

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

API 47-009-00177 County BROOKE District BUFFALO
Quad BETHANY, WV-PA Pad Name JAMES SEABRIGHT-BRK-PAD1 Field/Pool Name PANHANDLE FIELD WET
Farm name JAMES K. & MARTHA MAY SEABRIGHT; LIFE INTEREST & JAMES H. SEABRIGHT Well Number JAMES SEABRIGHT 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 4,452,330.748 Easting 539,873.160
Landing Point of Curve Northing 4,452,176.742 Easting 539,818.860
Bottom Hole Northing 4,449,667.218 Easting 540,880.852

Elevation (ft) 1130.6' GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine
Mud Type(s) and Additive(s)
SOBM

Date permit issued 02/25/2016 Date drilling commenced 03/16/2017 Date drilling ceased 06/21/2017
Date completion activities began 07/16/2017 Date completion activities ceased 08/30/2017
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

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Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 235' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 831' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 313' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed
[Signature] 2-7-18

Reviewed by:
CB 2-7-18
03/02/2018

API 47-009 - 00177 Farm name JAMES K. & MARTHA MAY SEABRIGHT, LIFE INTEREST & JAMES H. SEABRIGHT Well number JAMES SEABRIGHT 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	353	NEW	H-40/48#		Y; 28 BBLS RETURNED
Coal	SEE SURFACE						
Intermediate 1	12.25	9.625	1722	NEW	J-55/36#		Y; 40 BBLS RETURNED
Intermediate 2							
Intermediate 3							
Production	8.75/8.50	5.5	15405	NEW	HCP-110/20#		Y
Tubing		2.375	6293	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	340	15.60	1.20	408	SURFACE	8
Coal	SEE INTERMEDIATE						
Intermediate 1	CLASS A	670	15.60	1.18	790.60	SURFACE	8
Intermediate 2							
Intermediate 3							
Production	CLASS A	2976	15.60	1.19	3541.44	SURFACE	24
Tubing							

Drillers TD (ft) 15,405' Loggers TD (ft) 15,405'
 Deepest formation penetrated MARCELLUS Plug back to (ft) N/A
 Plug back procedure _____

Kick off depth (ft) 5,388'

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 _____ RECEIVED
 Office of Oil and Gas
 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
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WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____ WV Department of Environmental Protection

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

**JAMES SEABRIGHT BRK 8H
FRAC STAGE SUMMARY**

STAGE NUM	Stim 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
1	7/19/2017	90	8,435	8,801	4,395	494,440	9,859	
2	7/20/2017	94	8,025	9,016	4,561	498,600	7,457	
3	7/20/2017	94	8,234	9,055	4,814	503,080	7,465	
4	7/20/2017	94	8,299	8,755	4,932	505,760	7,586	
5	7/20/2017	95	8,375	8,891	5,382	505,800	7,610	
6	7/21/2017	85	8,646	9,041	4,270	502,680	7,451	
7	7/21/2017	98	8,295	8,680	4,470	505,240	7,322	
8	7/21/2017	100	8,062	8,497	4,599	504,960	7,425	
9	7/22/2017	99	7,797	8,383	4,270	501,560	7,281	
10	7/22/2017	98	7,910	8,144	4,256	503,060	7,210	
11	7/22/2017	99	7,953	8,286	4,656	499,960	7,249	
12	7/22/2017	99	7,988	8,608	4,581	498,180	7,315	
13	7/22/2017	99	7,663	8,333	4,771	497,580	7,270	
14	7/23/2017	100	7,736	8,469	4,320	497,800	7,131	
15	7/23/2017	99	7,479	8,147	4,506	496,180	7,084	
16	7/23/2017	98	7,870	8,451	4,367	502,360	7,092	
17	7/23/2017	99	7,541	8,136	4,656	502,460	7,166	
18	7/23/2017	86	8,607	9,087	4,796	132,860	8,238	
19	7/24/2017	97	7,254	8,065	4,109	503,040	7,186	
20	7/24/2017	101	7,588	7,854	4,102	577,820	7,811	
21	7/24/2017	100	7,448	8,043	4,313	574,360	7,754	
22	7/24/2017	99	7,196	7,818	4,517	582,100	7,723	
23	7/24/2017	100	7,211	7,592	4,545	577,640	7,705	
24	7/25/2017	100	7,466	8,197	4,485	576,300	7,634	
25	7/25/2017	100	7,266	7,435	4,091	501,640	6,975	
26	7/25/2017	100	6,905	7,507	4,089	503,780	6,916	
27	7/26/2017	100	7,006	7,846	4,399	505,800	6,915	
28	7/26/2017	100	6,807	7,213	5,481	499,260	6,916	
29	7/26/2017	101	7,044	7,371	4,245	498,620	6,865	
30	7/26/2017	101	6,922	7,313	4,377	503,360	6,812	
31	7/26/2017	99	6,800	7,546	4,331	503,230	6,759	
32	7/26/2017	99	6,876	8,240	4,699	503,670	6,680	
33	7/26/2017	99	6,645	8,283	4,513	501,440	6,708	
34	7/26/2017	100	6,846	8,390	4,470	503,040	6,741	
35	7/27/2017	100	6,518	7,063	4,860	500,920	6,691	

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**JAMES SEABRIGHT BRK 8H
PERF SUMMARY**

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
1	7/19/2017	15,104	15,279	42
2	7/20/2017	14,846	15,041	42
3	7/20/2017	14,588	14,780	42
4	7/20/2017	14,333	14,525	42
5	7/20/2017	14,072	14,267	42
6	7/21/2017	13,814	14,009	42
7	7/21/2017	13,556	13,751	42
8	7/21/2017	13,298	13,493	42
9	7/22/2017	13,045	13,235	42
10	7/22/2017	12,782	12,977	42
11	7/22/2017	12,524	12,719	42
12	7/22/2017	12,266	12,461	42
13	7/22/2017	12,008	12,203	42
14	7/23/2017	11,750	11,945	42
15	7/23/2017	11,492	11,687	42
16	7/23/2017	11,234	11,429	42
17	7/23/2017	10,976	11,171	42
18	7/23/2017	10,718	10,913	42
19	7/24/2017	10,460	10,655	42
20	7/24/2017	10,202	10,397	42
21	7/24/2017	9,944	10,139	42
22	7/24/2017	9,686	9,881	42
23	7/24/2017	9,428	9,623	42
24	7/25/2017	9,170	9,365	42
25	7/25/2017	8,912	9,107	42
26	7/25/2017	8,654	8,849	42
27	7/26/2017	8,396	8,591	42
28	7/26/2017	8,138	8,333	42
29	7/26/2017	7,880	8,075	42
30	7/26/2017	7,622	7,817	42
31	7/26/2017	7,364	7,559	42
32	7/26/2017	7,106	7,301	42
33	7/26/2017	6,848	7,043	42
34	7/26/2017	6,590	6,785	42
35	7/27/2017	6,332	6,527	42

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Well Name:

JAMES SEABRIGHT BRK 8H

47009001770000

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	N.A.	N.A.	235.00	235.00	N.A.
Top of Salt Water	831.00	831.00	N.A.	N.A.	N.A.
Pittsburgh Coal	313.00	313.00	318.00	318.00	N.A.
Big Injun (ss)	1509.00	1506.00	1653.00	1650.00	N.A.
Berea (siltstone)	Not Logged	Not Logged	5483.00	5456.00	N.A.
Rhinestreet (shale)	5483.00	5456.00	5749.00	5711.00	N.A.
Cashaqua (shale)	5749.00	5711.00	5810.00	5766.00	N.A.
Middlesex (shale)	5810.00	5766.00	5900.00	5839.00	N.A.
Burket (shale)	5900.00	5839.00	5919.00	5854.00	N.A.
Tully (ls)	5919.00	5854.00	6013.00	5852.00	N.A.
Mahantango (shale)	6095.00	5907.00	6301.00	6015.00	N.A.
Marcellus (shale)	6287.00	6040.00	N.A.	N.A.	GAS

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	7/20/2017
Job End Date:	7/27/2017
State:	West Virginia
County:	Brooke
API Number:	47-009-00177-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	James Seabright BRK 8H
Latitude:	40.22045000
Longitude:	-80.53137100
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,159
Total Base Water Volume (gal):	10,607,118
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
Water	Southwestern Energy	Carrier/Base Fluid	Water	7732-18-5	100.00000	82.34347	
Sand	U.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	16.35319	
HCL Acid (12.6%-17.5%)	U.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.40000	0.98283	
			Hydrogen Chloride	7647-01-0	17.50000	0.22851	
WFRA-2000	U.S. Well Services, LLC	Friction Reducer	Water	7732-18-5	60.00000	0.04779	
			2-Propenoic acid, polymer with 2 propenamide	9003-06-9	30.00000	0.02389	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.01959	
AI-303	Office of Oil and Gas	Acid Corrosion Inhibitors	Ethylene glycol	107-21-1	40.00000	0.00032	
			Cinnamaldehyde	104-55-2	20.00000	0.00012	
			Formic acid	64-18-6	20.00000	0.00011	

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RETTEW Associates, Inc.
27 Travato Street, Suite 101
Bridgeport, WV 26330
Phone (800) 738-8395
Email: rettew@rettew.com
Website: www.rettew.com

SURFACE HOLE LOCATION (SHL):

UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,452,330.748
EASTING: 539,818.60

LANDING POINT LOCATION (LP):

UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,452,176.742
EASTING: 539,818.860

BOTTOM HOLE LOCATION (BHL):

UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,449,667.218
EASTING: 540,880.852

SURFACE HOLE LOCATION (SHL):

UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,452,330.785
EASTING: 539,873.172

LANDING POINT LOCATION (LP):

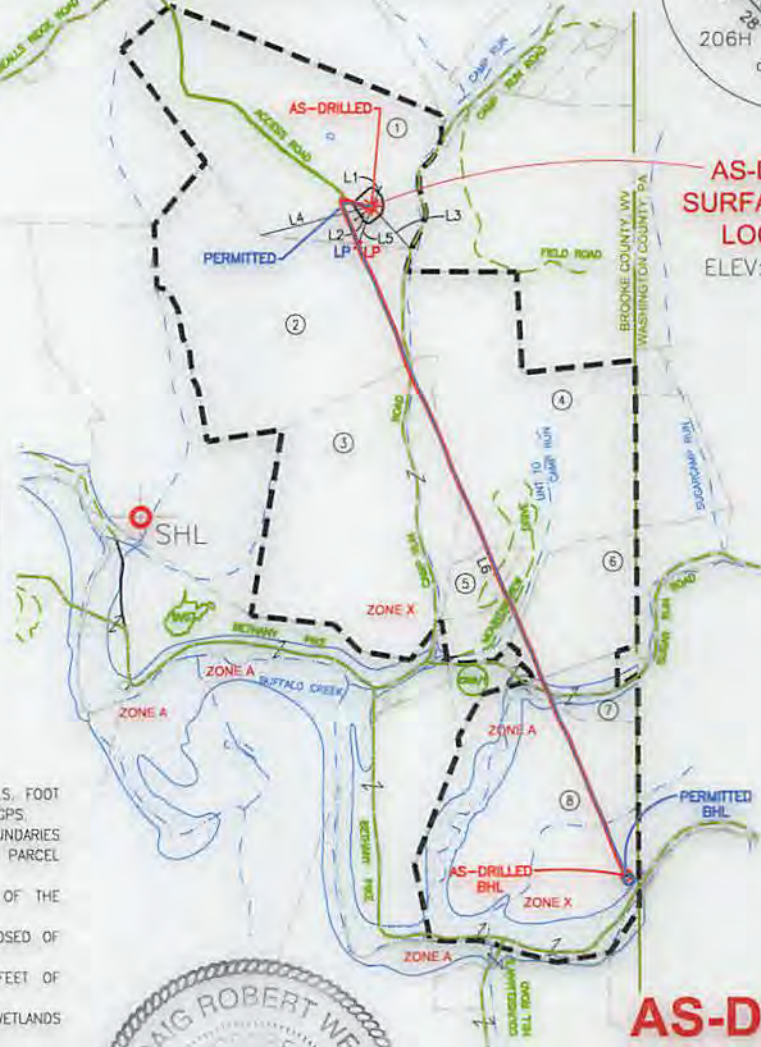
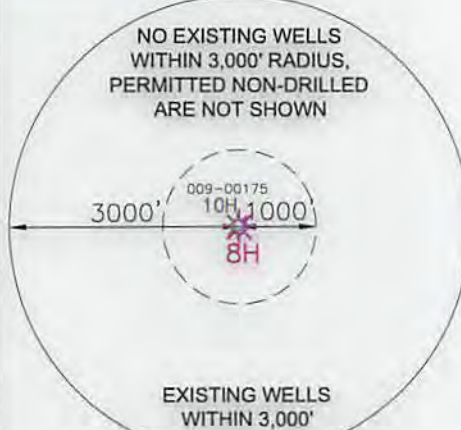
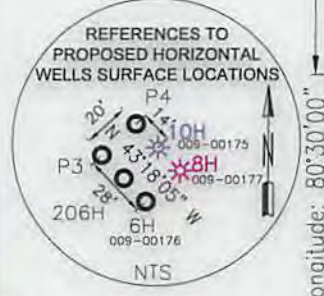
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,452,176.720
EASTING: 539,818.799

BOTTOM HOLE LOCATION (BHL):

UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,449,651.865
EASTING: 540,890.536

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

Table with columns: LINE, BEARING, DISTANCE, DESCRIPTION, MONUMENT. Includes surface owners and tax parcel information.

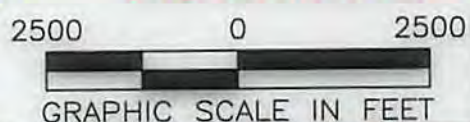


AS-DRILLED SURFACE HOLE LOCATION
ELEV: 1,130.6'

AS-DRILLED

- NOTES ON SURVEY
1. COORDINATES 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 FIELD LOCATIONS.
3. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
4. NO DWELLINGS AND BUILDINGS WITHIN 625 FEET OF PROPOSED OF CENTER OF PAD.
5. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
6. NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
7. NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.

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. 2241

COMPANY: SWN Production Company, LLC

STATE OF WEST VIRGINIA
WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25034

MINIMUM DEGREE OF ACCURACY: 1/200
PROVEN SOURCE OF SURVEY GRADE GPS ELEVATION: (NAVD 88, US FT)

JAMES SEABRIGHT BRK
OPERATOR'S WELL #: 8H
API WELL #: 47 009 00177
STATE COUNTY PERMIT

WELL TYPE: OIL [] WASTE DISPOSAL [] PRODUCTION [X] DEEP [] GAS [X] LIQUID INJECTION [] STORAGE [] SHALLOW [X]
WATERSHED: SUGARCAMP RUN, BUFFALO CREEK
DISTRICT: BUFFALO COUNTY: BROOKE
SURFACE OWNER: JAMES K. & MARTHA MAY SEABRIGHT; LIFE INTEREST & JAMES H. SEABRIGHT
OIL & GAS ROYALTY OWNER: MARTHA MAY SEABRIGHT, LE, & JAMES H. SEABRIGHT
DRILL [] DRILL DEEPER [] REDRILL [] FRACTURE OR STIMULATE [] PLUG OFF OLD FORMATION [] PERFORATE NEW FORMATION []
CONVERT [] PLUG & ABANDON [] CLEAN OUT & REPLUG [] OTHER CHANGE [X] (SPECIFY) As-Drilled
TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 6,231' TVD 15,405' TMD

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

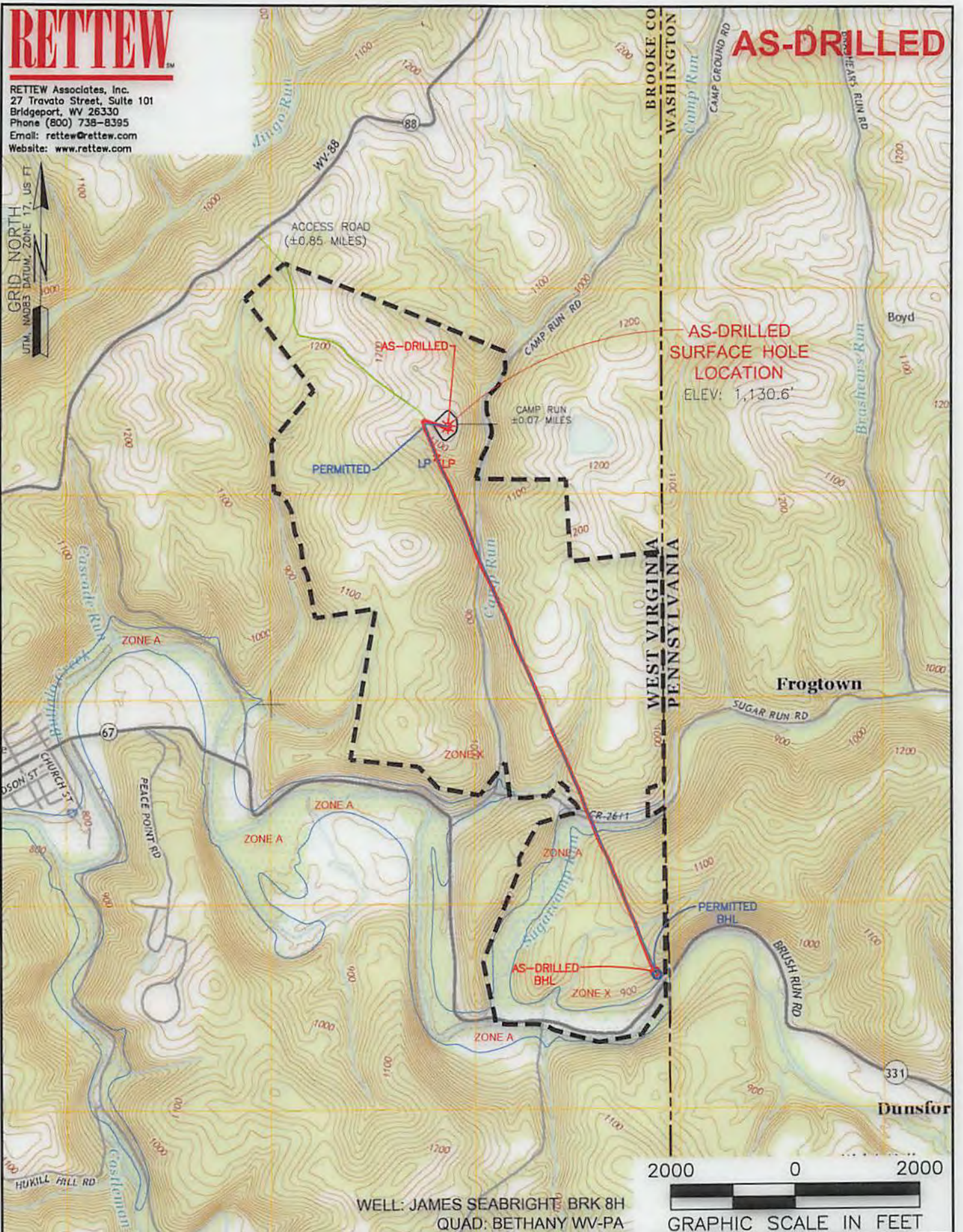
LEGEND:
PROPOSED SURFACE HOLE / BOTTOM HOLE
EXISTING / PRODUCING WELLHEAD
ABANDONED WELL
PLUGGED & ABANDONED WELL
CUT CONDUCTOR
TIE LINE
LEASE BOUNDARY
ASDRILLED WELLPATH
PERMITTED WELLPATH
STREAM
REVISIONS:
DATE: 08-22-2017
DRAWN BY: G.FLORES
SCALE: 1" = 2500'
DRAWING NO: 087569036
AS-DRILLED PLAT

RETTEW

RETTEW Associates, Inc.
27 Travato Street, Suite 101
Bridgeport, WV 26330
Phone (800) 738-8395
Email: rettew@rettew.com
Website: www.rettew.com

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

AS-DRILLED



WELL: JAMES SEABRIGHT BRK 8H
QUAD: BETHANY WV-PA



NAME AND DISTANCE TO THE NEAREST STREAM: CAMP RUN IS LOCATED ±0.07 MILES EAST OF THE CENTER OF THE DRILL PAD.		STREAM CROSSING COORDINATES (NAD 83): NO NEW CROSSINGS.		COMPANY: 	
WELL RESTRICTIONS: WELL PAD, LOD, & E & S CONTROL FEATURES TO PERENNIAL STREAM, LAKE, POND, RESERVOIR OR WETLAND: >100 FEET WELL PAD, LOD, & E & S CONTROL FEATURES TO NATURALLY PRODUCING TROUT STREAM: >300 FEET WELL PAD, LOD, & E & S CONTROL FEATURES TO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY: >1000 FEET WELL SHL TO EXISTING WATER WELL OR DEVELOPED SPRING: >250 FEET CENTER OF PAD TO OCCUPIED DWELLING STRUCTURE: >625 FEET CENTER OF PAD TO AGRICULTURAL BUILDINGS LARGER THAN 2500 SQ FT: >625 FEET		OPERATOR'S: JAMES SEABRIGHT BRK WELL #: 8H		LOCATION: BUFFALO DISTRICT, BROOKE COUNTY, WEST VIRGINIA	
FEMA FLOOD INFORMATION: BY GRAPHIC PLOTTING ONLY FEMA FIRM INCORPORATED AREA OF BROOKE COUNTY, WEST VIRGINIA; MAP NUMBER 54009C0135D; EFFECTIVE DATE: APRIL 19, 2010. FLOOD ZONES A & X ARE SITUATED WITHIN THE UNIT.		SURFACE HOLE LOCATION: GEOGRAPHIC (NAD83): LATITUDE: 40.220450° LONGITUDE: -80.531371° 03/02/2018		BOTTOM HOLE LOCATION: GEOGRAPHIC (NAD83): LATITUDE: 40.196405° LONGITUDE: -80.519698°	
LEGEND: <ul style="list-style-type: none"> PROPOSED SURFACE HOLE / BOTTOM HOLE EXISTING / PRODUCING WELLHEAD ABANDONED WELL PLUGGED & ABANDONED WELL CUT CONDUCTOR ASDRILLED WELLPATH PERMITTED WELLPATH ACCESS ROAD HIGHWAY/INTERSTATE COUNTY ROAD 		REVISIONS:		DATE: 08-22-2017	
				DRAWN BY: G.FLORES SCALE: 1" = 2000' DRAWING NO: 087569036 TOPOGRAPHIC MAP	