395	417,260	10,837	0
5	4/12/2019	74.9	8,388	4,983	4,428	418,600	12,669	0
6	4/12/2019	57.1	7,627	5,185	4,544	420,647	7,858	0
7	4/13/2019	83.8	8,591	5,429	4,336	421,329	7,503	0
8	4/14/2019	88.1	8,007	5,631	4,590	424,326	7,467	0
9	4/14/2019	74.3	8,615	5,575	4,352	422,470	7,386	0
10	4/14/2019	78.9	8,513	5,103	4,307	421,977	7,780	0
11	4/15/2019	74.9	8,532	5,334	4,030	420,762	7,440	0
12	4/15/2019	86.1	8,838	5,199	4,410	427,430	7,558	0
13	4/15/2019	87.8	8,529	5,301	4,322	421,968	7,538	0
14	4/15/2019	82	8,549	4,793	4,231	419,920	7,416	0
15	4/16/2019	83.3	8,765	5,268	4,361	419,294	7,295	0
16	4/16/2019	73.4	8,869	5,382	4,336	417,546	6,528	0
17	4/16/2019	88.9	8,522	5,129	4,418	420,230	6,511	0
18	4/17/2019	93.3	8,710	5,092	4,365	427,741	6,665	0
19	4/18/2019	77.9	8,502	5,162	4,526	419,760	6,213	0
20	4/18/2019	86.7	8,299	4,911	4,385	420,173	6,572	0
21	4/19/2019	86.8	8,470	5,233	4,377	418,950	6,293	0
22	4/20/2019	91.2	8,437	5,122	4,401	420,216	6,011	0
23	4/20/2019	90.5	8,369	4,958	4,301	420,415	5,837	0
24	4/20/2019	93.9	8,374	5,293	4,353	420,090	6,177	0
25	4/21/2019	88.1	8,528	5,093	4,305	420,271	5,571	0
26	4/21/2019	97.2	8,060	5,409	4,621	420,030	5,960	0
27	4/22/2019	84.3	8,311	5,222	4,314	419,620	5,844	0
28	4/22/2019	14.4	7,246	5,693	7,806	3,847	2,326	0
29	4/22/2019	98.8	7,215	4,415	4,298	420,059	6,661	0
30	4/22/2019	86.7	8,314	5,448	4,354	422,480	6,120	0
31	4/22/2019	83.7	8,328	5,520	4,285	420,020	6,069	0
32	4/23/2019	91.3	8,498	5,343	4,557	419,770	5,876	0
33	4/23/2019	83.9	8,486	5,548	4,409	421,527	6,088	0
34	4/23/2019	88.6	8,318	5,824	4,624	421,843	6,420	0
35	4/23/2019	84.9	8,360	5,820	4,348	420,150	6,040	0
36	4/24/2019	75.5	8,464	5,947	4,381	420,540	5,971	0
37	4/24/2019	80	7,796	5,437	4,263	421,158	6,367	0
38	4/24/2019	91.5	8,383	6,073	4,407	420,400	5,999	0
39	4/24/2019	90	8,316	5,117	4,268	420,020	5,935	0
40	4/25/2019	70.6	8,480	7,449	4,180	419,460	6,050	0
41	4/25/2019	93.1	8,022	5,716	4,216	420,622	5,981	0
42	4/25/2019	89.3	8,208	5,711	4,172	420,460	5,940	0
43	4/25/2019	94.5	8,313	4,369	4,204	420,490	5,883	0
44	4/25/2019	94.6	8,246	5,480	4,641	420,450	5,549	0
45	4/26/2019	92.8	8,042	4,929	4,320	420,780	5,581	0
46	4/26/2019	86.9	8,220	4,582	4,285	420,859	5,961	0



Well Name: Sandra Parr BRK 401H 47009002650000

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	336.00	336.00	
Top of Salt Water	759.00	759.00	NA	NA	
Pittsburgh Coal	613.00	613.00	621.00	621.00	
Pottsville (ss)	751.00	751.00	828.00	828.00	
Raven Cliff (ss)	1187.00	1187.00	1774.00	1774.00	
Big Injun (ss)	1774.00	1774.00	5895.00	5808.00	
Rhinestreet (shale)	6198.00	5793.00	6573.00	6123.00	
Middlesex (shale)	6573.00	6123.00	6673.00	6198.00	
Burket (shale)	6673.00	6198.00	6698.00	6215.00	
Tully (ls)	6698.00	6215.00	6763.00	6257.00	
Mahantango (shale)	6763.00	6257.00	7002.00	6366.00	
Marcellus (shale)	7002.00	6366.00	NA	NA	GAS

Latitude: 40°12'30" (SHL)

SURFACE HOLE 6043'

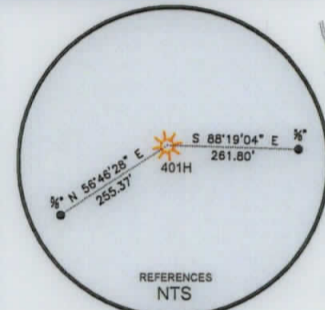
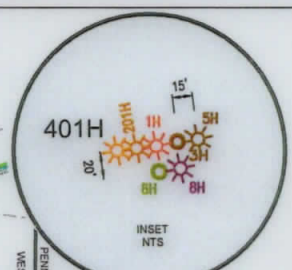
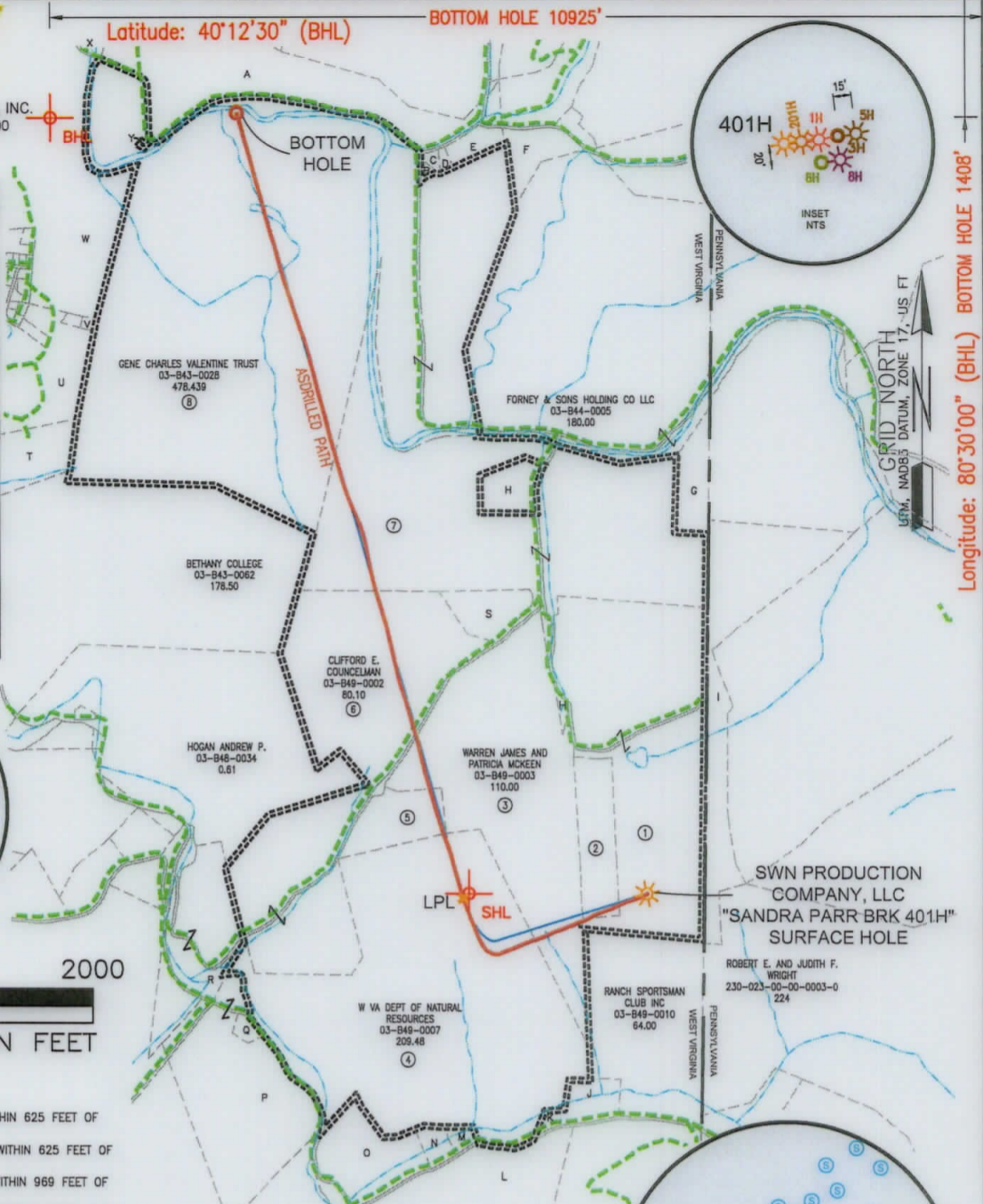
Latitude: 40°12'30" (BHL)

BOTTOM HOLE 10925'



CIVIL & ENVIRONMENTAL CONSULTANTS, INC. 600 MARKETPLACE AVENUE, SUITE 200 BRIDGEPORT, WV 26330 304-933-3119

Table with 4 columns: Location Type, UTM (NAD83, Zone 17, Meters), Northing, Easting. Rows include Surface Hole Location (SHL), Landing Point Location (LPL), Bottom Hole Location (BHL), and Permit locations for SHL, LPL, and BHL.



GRAPHIC SCALE IN FEET

WELL RESTRICTIONS

- 1. NO OCCUPIED DWELLINGS > 2500 SQ. FT. WITHIN 625 FEET OF CENTER OF PAD.
2. NO AGRICULTURE BUILDINGS > 2500 SQ. FT. WITHIN 625 FEET OF CENTER OF PAD.
3. WATER WELLS OR DEVELOPED SPRINGS ARE WITHIN 969 FEET OF PROPOSED WELL.
4. PERENNIAL STREAMS, LAKES, PONDS, OR RESERVOIRS WITHIN 800 FEET OF THE LIMITS OF DISTURBANCE.
5. NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.
6. NO GROUND INTAKE OR PUBLIC WATER SUPPLY WITHIN 1000 FEET OF WELL PAD, LIMITS OF DISTURBANCE, E & S CONTROLS OR PUBLIC WATER SUPPLY.

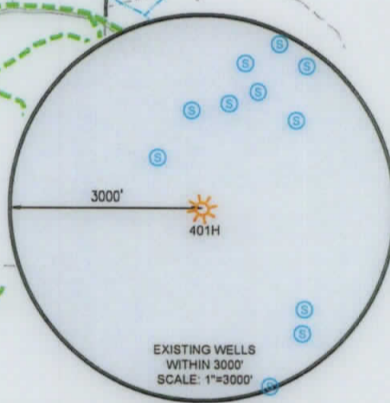
NOTES ON SURVEY

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

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 991

AS-DRILLED



(+) 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)

COMPANY: SWN Production Company, LLC

SANDRA PARR BRK
OPERATOR'S WELL #: 401H
API WELL #: 47 STATE 009 COUNTY 00265 PERMIT

WELL TYPE: OIL [] WASTE DISPOSAL [] PRODUCTION [X] DEEP [] GAS [X] LIQUID INJECTION [] STORAGE [] SHALLOW [X]
WATERSHED: BUFFALO CREEK ELEVATION: 1276.1'
DISTRICT: BUFFALO DISTRICT COUNTY: BROOKE QUADRANGLE: BETHANY
SURFACE OWNER: ANTHONY BRUCE PARR, ET AL ACREAGE: 132.00±
OIL & GAS ROYALTY OWNER: JOHN L. AND ANGELA LATIMER, HUSBAND AND WIFE, AND DEBORAH S. STARR, SINGLE ACREAGE: 132.00±
DRILL [X] DRILL DEEPER [] REDRILL [] FRACTURE OR STIMULATE [X] PLUG OFF OLD FORMATION [] PERFORATE NEW FORMATION []
CONVERT [] PLUG & ABANDON [] CLEAN OUT & REPLUG [] OTHER CHANGE [X] (SPECIFY) ASDRILLED
TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 6,244 TVD 16,794 TMD

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

Table with 2 columns: Legend (Proposed Surface Hole, Existing Wellhead, Landing Point, Existing Water Well, Existing Spring, Surveyed Boundary, Drilling Unit, Lease Boundary, Asdrilled Path, Proposed Path) and Revisions/Date information.



CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
 600 MARKETPLACE AVENUE, SUITE 200
 BRIDGEPORT, WV 26330
 304-933-3119

WELL BORE TABLE FOR SURFACE OWNERS			
TRACT	SURFACE OWNER	TAX PARCEL	ACRES
1	ANTHONY BRUCE PARR, SANDRA L. PARR, RAYMOND LEE, NANCY J. PARR, MICHAEL MAHAN AND PAULA MAHAN (S)	03-B49-0005	132.26
	JOHN L. AND ANGELA LATIMER, HUSBAND AND WIFE AND DEBORHA S. STARR (R)	03-B49-0005	132.26
2	ANTHONY PARR, SANDRA PARR, RAYMOND PARR, NANCY PARR, LEONARD BOYCE AND KAREN BOYCE	03-B49-0004	20.00
3	WARREN JAMES AND PATRICIA MCKEEN	03-B49-0003	110.00
4	W VA DEPT OF NATURAL RESOURCES	03-B49-0007	209.48
5	WEST VIRGINIA BUREAU OF	03-B49-0001	15.07
6	CLIFFORD E. COUNSELMAN	03-B49-0002	80.10
7	BETHANY COLLEGE	03-B44-0014	171.67
8	GENE CHARLES VALENTINE TRUST	03-B43-0028	478.439

ADJOINING OWNERS TABLE			
TRACT	SURFACE OWNER	TAX PARCEL	ACRES
A	VALENTINE GENE CHARLES TRUST	03-B43-0028	38.94
B	MAIN MORRIS G.	03-B44-0010	0.67
C	MAIN MORRIS G.	03-B44-0009	0.73
D	MAIN MORRIS G.	03-B43-0008	0.72
E	NEEL CURTIS LEE & LOUANN L.	03-B44-0007	5.16
F	MAIN MILDRED	03-B44-0006	9.41
G	CHARLES TOWARD JR. AND JAYME L. DEVOS	03-B44-0012	11.00
H	LELAND MACKKEY	03-B44-0014.1	7.33
I	ANTHONY BRUCE PARR, SANDRA L. PARR, RAYMOND LEE, NANCY J. PARR, MICHAEL MAHAN AND PAULA MAHAN	024-00-00-0007	49.00
J	CHARLES N. MUSTAHIO	03-B49-0011	114.02
K	JONES PERRY J. & KAREN J.	03-B49-0009	2.55
L	JONES ROBERT E.	03-B49-0012	102.01
M	JONES PERRY J. & KAREN J.	03-B49-0009	2.55
N	YOUNG ROBERT L.	03-B49-0008.1	26.37
O	YOUNG ROBERT L.	03-B49-0008	26.37
P	WALDEN DANIEL E. & MARY VIRGINIA	03-B48-0037	2.13
Q	WALDEN DANIEL E.	03-B49-0006	1.69
R	MCNICHOLAS JOHN WALTER III	03-B48-0036	8.02
S	CLIFFORD E. COUNSELMAN	03-B44-0013	12.59
T	DONNI SAMUEL J. & MELANE	03-B43-0057	20.79
U	BETHANY COLLEGE	03-B38-0031	93.00
V		03-B43-0049	
W	COLLINS RANDY L. & VANESSA J.	03-B43-0049.2	140.98
X	BETHANY COLLEGE	03-B38-0031	93.00
Y	ROBERT CLYDE B.	03-B43-0029	0.35

API WELL #: **47** **009** **00265**
 STATE COUNTY PERMIT

REVISIONS:	COMPANY:			DATE: 07-10-2019
	 			
	OPERATOR'S SANDRA PARR BRK			
	WELL #: 401H			
	DISTRICT: BUFFALO DISTRICT	COUNTY: BROOKE	STATE: WV	
			DRAWN BY: K.E.S.	
			SCALE: N/A	
			DRAWING NO: 172-289	
			WELL LOCATION PLAT 2	