

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

API 47 - 051 - 02127 County MARSHALL District LIBERTY  
Quad CAMERON Pad Name CHARLES JAMISON MSH PAD Field/Pool Name NORTH VICTORY FIELD WET  
Farm name CHARLES AND JEAN JAMISON Well Number CHARLES JAMISON MSH 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 4,404,732.622 Easting 533,594.914  
Landing Point of Curve Northing 4,405,130.417 Easting 533,346.227  
Bottom Hole Northing 4,401,015.179 Easting 535,915.437

Elevation (ft) 1335' 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

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Date permit issued 1/29/2020 Date drilling commenced 5/28/2020 Date drilling ceased 6/13/2020  
Date completion activities began 7/19/2020 Date completion activities ceased 10/08/2020  
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 322' Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 1195' Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 1086' Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

Reviewed by:  
*Jai Thibodeau*  
12/18/2020

API 47-051 - 02127 Farm name CHARLES AND JEAN JAMISON Well number CHARLES JAMISON MSH 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	442'	NEW	J-55/54.50#		Y, 15 BBLS
Coal	SEE SURFACE						
Intermediate 1	12.25	9.625	2,688'	NEW	J-55/36#		Y, 89 BBLS
Intermediate 2							
Intermediate 3							
Production	8.75/8.50	5.5	24,014'	NEW	HCP-110/20#		Y, 4 BBLS
Tubing		2.375		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	452	15.60	1.21	546.92	SURFACE	8
Coal	SEE SURFACE						
Intermediate 1	CLASS A	1,076	16.00	1.12	1,205.12	SURFACE	8
Intermediate 2	CLASS A	150	15.60	1.18	177		
Intermediate 3							
Production	CLASS A	4,337	15.60	1.19	5,161.03	SURFACE	24
Tubing							

Drillers TD (ft) 24,014' Loggers TD (ft) 24,014'  
 Deepest formation penetrated MARCELLUS Plug back to (ft) N/A  
 Plug back procedure N/A

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Kick off depth (ft) 6,493'

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Check all wireline logs run  caliper  density  deviated/directional  induction  
 neutron  resistivity  gamma ray  temperature  sonic

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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 \_\_\_\_\_

API 47- 051 - 02127 Farm name CHARLES AND JEAN JAMISON Well number CHARLES JAMISON MSH 8H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
	SEE	ATTACHMENT	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 (cubic ft)	Amount of Oil and Gas
		SEE	ATTACHMENT	2					

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Please insert additional pages as applicable.

API 47- 051 - 02127 Farm name CHARLES AND JEAN JAMISON Well number CHARLES JAMISON MSH 8H

PRODUCING FORMATION(S)	DEPTHS	
MARCELLUS	7,105'	TVD 7,845' MD

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 2918 psi Bottom Hole \_\_\_\_\_ psi DURATION OF TEST \_\_\_\_\_ hrs

OPEN FLOW Gas 8,192 mcfpd Oil 11 bpd NGL \_\_\_\_\_ bpd Water 0 bpd GAS MEASURED BY  Estimated  Orifice  Pilot

LITHOLOGY/ FORMATION	TOP		BOTTOM		DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H,S, ETC)
	DEPTH IN FT NAME	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	0 SEE	ATTACHMENT	0 3		

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Please insert additional pages as applicable.

Drilling Contractor SWN DRILLING COMPANY  
Address PO BOX 12359 City SPRING State TX Zip 77391-2359

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Logging Company BAKER HUGHES  
Address 9110 GROGANS MILL RD City THE WOODLANDS State TX Zip 77380

Cementing Company BJ SERVICES  
Address 11211 FM 2920 City TOMBALL State TX Zip 77377

Stimulating Company SWN DRILLING COMPANY  
Address PO BOX 12359 City SPRING State TX Zip 77391

Please insert additional pages as applicable.

Completed by BOBBY WILLIS Telephone 832-796-2884  
Signature *Bobby Willis* Title SENIOR REGULATORY ANALYST Date 11/19/2020

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

**CHARLES JAMISON MSH 8H  
ATTACHMENT 1  
PERF REPORT**

STAGE NUM	Perf Date	Perf Bottom MD	Perf Top MD2	# SHOTS PER STG
1	7/12/2020	23,968	23,877	36
2	7/20/2020	23,844	23,667	36
3	7/21/2020	23,633	23,456	36
4	7/22/2020	23,423	23,245	36
5	7/22/2020	23,212	23,035	36
6	7/23/2020	23,002	22,824	36
7	7/24/2020	22,793	22,614	36
8	7/26/2020	22,578	22,403	36
9	7/26/2020	22,370	22,192	36
10	7/27/2020	22,159	21,982	36
11	7/29/2020	21,949	21,775	36
12	7/30/2020	21,738	21,560	36
13	7/30/2020	21,522	21,350	36
14	7/31/2020	21,317	21,139	36
15	8/1/2020	21,106	20,929	36
16	8/2/2020	20,896	20,718	36
17	8/3/2020	20,685	20,504	36
18	8/4/2020	20,474	20,297	36
19	8/5/2020	20,261	20,086	36
20	8/5/2020	20,053	19,876	36
21	8/6/2020	19,843	19,665	36
22	8/6/2020	19,632	19,455	36
23	8/7/2020	19,421	19,244	36
24	8/8/2020	19,211	19,033	36
25	8/8/2020	19,000	18,825	36
26	8/9/2020	18,790	18,610	36
27	8/10/2020	18,581	18,402	36
28	8/10/2020	18,365	18,191	36
29	8/10/2020	18,158	17,980	36
30	8/11/2020	17,947	17,770	36
31	8/12/2020	17,737	17,559	36
32	8/12/2020	17,529	17,349	36
33	8/13/2020	17,315	17,138	36
34	8/14/2020	17,105	16,927	36
35	8/15/2020	16,894	16,717	36
36	8/16/2020	16,684	16,506	36
37	8/16/2020	16,473	16,296	36
38	8/17/2020	16,262	16,085	36
39	8/18/2020	16,052	15,874	36
40	8/18/2020	15,841	15,664	36
41	8/19/2020	15,631	15,453	36
42	8/20/2020	15,420	15,243	36

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**PERF REPORT**

STAGE NUM	Perf Date	Perf Bottom MD	Perf Top MD2	# SHOTS PER STG
43	8/21/2020	15,209	15,032	36
44	8/22/2020	14,999	14,823	36
45	8/22/2020	14,788	14,611	36
46	8/23/2020	14,574	14,400	36
47	8/24/2020	14,367	14,190	36
48	8/25/2020	14,156	13,979	36
49	8/26/2020	13,946	13,768	36
50	8/27/2020	13,735	13,558	36
51	8/27/2020	13,525	13,352	36
52	8/28/2020	13,314	13,135	36
53	8/29/2020	13,103	12,926	36
54	8/30/2020	12,895	12,715	36
55	8/30/2020	12,681	12,505	36
56	8/30/2020	12,471	12,294	36
57	8/31/2020	12,261	12,084	36
58	8/31/2020	12,050	11,873	36
59	9/1/2020	11,840	11,662	36
60	9/1/2020	11,629	11,457	36
61	9/2/2020	11,419	11,241	36
62	9/2/2020	11,204	11,031	36
63	9/3/2020	10,997	10,820	36
64	9/4/2020	10,787	10,609	36
65	9/4/2020	10,576	10,399	36
66	9/5/2020	10,366	10,190	36
67	9/5/2020	10,155	9,978	36
68	9/5/2020	9,944	9,767	36
69	9/6/2020	9,734	9,559	36
70	9/6/2020	9,523	9,346	36
71	9/6/2020	9,313	9,135	36
72	9/7/2020	9,106	8,925	36
73	9/8/2020	8,891	8,714	36
74	9/8/2020	8,681	8,503	36
75	9/9/2020	8,470	8,293	36
76	9/9/2020	8,260	8,082	36

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**CHARLES JAMISON MSH 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/othr
1	7/19/2020	65	9,073	6,465	3,689	174,920	6,806	0
2	7/20/2020	67.13	9,559	6,604	4,017	159,110	8,890	0
3	7/21/2020	85	9,017	6,230	5,135	261,500	9,417	0
4	7/22/2020	86.25	8,576	6,421	5,468	307,560	8,358	0
5	7/23/2020	88.57	9,336	5,751	5,051	278,780	8,607	0
6	7/23/2020	86.38	9,405	6,912	4,512	308,800	8,764	0
7	7/24/2020	88.57	9,488	7,014	5,060	306,440	8,604	0
8	7/26/2020	85.5	9,249	6,425	4,920	312,900	9,175	0
9	7/26/2020	91.5	9,689	6,736	4,058	309,900	8,469	0
10	7/29/2020	80.29	8,670	6,174	4,875	306,200	9,012	0
11	7/29/2020	82.25	9,150	6,307	4,453	282,510	8,128	0
12	7/30/2020	85.5	8,980	6,601	4,473	302,530	8,584	0
13	7/30/2020	86.88	9,050	6,759	4,987	305,670	8,545	0
14	8/1/2020	82.5	9,155	6,533	5,244	299,680	9,156	0
15	8/1/2020	69	8,722	6,313	6,163	180,720	8,313	0
16	8/2/2020	79.14	8,858	7,109	4,219	282,010	8,899	0
17	8/3/2020	86	8,948	6,840	5,041	303,640	8,481	0
18	8/4/2020	84.38	8,794	6,222	4,468	299,250	8,384	0
19	8/5/2020	96.25	9,239	6,346	5,059	308,690	8,861	0
20	8/6/2020	93.5	9,272	6,315	5,737	306,590	8,878	0
21	8/6/2020	96.75	9,352	6,376	4,950	313,250	8,704	0
22	8/7/2020	94	9,240	7,068	5,273	311,580	8,561	0
23	8/8/2020	94.43	9,176	6,851	4,825	305,020	8,568	0
24	8/8/2020	86.13	9,226	7,223	4,875	312,200	8,672	0
25	8/9/2020	99.63	9,026	6,585	5,132	304,230	8,616	0
26	8/9/2020	99.25	8,973	6,887	5,269	310,500	9,254	0
27	8/10/2020	100	8,960	6,906	5,104	285,570	8,232	0
28	8/10/2020	100	8,605	6,826	4,923	306,380	8,585	0
29	8/11/2020	101	8,652	6,652	5,225	308,160	8,906	0
30	8/12/2020	100	8,920	7,188	5,257	311,250	8,502	0
31	8/12/2020	99.25	8,365	6,780	5,365	305,530	7,839	0
32	8/13/2020	98	8,831	6,032	5,452	300,460	7,387	0
33	8/14/2020	98.88	8,589	6,086	5,134	307,160	7,433	0
34	8/15/2020	100	8,442	6,521	5,139	301,170	7,423	0
35	8/15/2020	100	8,743	6,314	4,897	303,740	7,326	0
36	8/16/2020	98.57	8,792	6,658	5,047	307,960	7,920	0
37	8/17/2020	99.67	9,037	6,907	5,565	240,800	6,433	0
38	8/17/2020	98.13	8,690	6,218	4,656	311,360	7,226	0
39	8/18/2020	97.25	8,564	6,173	5,146	308,320	7,305	0
40	8/19/2020	93.13	8,701	5,894	5,204	308,130	7,271	0
41	8/20/2020	92.75	8,546	6,598	4,865	301,310	7,319	0
42	8/21/2020	94.75	8,419	6,355	5,222	306,320	7,457	0
43	8/22/2020	90.88	8,391	6,437	5,203	311,960	7,473	0
44	8/22/2020	94.38	8,203	6,483	5,245	304,850	7,359	0
45	8/23/2020	92.75	8,237	6,401	5,666	301,670	7,367	0
46	8/24/2020	95.25	8,147	5,713	5,509	310,770	7,495	0
47	8/25/2020	90.86	8,176	6,229	5,520	302,880	7,387	0
48	8/26/2020	94.5	8,148	6,318	5,114	303,720	7,261	0
49	8/26/2020	93.13	8,172	5,544	5,373	311,130	7,294	0
50	8/27/2020	99.75	8,398	5,128	5,456	302,570	7,235	0
51	8/28/2020	100	8,255	5,645	5,079	304,360	7,327	0
52	8/29/2020	97.25	8,398	6,210	5,452	302,280	7,293	0
53	8/29/2020	94.87	8,261	5,151	5,455	304,950	7,192	0

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**CHARLES JAMISON MSH 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
54	8/30/2020	99.25	8,067	5,675	5,784	311,270	7,470	0
55	8/30/2020	91.38	8,145	4,717	5,362	305,800	7,303	0
56	8/31/2020	98.5	8,386	7,012	5,237	307,580	7,231	0
57	8/31/2020	93.75	8,248	6,131	5,500	303,080	7,369	0
58	9/1/2020	100	8,224	5,142	5,083	310,160	7,417	0
59	9/1/2020	95.5	8,012	5,899	5,032	306,700	7,257	0
60	9/2/2020	100	7,906	6,299	4,895	312,060	7,140	0
61	9/2/2020	100	7,963	6,154	5,024	305,730	7,308	0
62	9/3/2020	100	7,884	5,556	5,251	308,340	7,354	0
63	9/3/2020	100	7,716	5,455	4,891	306,230	7,423	0
64	9/4/2020	100	7,823	6,773	4,721	305,957	7,049	0
65	9/4/2020	100	7,977	6,623	5,007	308,660	7,415	0
66	9/5/2020	100	7,712	5,596	5,046	304,930	7,247	0
67	9/5/2020	100.25	7,639	5,915	4,850	311,280	7,377	0
68	9/6/2020	100	7,635	6,209	5,015	307,560	7,253	0
69	9/6/2020	100	7,562	6,589	5,309	309,350	7,057	0
70	9/6/2020	100.75	7,589	6,102	5,297	306,120	7,158	0
71	9/6/2020	100	7,713	6,628	5,896	300,730	7,156	0
72	9/7/2020	100	7,524	6,225	5,108	305,130	7,065	0
73	9/8/2020	100	7,735	6,448	5,872	309,250	7,495	0
74	9/8/2020	101	7,460	6,201	6,003	306,540	7,428	0
75	9/9/2020	100	7,291	6,345	5,203	312,660	7,135	0
76	9/9/2020	100	7,423	5,872	5,289	306,540	6,840	0

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Well Name: Charles Jamison MSH 8H

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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	322.00	322.00	
Top of Salt Water	1195.00	1195.00	NA	NA	
Pittsburgh Coal	1086.00	1086.00	1189.00	1189.00	
Pottsville (ss)	1189.00	1189.00	1632.00	1632.00	
Raven Cliff (ss)	1632.00	1632.00	2044.00	2044.00	
Maxton (ss)	2044.00	2044.00	2241.00	2236.00	
Big Injun (ss)	2241.00	2236.00	2848.00	2830.00	
Berea (siltstone)	2848.00	2830.00	7472.00	6873.00	
Middlesex (shale)	7472.00	6873.00	7584.00	6961.00	
Burket (shale)	7584.00	6961.00	7616.00	6984.00	
Tully (ls)	7616.00	6984.00	7649.00	7006.00	
Mahantango (shale)	7649.00	7006.00	7845.00	7105.00	
Marcellus (shale)	7845.00	7105.00	NA	NA	GAS

## Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	7/19/2020
Job End Date:	9/9/2020
State:	West Virginia
County:	Marshall
API Number:	47-051-02127-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	CHARLES JAMISON MSH 8
Latitude:	39.79188584
Longitude:	-80.60762038
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	7,144
Total Base Water Volume (gal):	24,881,734
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
Ecopol-FEAC	SWN Well Services	Iron Control					<b>RECEIVED</b> <b>Office of Oil and Gas</b> <b>NOV 23 2020</b> <b>WV Department of Environmental Protection</b>
				Listed Below			
Econo-CI200	SWN Well Services	Corrosion Inhibitor					<b>RECEIVED</b> <b>Office of Oil and Gas</b> <b>NOV 23 2020</b> <b>WV Department of Environmental Protection</b>
				Listed Below			

Plexaid 655WG	SWN Well Services	Scale Inhibitor					
				Listed Below			
Tolicide PS 50A	SWN Well Services	Biocide					
				Listed Below			
HCL	SWN Well Services	Solvent					
				Listed Below			
SWN FRW-11LC	SWN Well Services	Friction Reducer					
				Listed Below			
Base Water	Operator	Base Fluid					
				Listed Below			
Sand	SWN Well Services	Proppant					
				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	89.58655	Density = 8.345
			Crystalline Silica, quartz	14808-60-7	100.00000	9.79429	
			Water	7732-18-5	85.00000	0.48635	
			Hydrochloric Acid	7647-01-0	15.00000	0.06273	
			Petroleum Distillates, Hydrotreated	64742-47-8	25.00000	0.04139	
			Tetrakis	55566-30-8	55.00000	0.01463	
			Ammonium Chloride	12125-02-9	2.00000	0.00331	
			Glycerin	56-81-5	50.00000	0.00294	

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			Oleic Acid Diethanolamide	93-83-4	1.50000	0.00248	
			Alcohols, C12-1, ethoxylated	68551-12-2	1.50000	0.00248	
			Acetic Acid	64-19-7	37.50000	0.00084	
			Diethylenetriamine penta	15827-60-8	10.00000	0.00059	
			Methanol	67-56-1	80.00000	0.00051	
			Citric Acid	77-92-9	22.50000	0.00050	
			Acrylic acid terpolymer	397256-50-7	1.00000	0.00027	
			Oxyalkylated fatty acid	68951-67-7	9.67400	0.00006	
			Fatty acids	61790-12-3	5.02700	0.00003	
			Modified thiourea polymer	68527-49-1	4.74600	0.00003	
			Potassium acetate	127-08-2	0.02200	0.00000	
			Formaldehyde	50-00-0	0.00400	0.00000	

\* 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(f) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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Environmental Protection

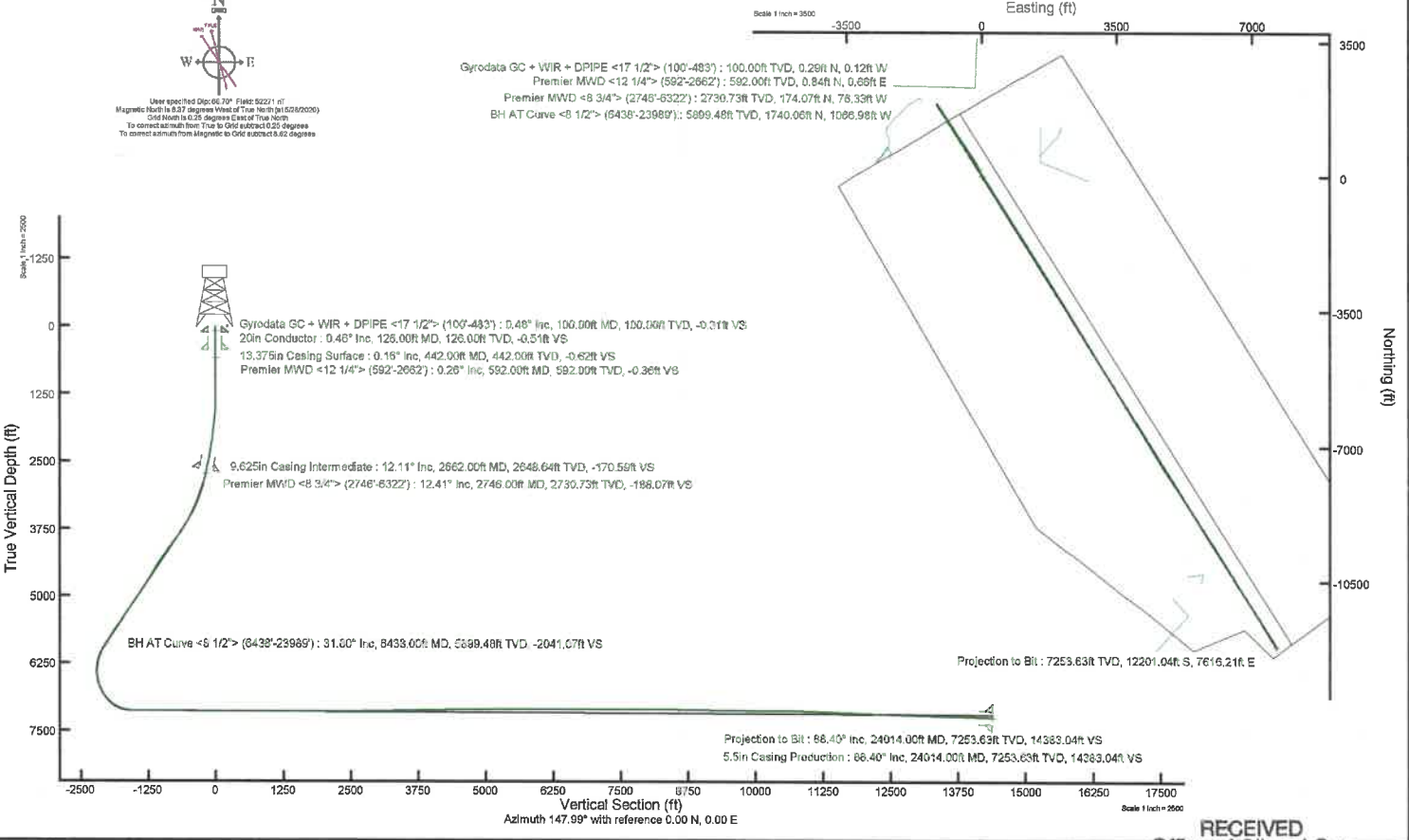
# SWN PRODUCTION COMPANY, LLC

Location: Marshall County, WV Slot: Slot 8H  
 Field: Marshall Well: Charles Jamison MSH 8H  
 Facility: Charles Jamison MSH Pad Wellbore: Charles Jamison MSH 8H PWB



Location Information				
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Charles Jamison MSH Pad	1750538.500	14451211.924	39°47'30.5700"N	80°36'27.4000"W
Slot	Local N (ft)	Local E (ft)	Grid North (US ft)	Longitude
Slot 8H	-18.32	-2.52	1750535.980	14451193.610
SDC 46 (KB) to Mud line (At Slot: Slot 8H)				26ft
Mean Sea Level to Mud line (At Slot: Slot 8H)				-1337.3ft
SDC 46 (KB) to Mean Sea Level				1363.3ft
Comments				
API: 47-051-02127-0000				
BH Job #: 110433029				
Rig: SDC 46				
Duration: 06/06/2020 - 06/10/2020				

Reference wellbore is Charles Jamison MSH 8H PWB Rev 0.0	Grid System: NAD83 / UTM Zone 17 North, US Feet
True vertical depths are referenced to SDC 46 (KB)	North Reference: Grid north
Reference wellbore measured depths are referenced to SDC 46 (KB)	Scale: True distance
SDC 46 (KB) to Mean Sea Level: 1363.3 feet	Coordinates are in feet referenced to Slot
Mean Sea Level to Mud line (At Slot: Slot 8H): -1337.3 feet	Depths are in feet
Other wellbore MDs are referenced to each other relative MD datum	Created by: bhwjw@swnc.com 2020-06-12, Database: WVA_MPL_EASTERNUS_Datm



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Latitude: 39°50'00" (SHL)

SURFACE HOLE 6825'

BOTTOM HOLE 10980'

Latitude: 39°47'30" (BHL)

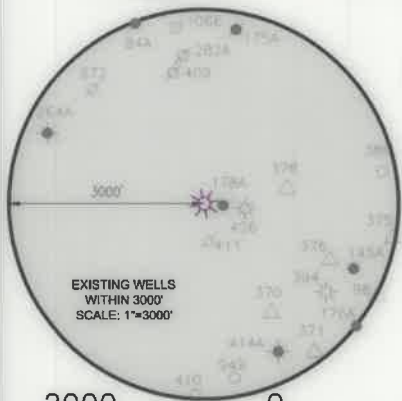
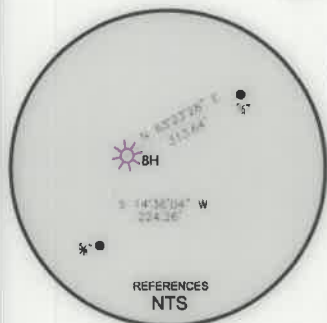


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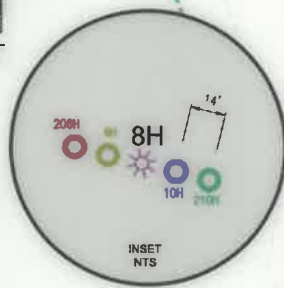
SWN PRODUCTION COMPANY, LLC "CHARLES JAMISON MSH 8H" SURFACE HOLE

GRID NORTH UTM, NAD83, ZONE 17, US FT

<b>SURFACE HOLE LOCATION (SHL):</b>
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,404,732.622
EASTING: 533,594.914
<b>LANDING POINT LOCATION (LPL):</b>
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,405,130.417
EASTING: 533,346.227
<b>BOTTOM HOLE LOCATION (BHL):</b>
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,401,015.179
EASTING: 535,915.437
<b>PERMIT SURFACE HOLE LOCATION (SHL):</b>
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,404,732.948
EASTING: 533,594.591
<b>PERMIT LANDING POINT LOCATION (LPL):</b>
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,405,132.054
EASTING: 533,348.077
<b>PERMIT BOTTOM HOLE LOCATION (BHL):</b>
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,401,015.405
EASTING: 535,921.359



GRAPHIC SCALE IN FEET



WELL RESTRICTIONS

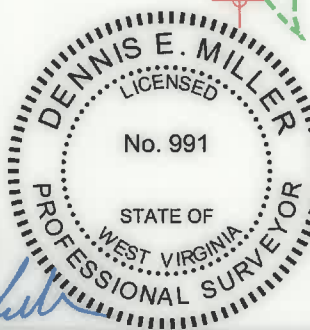
1. NO OCCUPIED DWELLINGS > 2500 SQ FT. WITHIN 625 FEET OF CENTER OF PAD.
2. NO AGRICULTURE BUILDINGS > 2500 SQ FT. WITHIN 625 FEET OF CENTER OF PAD.
3. WATER WELLS OR DEVELOPED SPRINGS ARE WITHIN 625 FEET OF PROPOSED WELL.
4. PERENNIAL STREAMS, LAKES, PONDS, OR RESERVOIRS WITHIN 600 FEET OF THE LIMITS 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



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COMPANY: SWN SWN Production Company, LLC Production Company, LLC



(+) 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)

CHARLES JAMISON MSH OPERATOR'S WELL #: 8H API WELL #: 47 STATE 051 COUNTY 02127 PERMIT

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

WATERSHED: MAGGOTY RUN DISTRICT: LIBERTY DISTRICT COUNTY: MARSHALL ELEVATION: 1335.0' QUADRANGLE: CAMERON

SURFACE OWNER: CHARLES AND JEAN JAMISON OIL & GAS ROYALTY OWNER: CHARLES AND JEAN JAMISON ACREAGE: 97.2± ACREAGE: 97.2±

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: 7,253.63 TVD 24,014 TMD

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

DESIGNATED AGENT: BRITTANY WOODY ADDRESS: 1300 FORT PIERPONT DRIVE, STE 201 CITY: MORGANTOWN STATE: WV ZIP CODE: 26508

LEGEND:	○ PROPOSED SURFACE HOLE / BOTTOM HOLE	— SURVEYED BOUNDARY	REVISIONS:	DATE: 11-16-2020
	○ EXISTING / PRODUCING WELLHEAD	— DRILLING UNIT		
LPL	★ LANDING POINT LOCATION	— LEASE BOUNDARY		DRAWN BY: K.E.S.
W	○ EXISTING WATER WELL	— ASDRILLED PATH		SCALE: 1" = 2000'
S	○ EXISTING SPRING	— PROPOSED PATH		DRAWING NO: 170-426
				WELL LOCATION PLAT

Longitude: 80°32'30" (BHL) Longitude: 80°35'00" (SHL) SURFACE HOLE 15099' BOTTOM HOLE 12156'



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	CHARLES AND JEAN JAMISON	07-007-0006
2	CONSOLIDATED COAL COMPANY	07-007-0006.3
3	GAIL ZWICK - LIFE	07-007-0012
4	TIMOTHY R. CAIN	07-007-0006.1
5	GAIL ZWICK - LIFE	07-007-0014
6	CO. RT. 23 ROW (CAMERON RIDGE ROAD)	
7	CONSOLIDATED COAL COMPANY	07-010-0019
8	GARY RAY DOBBS, ET UX	07-010-0021
9	HOWARD E. WILLIAMS	07-010-0025.1
10	NAOMI WILLIAMS STARKEY	07-010-0025
11	RUSSELL ALLEN DOTSON JR, ET UX	07-016-0031
12	DONALD REX QUIGLEY, ET UX	07-016-0033
13	DAVID L. ELSON, ET UX	07-016-0032
14	CO. RT. 96 ROW	
15	DAVID L. ELSON, ET UX	07-016-0034
16	DONALD REX QUIGLEY, ET UX	07-016-0036
17	LILLIAN A. FERBY	07-020-0021

**ADJOINING OWNERS TABLE**

TRACT	SURFACE OWNER	TAX PARCEL
A	KENNETH WAYNE STEELE TRUST	07-007-0008.1
B	KENNETH WAYNE STEELE TRUST	07-007-0011
C	GAIL ZWICK - LIFE	07-006-0008
D	CONSOL MINING COMPANY LLC	07-006-0010
E	GAIL ZWICK - LIFE	07-006-0012.1
F	JACK R. BUZZARD, ET UX	07-010-0020
G	JACK R. BUZZARD, ET UX	07-011-0001
H	CONSOL COMPANY LLC	07-011-0003
I	SCOTT D. SHALAWAY, ET UX	07-011-0004
J	DONALD REX QUIGLEY, ET UX	07-011-0005
K	DONALD QUIGLEY, ET UX	07-011-0017
L	ANDREW MCCURDY, ET UX	07-016-0036.2
M	HINKLE FAMILY TRUST	07-015-0001
N	DONALD REX AND ELLEN QUIGLEY	07-016-0036.1
O	STEPHANIE L. WHITE	07-016-0036.3
P	TERRY A. AND DONNA L. BONAR	07-016-0035
Q	JAMES W. DEVER	07-020-0022
R	CLAUDE R. STEPHENS EST, ET AL	07-020-0023
S	AMMON A. BURLEY	07-020-0024
T	CONRAD M. BERISFORD, ET UX	07-020-0020
U	CONRAD M. BERISFORD, ET UX	07-020-0019
V	AMMON A. BURLEY	07-020-0018
W	WYATT A. MCCLURE	07-020-0017
X	ROBERT B. MCCLURE	07-020-0013
Y	JOHN E. RIGGS JR, ET UX	07-016-0044
Z	LOUIS S. MCCLELLAND EST	07-016-0037
AA	JOHN MATTHEW BUTLER	07-016-0039
BB	JEREMIAH N. AND ANDREA J. MAGERS	07-016-0033.1
CC	JOHN M. BUTLER	07-016-0026.1
DD	RUSSELL ALLEN DOTSON JR, ET UX	07-016-0028
EE	RALPH E. WILLIAMS	07-016-0030
FF	DELORSE A. HORNER - LIFE	07-016-0023
GG	GARY RAY DOBBS, ET AL	07-010-0022
HH	GARY RAY DOBBS, ET AL	07-010-0018
II	JEFFREY A. MURRAY	07-010-0018.2
JJ	CHARLES AND JEAN JAMISON	07-007-0013
KK	GARY RAY DOBBS, ET AL	07-010-0017
LL	CONSOL MINING COMPANY LLC	07-007-0005.3
MM	TIMOTHY R. CAIN	07-007-0006.2
NN	CONSOLIDATED COAL COMPANY	07-007-0007
OO	CONSOLIDATED COAL COMPANY	07-007-0007.1

**AS-DRILLED**

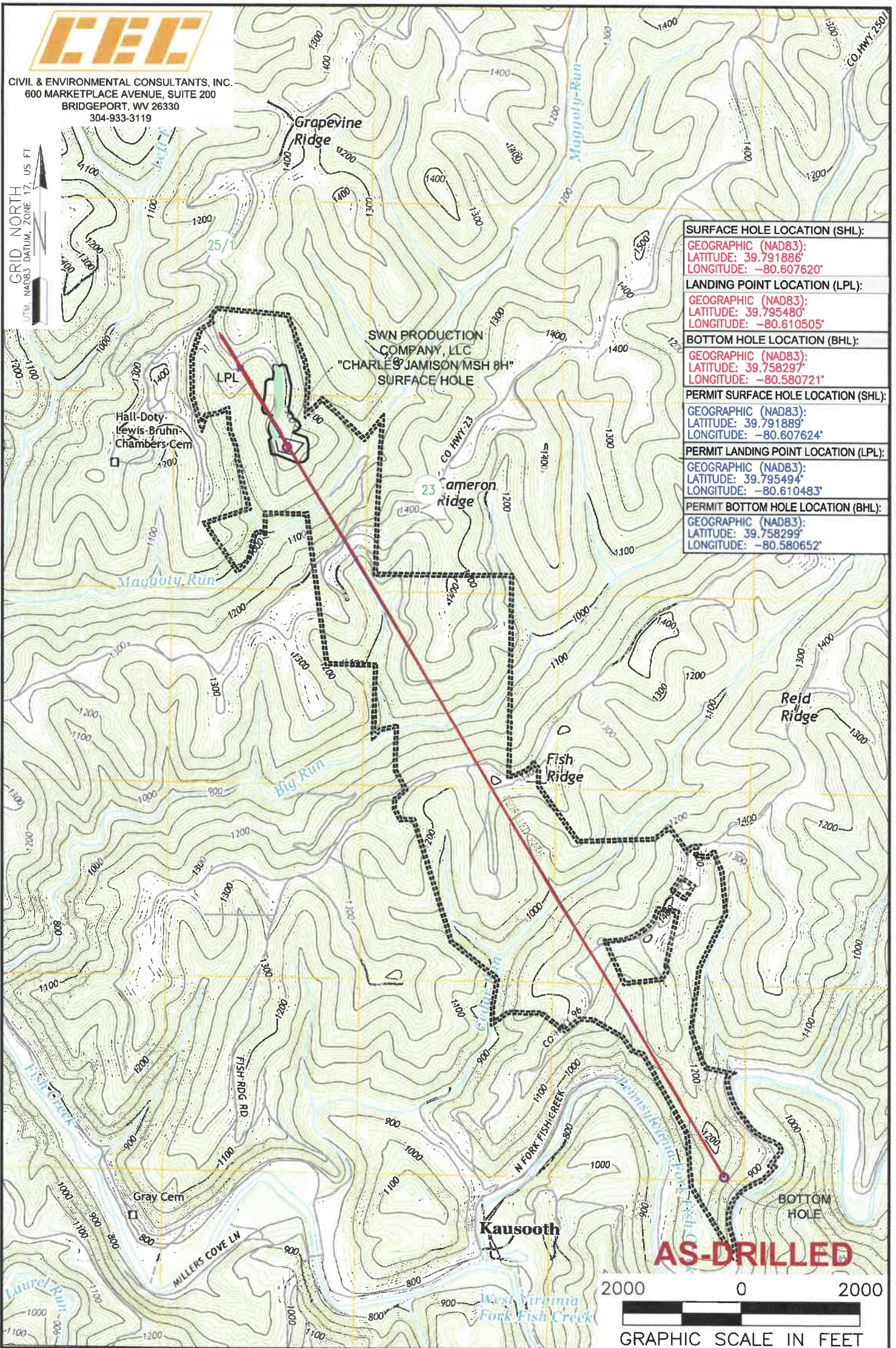
API WELL #: **47**      **051** **02127**  
 STATE                      COUNTY                      PERMIT

REVISIONS:	COMPANY:			
	OPERATOR'S		CHARLES JAMISON MSH	
	WELL #:		8H	
	DISTRICT:	COUNTY:	STATE:	DATE: 11-16-2020
	LIBERTY DISTRICT	MARSHALL	WV	DRAWN BY: K.E.S.
				SCALE: N/A
				DRAWING NO: 170-426
				WELL LOCATION PLAT 2



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

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



<b>SURFACE HOLE LOCATION (SHL):</b>
<b>GEOGRAPHIC (NAD83):</b> LATITUDE: 39.791886° LONGITUDE: -80.607620°
<b>LANDING POINT LOCATION (LPL):</b>
<b>GEOGRAPHIC (NAD83):</b> LATITUDE: 39.795480° LONGITUDE: -80.610505°
<b>BOTTOM HOLE LOCATION (BHL):</b>
<b>GEOGRAPHIC (NAD83):</b> LATITUDE: 39.758297° LONGITUDE: -80.580721°
<b>PERMIT SURFACE HOLE LOCATION (SHL):</b>
<b>GEOGRAPHIC (NAD83):</b> LATITUDE: 39.791889° LONGITUDE: -80.607624°
<b>PERMIT LANDING POINT LOCATION (LPL):</b>
<b>GEOGRAPHIC (NAD83):</b> LATITUDE: 39.795494° LONGITUDE: -80.610483°
<b>PERMIT BOTTOM HOLE LOCATION (BHL):</b>
<b>GEOGRAPHIC (NAD83):</b> LATITUDE: 39.758299° LONGITUDE: -80.580652°



**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.

**LEGEND:**

- PROPOSED SURFACE HOLE / BOTTOM HOLE
- EXISTING / PRODUCING WELLHEAD
- LPL\* LANDING POINT LOCATION
- FLOOD PLAIN
- ACCESS ROAD
- PUBLIC ROAD
- ACCESS ROAD TO PREV. SITE
- LEASE BOUNDARY
- PROPOSED PATH
- ASDRILLED PATH

<b>WELL OPERATOR:</b> SWN PRODUCTION COMPANY, LLC	<b>WELL (FARM) NAME:</b> CHARLES JAMISON MSH	<b>WELL #</b> 8H	<b>SERIAL #</b> XXXX
<b>ADDRESS:</b> 1300 FORT PIERPONT DRIVE, STE 201, MORGANTOWN, WV 26508	<b>COUNTY - CODE</b> MARSHALL - 051	<b>DISTRICT;</b> LIBERTY DISTRICT	
<b>SURFACE OWNER:</b> CHARLES AND JEAN JAMISON	<b>USGS 7 1/2 QUADRANGLE MAP NAME</b> CAMERON, WV		