

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

API 47 - 009 - 00259 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 8H
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 4,447,787.369 Easting 540,740.211
Landing Point of Curve Northing 4,447,342.193 Easting 540,881.243
Bottom Hole Northing 4,445,655.810 Easting 540,892.072

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 09/14/2018 Date drilling commenced 03/06/2019 Date drilling ceased 03/17/2019
Date completion activities began 03/30/2019 Date completion activities ceased 05/14/2019
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. [Signature] 9.9.19

Reviewed by:
CS 9.9.19

API 47-009 - 00259 Farm name ANTHONY BRUCE PARR, ET AL Well number SANDRA PARR BRK 8H

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	437	NEW	J-55/54.50#		Y
Coal	SEE INTERMEDIATE						
Intermediate 1	12.25	9.625	2058	NEW	J-55/36#		Y
Intermediate 2							
Intermediate 3							
Production	8.75/8.50	5.5	13557	NEW	HCP-110/20#		Y
Tubing		2.375	6890	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	430	15.60	1.20	516	SURFACE	8
Coal	SEE INTERMEDIATE						
Intermediate 1	CLASS A	820	15.60	1.19	975.8	SURFACE	8
Intermediate 2							
Intermediate 3							
Production	CLASS A	2355	15.60	1.21	2849.55	SURFACE	24
Tubing							

Drillers TD (ft) 13,571' Loggers TD (ft) 13,571'
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 5,580'

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:	4/12/2019
Job End Date:	4/21/2019
State:	West Virginia
County:	Brooke
API Number:	47-009-00259-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	Sandra Parr 8H
Latitude:	40.17947592
Longitude:	-80.52146887
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,467
Total Base Water Volume (gal):	9,155,708
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	68.28758	Density = 8.330
Recycled Water	Operator	Base Fluid					
			Water	7732-18-5	100.00000	16.77683	Density = 9.000

Ingredients	Listed Above	Listed Above							
			Water		7732-18-5	100.00000	0.63881		
SAND- PREMIUM WHITE-40/70, BULK	Halliburton	Proppant			Listed Below				
CI-01	FSTI	Additive			Listed Below				
IC-001	FSTI	Additive			Listed Below				
SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676)	Halliburton	Proppant			Listed Below				
BE-9W	Halliburton	Biocide			Listed Below				
HYDROCHLORI C ACID	Halliburton	Solvent			Listed Below				
SCAL16486A	Nalco Champion	Scale Inhibitor			Listed Below				

EXCELERATE LX-1	Halliburton	Friction Reducer							
					Listed Below				
Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.									
			Crystalline silica, quartz	14808-60-7		100.00000		14.20735	
			Hydrochloric acid	7647-01-0		15.00000		0.09470	
			Complex Amine Compound	Proprietary		30.00000		0.02192	
			Hydrotreated light petroleum distillate	64742-47-8		30.00000		0.02192	
			Acetic acid	64-19-7		60.00000		0.00470	
			Propylene glycol	57-55-6		60.00000		0.00449	
			Citric acid	77-92-9		40.00000		0.00314	
			Ethylene Glycol	107-21-1		30.00000		0.00190	
			Amine Triphosphate	Proprietary		30.00000		0.00190	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Methanol	67-56-1		80.00000		0.00176	
			Tributyl tetradecyl phosphonium chloride	81741-28-8		10.00000		0.00075	
			Fatty acids	Trade Secret		10.00000		0.00022	

* 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 8H
ATTACHMENT 1
PERF REPORT**

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
1	3/22/2019	13,489	13,396	36
2	4/12/2019	13,363	13,186	24
3	4/13/2019	13,153	12,976	18
4	4/13/2019	12,943	12,766	18
5	4/14/2019	12,733	12,556	18
6	4/14/2019	12,523	12,346	18
7	4/14/2019	12,313	12,136	18
8	4/15/2019	12,103	11,926	18
9	4/15/2019	11,893	11,716	18
10	4/15/2019	11,678	11,506	18
11	4/15/2019	11,470	11,296	18
12	4/16/2019	11,263	11,086	18
13	4/16/2019	11,053	10,876	27
14	4/17/2019	10,842	10,666	36
15	4/17/2019	10,632	10,456	36
16	4/17/2019	10,423	10,246	18
17	4/18/2019	10,212	10,036	18
18	4/18/2019	10,002	9,826	18
19	4/18/2019	9,793	9,616	36
20	4/18/2019	9,583	9,406	18
21	4/19/2019	9,372	9,196	18
22	4/19/2019	9,162	8,986	24
23	4/19/2019	8,952	8,776	24
24	4/19/2019	8,743	8,566	24
25	4/20/2019	8,533	8,356	24
26	4/20/2019	8,322	8,146	24
27	4/20/2019	8,113	7,936	24
28	4/20/2019	7,903	7,726	24
29	4/21/2019	7,693	7,516	24
30	4/21/2019	7,482	7,306	24
31	4/21/2019	7,272	7,096	24
32	4/21/2016	7,062	6,886	18

**SANDRA PARR BRK 8H
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	4/12/2019	95.7	8,278	6,812	4,043	280,582	7,162	0
2	4/13/2019	90.3	8,568	4,990	4,371	420,817	10,818	0
3	4/13/2019	75.7	8,373	5,487	4,146	418,062	10,708	0
4	4/13/2019	74.9	8,472	5,426	3,636	423,078	10,949	0
5	4/14/2019	85	8,710	5,166	4,526	419,974	10,681	0
6	4/14/2019	85.8	8,683	5,517	4,285	421,732	7,397	0
7	4/14/2019	72.5	8,519	5,230	4,425	422,535	7,282	0
8	4/14/2019	86.1	8,466	5,182	4,335	420,504	7,327	0
9	4/15/2019	88.4	8,779	5,966	4,708	420,138	7,403	0
10	4/15/2019	81.1	8,575	5,313	4,497	422,490	7,371	0
11	4/16/2019	78.8	8,517	5,799	4,297	420,060	7,132	0
12	4/16/2019	83.5	8,790	5,782	4,490	420,553	7,354	0
13	4/16/2019	76	8,707	6,052	4,258	424,798	8,747	0
14	4/17/2019	82	8,597	5,560	4,499	420,893	6,202	0
15	4/17/2019	77.4	8,416	5,717	4,377	419,540	6,290	0
16	4/18/2019	78.4	8,511	5,846	4,780	420,470	6,210	0
17	4/18/2019	68.2	8,529	5,516	4,382	434,956	6,521	0
18	4/18/2019	18.8	7,968	5,391	6,190	4,541	2,058	0
19	4/18/2019	99.3	7,251	4,872	4,259	420,340	5,831	0
20	4/18/2019	77.3	8,373	5,333	4,189	420,470	6,076	0
21	4/19/2019	48.9	8,455	5,717	4,163	418,907	8,186	0
22	4/19/2019	95.9	8,249	5,316	4,184	422,682	6,011	0
23	4/19/2019	98	8,277	5,369	4,681	419,740	6,005	0
24	4/19/2019	98.4	7,989	5,292	4,159	420,180	5,706	0
25	4/20/2019	98.3	8,248	5,856	4,012	420,860	5,737	0
26	4/20/2019	96.2	7,858	5,481	4,225	424,391	5,684	0
27	4/20/2019	94.8	7,542	5,282	4,585	420,067	5,867	0
28	4/20/2019	98.2	7,710	5,101	4,386	421,880	5,682	0
29	4/21/2019	99.9	8,013	5,555	4,675	420,750	4,920	0
30	4/21/2019	99	7,411	5,182	4,441	421,544	5,282	0
31	4/21/2019	98.5	7,965	5,167	4,716	420,378	4,788	0
32	4/21/2019	73.9	8,363	5,348	4,221	419,880	5,575	0



Well Name: Sandra Parr BRK 8H 470090002590000

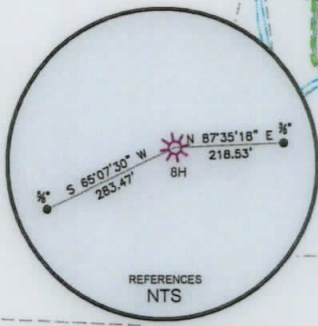
LITHOLOGY/FORMATION	TOP DEPTH, MD (FT)	TOP DEPTH, TVD (FT)	BOTTOM DEPTH, MD (FT)	BOTTOM DEPTH, TVD (FT)	QUANTITY AND TYPE OF FLUID
Base of Fresh Water	0.00	0.00	336.00	336.00	
Top of Salt Water	759.00	759.00	NA	NA	
Pittsburgh Coal	613.00	613.00	621.00	621.00	
Pottsville (ss)	751.00	751.00	828.00	828.00	
Raven Cliff (ss)	1187.00	1187.00	1774.00	1774.00	
Big Injun (ss)	1774.00	1774.00	5895.00	5898.00	
Rhinestreet (shale)	5862.00	5816.00	6236.00	6151.00	
Middlesex (shale)	6236.00	6151.00	6343.00	6231.00	
Burket (shale)	6343.00	6231.00	6371.00	6251.00	
Tully (ls)	6371.00	6251.00	6439.00	6295.00	
Mahantango (shale)	6439.00	6295.00	6692.00	6412.00	
Marcellus (shale)	6692.00	6412.00	NA	NA	GAS



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

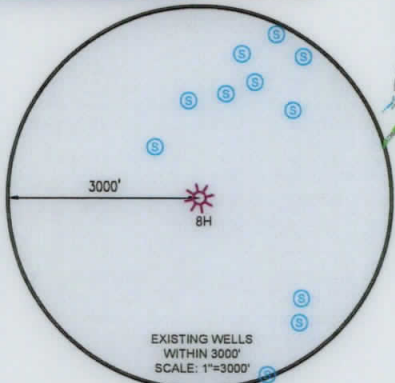
Latitude: 40°12'30" (SHL) SURFACE HOLE 5999'
Latitude: 40°10'00" (BHL) BOTTOM HOLE 5540'

SURFACE HOLE LOCATION (SHL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,447,787.369	
EASTING: 540,740.211	
LANDING POINT LOCATION (LPL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,447,342.193	
EASTING: 540,881.243	
BOTTOM HOLE LOCATION (BHL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,445,655.810	
EASTING: 540,892.072	
PERMIT SURFACE HOLE LOCATION (SHL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,447,787.366	
EASTING: 540,740.211	
PERMIT LANDING POINT LOCATION (LPL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,447,659.746	
EASTING: 540,887.598	
PERMIT BOTTOM HOLE LOCATION (BHL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,445,655.466	
EASTING: 540,892.910	



AS-DRILLED

SWN PRODUCTION COMPANY, LLC
"SANDRA PARR BRK 8H"
SURFACE HOLE



2000 0 2000

GRAPHIC SCALE IN FEET

WELL RESTRICTIONS

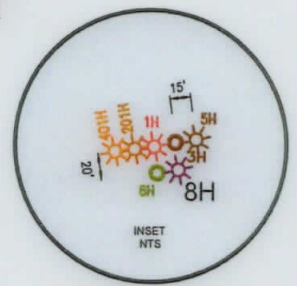
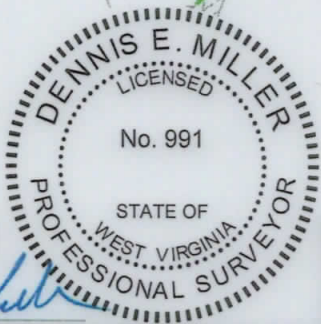
1. NO OCCUPIED DWELLINGS > 2500 SQ FT. WITHIN 625 FEET OF CENTER OF PAD.
2. NO AGRICULTURE BUILDINGS > 2500 SQ FT. WITHIN 625 FEET OF CENTER OF PAD.
3. WATER WELLS OR DEVELOPED SPRINGS ARE WITHIN 969 FEET OF PROPOSED WELL.
4. PERENNIAL STREAMS, LAKES, PONDS, OR RESERVOIRS WITHIN 800 FEET OF THE LIMITS 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



COMPANY: **SWN** Production Company, LLC

SANDRA PARR BRK
OPERATOR'S WELL #: 8H
API WELL #: 47 009 00259
STATE COUNTY PERMIT

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25034

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

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

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

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 6,453 TVD 13,571 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

LEGEND:	— SURVEYED BOUNDARY	REVISIONS:	DATE: 07-10-2019
○ PROPOSED SURFACE HOLE / BOTTOM HOLE	— DRILLING UNIT		
⊙ EXISTING / PRODUCING WELLHEAD	===== LEASE BOUNDARY		
LPL* LANDING POINT LOCATION	— ASDRILLED PATH		DRAWN BY: K.E.S.
⊙ EXISTING WATER WELL	— PROPOSED PATH		SCALE: 1" = 2000'
⊙ EXISTING SPRING			DRAWING NO: 172-289
			WELL LOCATION PLAT



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
1	(S) ANTHONY BRUCE PARR, SANDRA L. PARR, RAYMOND LEE, NANCY PARR, MICHAEL MAHAN, AND PAULA MAHAN (R) JOHN L. LATIMER AND ANGELA LATIMER AND DEBORAH S. STARR	03-B49-0005
2	THE RANCH SPORTSMANS CLUB, INC., BY NICK MUSTACHIO, PRESIDENT	03-B49-0010
3	THE RANCH SPORTSMANS CLUB, INC., BY NICK MUSTACHIO, PRESIDENT DAN BRAGG, A MARRIED MAN DEALING IN HER SOLE AND SEPARATE PROPERTY DAWN L. BARNES, A MARRIED WOMAN DEALING IN HER SOLE AND SEPARATE PROPERTY, AND HUSBAND, JAY BARNES STEPHANIE A. SITAR, FKA STEPHANIE A. WHITTLE, A MARRIED WOMAN DEALING IN HER SOLE AND SEPARATE PROPERTY, AND HUSBAND, STAN SITAR MASTER MINERAL HOLDINGS II, LP	03-B49-0011
4	EDWARD JOHN COVEY AND ROSEMARY ANN COVEY, HUSBAND AND WIFE, JTWROS	03-B54-0008

ADJOINING OWNERS TABLE		
TRACT	SURFACE OWNER	TAX PARCEL
A	ANTHONY BRUCE PARR, SANDRA L. PARR, RAYMOND LEE, NANCY J. PARR, MICHAEL MAHAN AND PAULA MAHAN	024-00-00-0007
B	ROBERT E. & JUDITH F. WRIGHT	023-00-00-0003-0
C	STEVE S. VOYTEK	230-023-00-00-0012-00
D	MARK S. & CAROL B. GRACY	023-00-00-0010-6
E	RITA V. JONES QTIP	016-00-00-0001-0
F	TIMOTHY ALAN RYAN	03-L60-0004
G	TIMOTHY ALAN RYAN	03-L60-0004
H	DOROTHY D. TUSTIN	03-L3-0003
I	DANIEL P. SR & VICKIE S. TUSTIN	03-L3-0003.1
J	DANIEL P. SR & VICKIE S. TUSTIN	03-L3-0002.3
K	JOHN S. & N. FREEMAN	03-L3-0002.2
L	CHRISTOPHER J. & LELA G. COVEY	03-L3-0004
M	RICHARD P. FORSHEY	03-B54-0013
N	RICHARD P. FORSHEY	03-B54-0012
O	EDWARD JOHN & ROSEMARY ANN COVEY	03-B54-0011
P	EDWARD JOHN & ROSEMARY ANN COVEY	03-B54-0010
Q	EDWARD JOHN & ROSEMARY ANN COVEY	03-B54-0009
R	EVERETT L. CARMICHAEL	03-B54-0003
S	SHERRY ROUSE	03-B54-0004
T	SHERRY ROUSE	03-B54-0005
U	GEO & MARTHA DAGUE	03-B54-0006
V	GEO & MARTHA DAGUE	03-B54-0007
W	ROBERT E. JONES	03-B49-0012
X	PERRY J. & KAREN J. JONES	03-B49-0009
Y	CHARLES N. MUSTAHIO	03-B49-0011
Z	W VA DEPT OF NATURAL RESOURCES	03-B49-0007
AA	JAMES WARREN & PATRICIA MCKEEN	03-B49-0003
BB	ANTHONY PARR, SANDRA PARR, RAYMOND PARR, NANCY PARR, LEONARD BOYCE AND KAREN BOYCE	03-B49-0004
CC	LELAND MACKAY	03-B44-0014.1
DD	STATE OF WEST VIRGINIA, DEPARTMENT OF COMMERCE, DIVISION OF NATURAL RESOURCES, WILDLIFE RESOURCES SECTION	03-B44-0014

API WELL #: **47** **009** **00259**
 STATE COUNTY PERMIT

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