

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

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JAN 26 2023

API 47-051-02189 County Marshall District Franklin
Quad Powhatan Point 7.5' Pad Name Old Crow Field/Pool Name _____
Farm name Donna Yoho Well Number Old Crow N-1HM
Operator (as registered with the OOG) Tug Hill Operating, LLC
Address 380 Southpointe Boulevard, Plaza II, Suite 200 City Canonsburg State PA Zip 15317

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,403,201.98 Easting 520,278.65
Landing Point of Curve Northing 4,403,889.2 Easting 519,874.0
Bottom Hole Northing 4,407,357.4 Easting 517,851.7

Elevation (ft) 1,264.99' 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; Base oil, osmotic inhibitor, weighting agent, viscosifier, emulsifier, hardness buffer, fluid loss additive, LCM, Shale inhibitor, de-foamer, soaping agent, coagulant, flocculant; specific additives per WSSP and Permit.

Date permit issued 4/12/2019 Date drilling commenced spud: 1/25/21 big rig: 8/28/21 Date drilling ceased 2/11/2022
Date completion activities began 10/2/2022 Date completion activities ceased 11/4/2022
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 919' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1,353' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 821-827', 913-919' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
[Signature]
03/17/2023
2-1-2023

API 47-051 - 02189 Farm name Donna Yoho Well number Old Crow N-1HM

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	36"	30"	120'	NEW	94.5#	N/A	Y
Surface	17 1/2"	13 3/8"	1,014'	NEW	54.5#	N/A	Y
Coal	17 1/2"	13 3/8"	1,014'	NEW	54.5#	N/A	Y
Intermediate 1	12 1/4"	9 5/8"	2,837'	NEW	36#	N/A	Y
Intermediate 2							Y
Intermediate 3							
Production	8 1/2"	5 1/2"	20,738'	NEW	20#	N/A	Y
Tubing		2 7/8"	10,369'	NEW	4.7#	N/A	Y
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	A	65	15.6	1.21	78	0	8
Surface	A	1,090	15.6	1.20	908	0	8
Coal	A	1,090	15.6	1.20	908	0	8
Intermediate 1	A	815	15	1.4	582	0	8
Intermediate 2							
Intermediate 3							
Production	A	5465	15.5	1.77	3,088	0	8
Tubing							

Drillers TD (ft) 20,797 Loggers TD (ft) n/a
 Deepest formation penetrated Marcellus Plug back to (ft) n/a
 Plug back procedure n/a

Kick off depth (ft) 6,728'

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

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING 3 centralizers on surface casing at equal distance.
 Intermediate - 1 centralizer every other joint.
 Production - one centralizer every other joint in lateral, one centralizer every joint through curve, one centralizer every other joint to surface.

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 _____

**OLD CROW N-1HM
PEFORATION RECORD**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
1	10/2/2022	20,554	20,601	16	Marcellus
2	10/2/2022	20,354	20,500	48	Marcellus
3	9/19/2022	20,179	20,325	48	Marcellus
4	10/3/2022	20,004	20,150	48	Marcellus
5	10/3/2022	19,829	19,975	48	Marcellus
6	10/4/2022	19,654	19,800	48	Marcellus
7	10/4/2022	19,479	19,625	48	Marcellus
8	10/4/2022	19,304	19,450	48	Marcellus
9	10/5/2022	19,129	19,275	48	Marcellus
10	10/5/2022	18,954	19,100	48	Marcellus
11	10/6/2022	18,779	18,925	48	Marcellus
12	10/6/2022	18,604	18,750	48	Marcellus
13	10/7/2022	18,429	18,575	48	Marcellus
14	10/7/2022	18,254	18,400	48	Marcellus
15	10/7/2022	18,079	18,225	48	Marcellus
16	10/8/2022	17,904	18,050	48	Marcellus
17	10/8/2022	17,729	17,875	48	Marcellus
18	10/9/2022	17,554	17,700	48	Marcellus
19	10/9/2022	17,379	17,525	48	Marcellus
20	10/10/2022	17,204	17,350	48	Marcellus
21	10/10/2022	17,029	17,175	48	Marcellus
22	10/10/2022	16,854	17,000	48	Marcellus
23	10/11/2022	16,679	16,825	48	Marcellus
24	10/11/2022	16,504	16,650	48	Marcellus
25	10/12/2022	16,329	16,475	48	Marcellus
26	10/12/2022	16,154	16,300	48	Marcellus
27	10/13/2022	15,979	16,125	48	Marcellus
28	10/13/2022	15,804	15,950	48	Marcellus
29	10/13/2022	15,629	15,775	48	Marcellus
30	10/14/2022	15,454	15,600	48	Marcellus
31	10/14/2022	15,279	15,425	48	Marcellus
32	10/15/2022	15,104	15,250	48	Marcellus
33	10/15/2022	14,929	15,075	48	Marcellus
34	10/16/2022	14,754	14,900	48	Marcellus
35	10/16/2022	14,579	14,725	48	Marcellus
36	10/16/2022	14,404	14,550	48	Marcellus
37	10/17/2022	14,229	14,375	48	Marcellus
38	10/17/2022	14,054	14,200	48	Marcellus
39	10/18/2022	13,879	14,025	48	Marcellus
40	10/18/2022	13,704	13,850	48	Marcellus
41	10/19/2022	13,529	13,675	48	Marcellus

03/17/2023

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
42	10/19/2022	13,354	13,500	48	Marcellus
43	10/19/2022	13,179	13,325	48	Marcellus
44	10/20/2022	13,004	13,150	48	Marcellus
45	10/20/2022	12,829	12,975	48	Marcellus
46	10/21/2022	12,654	12,800	48	Marcellus
47	10/21/2022	12,479	12,625	48	Marcellus
48	10/22/2022	12,304	12,450	48	Marcellus
49	10/22/2022	12,129	12,275	48	Marcellus
50	10/22/2022	11,954	12,100	48	Marcellus
51	10/23/2022	11,779	11,925	48	Marcellus
52	10/23/2022	11,604	11,750	48	Marcellus
53	10/24/2022	11,429	11,575	48	Marcellus
54	10/24/2022	11,254	11,400	48	Marcellus
55	10/25/2022	11,079	11,225	48	Marcellus
56	10/25/2022	10,904	11,050	48	Marcellus
57	10/25/2022	10,729	10,875	48	Marcellus
58	10/26/2022	10,554	10,700	48	Marcellus
59	10/26/2022	10,379	10,525	48	Marcellus
60	10/27/2022	10,204	10,350	48	Marcellus
61	10/27/2022	10,029	10,175	48	Marcellus
62	10/28/2022	9,854	10,000	48	Marcellus
63	10/28/2022	9,679	9,825	48	Marcellus
64	10/28/2022	9,504	9,650	48	Marcellus
65	10/29/2022	9,329	9,475	48	Marcellus
66	10/29/2022	9,154	9,300	48	Marcellus
67	10/30/2022	8,979	9,125	48	Marcellus
68	10/30/2022	8,804	8,950	48	Marcellus
69	10/31/2022	8,629	8,775	48	Marcellus
70	10/31/2022	8,454	8,600	48	Marcellus
71	11/2/2022	8,279	8,425	48	Marcellus
72	11/1/2022	8,104	8,250	48	Marcellus
73	11/1/2022	7,929	8,075	48	Marcellus
74	11/2/2022	7,754	7,900	48	Marcellus
75	11/3/2022	7,579	7,725	48	Marcellus
76	11/4/2022	7,404	7,550	48	Marcellus

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Old Crow N-1HM
STIMULATION INFORMATION PER STAGE

Stage No.	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 (units)
1	83.00	6970	7603	3416	251860	6,586	0
2	83.00	7196	7543	4070	445480	8,732	0
3	83.00	4533	4710	4550	436480	8,534	0
4	84.00	7109	7357	4491	446700	8,645	0
5	84.00	7209	7449	4920	445500	8,599	0
6	85.00	7101	7350	4675	447960	8,639	0
7	84.00	6955	7158	4804	447100	8,684	0
8	83.00	6851	7144	4955	441380	8,813	0
9	84.00	7102	7371	4722	442300	8,487	0
10	83.00	6955	7201	4697	443880	8,594	0
11	84.00	6878	7024	4760	436360	8,637	0
12	84.00	6898	7075	5000	438840	8,574	0
13	84.00	6951	7196	5095	447980	8,581	0
14	84.00	7027	7214	4708	450800	8,588	0
15	84.00	7137	7466	5108	441860	8,489	0
16	84.00	7000	7392	4702	435020	8,442	0
17	84.00	7067	7573	4852	442900	8,554	0
18	84.00	7080	7447	4626	440900	8,489	0
19	83.00	6760	6901	4934	450280	8,627	0
20	83.00	6788	6960	4666	447120	8,472	0
21	83.00	6713	6890	4891	441540	8,449	0
22	83.00	6872	7174	4985	445400	8,528	0
23	84.00	6865	7282	4892	449240	8,588	0
24	84.00	6898	7671	4878	446400	8,829	0
25	84.00	6830	7150	4351	449820	8,551	0
26	84.00	6808	7004	4938	440680	8,420	0
27	84.00	6920	7519	4648	438280	8,380	0
28	83.00	6805	7159	4764	456760	8,561	0
29	83.00	6824	7217	4932	442450	8,502	0
30	84.00	6611	6742	4528	449220	9,232	0
31	85.00	6584	6781	5110	440360	8,488	0
32	84.00	6571	6796	4904	446800	8,388	0

Stage No.	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 (units)
33	83.00	6646	6895	5728	448280	8,409	0
34	84.00	6595	6847	4540	440060	8,301	0
35	84.00	6576	6845	4928	446820	8,448	0
36	83.00	6597	6930	4878	440240	8,490	0
37	84.00	6615	6960	4886	436580	8,250	0
38	84.00	6610	6905	5099	448060	8,500	0
39	85.00	6634	6926	5001	443360	8,915	0
40	84.00	6557	6767	4952	449660	8,469	0
41	84.00	6611	7001	5118	448100	8,385	0
42	84.00	6726	7381	4885	443980	8,202	0
43	84.00	6634	6807	5081	436400	8,266	0
44	84.00	6672	7246	5128	437080	8,147	0
45	84.00	6487	6836	5228	440300	8,327	0
46	82.00	6530	6820	4849	441020	8,201	0
47	84.00	6718	6928	4771	437320	8,200	0
48	84.00	6531	6703	4953	441200	8,339	0
49	85.00	6915	7797	4794	447140	8,347	0
50	84.00	6622	6759	5301	438490	8,224	0
51	84.00	6727	6985	5067	437680	8,141	0
52	85.00	6747	7001	4658	437940	8,204	0
53	84.00	6471	6824	4975	447840	8,281	0
54	84.00	6499	6704	5259	442320	8,229	0
55	84.00	6398	6633	5203	444940	8,066	0
56	85.00	6500	6771	6232	443500	8,182	0
57	84.00	6583	6823	4472	442120	8,220	0
58	84.00	6395	6546	5203	447320	8,212	0
59	84.00	6253	6518	4543	440500	8,147	0
60	83.00	6222	6513	5308	447600	8,166	0
61	83.00	6188	6370	4909	449090	8,288	0
62	84.00	6239	6457	5192	443100	8,272	0
63	84.00	6177	6453	5275	447520	8,267	0
64	85.00	6209	6378	4703	444200	8,260	0
65	84.00	6211	6323	5034	448680	8,389	0
66	84.00	6192	6438	4924	445560	8,175	0

Stage No.	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 (units)
67	84.00	6240	6370	5204	448400	8,194	0
68	85.00	6273	6555	5316	443590	8,052	0
69	84.00	6190	6374	5457	449700	8,116	0
70	84.00	6014	6344	5299	447700	8,206	0
71	84.00	6019	6435	4805	440540	8,174	0
72	85.00	5998	6419	5427	445100	8,223	0
73	84.00	5947	6111	4810	447080	8,157	0
74	84.00	6014	6414	5072	447900	8,150	0
75	85.00	6091	6371	5487	447640	8,097	0
76	84.00	6087	6386	5477	447820	8,285	0

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LITHOLOGY/FORMATION	TOP DEPTH IN FT/ Name TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID
Maxton	1998	2088	2002	2092	Sandstone
Big Lime	2088	2158	2092	2162	Limestone
Big Injun	2158	2442	2162	2447	Sandstone
Weir	2442	2637	2447	2643	Sandstone
Berea	2637	2982	2643	2990	Sandstone
Gordon	2982	3036	2990	3044	Sandstone
Fifty Foot	3036	3584	3044	3602	Sandstone
Speechley	3584	5006	3602	5206	Sandstone
Benson	5006	5361	5206	5629	Sandstone
Alexander	5361	5955	5629	6342	Siltstone
Rhinestreet	5955	6382	6342	6863	Black Shale
Middlesex	6382	6460	6863	6988	Black Shale
Geneseo/Burkett	6460	6482	6988	7028	Black Shale
Tully	6482	6520	7028	7110	Limestone
Hamilton	6520	6567	7110	7237	Gray Shale
Marcellus	6567	-	7237	-	Black Shale

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	10/2/2022
Job End Date:	11/4/2022
State:	West Virginia
County:	Marshall
API Number:	47-051-02189-00-00
Operator Name:	Tug Hill Operating, LLC
Well Name and Number:	Old Crow N 1HM
Latitude:	39.77851632
Longitude:	-80.76319640
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,525
Total Base Water Volume (gal):	26,722,710
Total Base Non Water Volume:	0



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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	Tug Hill Operating	Carrier/Base Fluid	Water	7732-18-5	100.00000	86.58195	None
Sand (40/70 White Proppant)	Tug Hill Operating	Proppant	Silica Substrate	14808-60-7	100.00000	8.76487	None
Sand (100 Mesh Proppant)	Tug Hill Operating	Proppant	Silica Substrate	14808-60-7	100.00000	3.07726	None
Sand (30/50 White Proppant)	Tug Hill Operating	Proppant	Silica Substrate	14808-60-7	100.00000	1.19057	None
Hydrochloric Acid (7.5%)	CNR	Acidizing	Water	7732-18-5	85.00000	0.22606	None
			Hydrochloric Acid (Hydrogen Chloride)	7647-01-0	37.00000	0.09840	None
StimStream FR 9800	Chemstream	Friction Reducer	Butene, homopolymer	9003-29-6	25.00000	0.01815	None
			Alkanes, C16-20-iso-	90622-59-6	25.00000	0.01815	None
			Ethoxylated alcohols (C12-18)	68213-23-0	3.00000	0.00218	None

MC MX 9-4743	Multi-Chem	Biocide					
			Sodium Nitrate	7631-99-4	60.00000	0.02200	None
LD-7750W	Multi-Chem	Scale Inhibitor					
			Methanol	67-56-1	60.00000	0.00499	None
			Phosphonic Acid Salt	Proprietary	5.00000	0.00042	None
ProHib 100	CNR	Acid Inhibitor					
			2-Butoxyethanol	111-76-2	60.00000	0.00049	None
			Proprietary material	Proprietary	30.00000	0.00025	None
			Proprietary non-ionic surfactant	Proprietary	20.00000	0.00016	None
			Proprietary corrosion inhibitor	Proprietary	10.00000	0.00008	None
			Proprietary ethoxylated alcohol	Proprietary	10.00000	0.00008	None
ProFE 105	CNR	Iron Control					
			Citric Acid	77-92-9	20.00000	0.00020	None
			Acetic Acid	64-19-7	5.00000	0.00005	None
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.							
Other Chemical(s)	Listed Above	See Trade Name(s) List					
			Water	7732-18-5	85.00000	0.22606	
			Butene, homopolymer	9003-29-6	25.00000	0.01815	
			Ethoxylated alcohols (C12-18)	68213-23-0	3.00000	0.00218	
			Phosphonic Acid Salt	Proprietary	5.00000	0.00042	
			Proprietary material	Proprietary	30.00000	0.00025	
			Proprietary non-ionic surfactant	Proprietary	20.00000	0.00016	
			Proprietary corrosion inhibitor	Proprietary	10.00000	0.00008	
			Proprietary ethoxylated alcohol	Proprietary	10.00000	0.00008	
			Acetic Acid	64-19-7	5.00000	0.00005	

* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

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)

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**OLD CROW N LEASE
WELL 1HM
TUG HILL OPERATING**

T.H. LATITUDE 39°47'30"
B.H. LATITUDE 39°50'00"

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17)

NAD'83 S.P.C.(FT) N. 468,171.20 E. 1,613,489.83
NAD'83 GEO. LAT-(N) 39.778516 LONG-(W) 80.763196
NAD'83 UTM (M) N. 4,403,201.98 E. 520,278.65

LANDING POINT

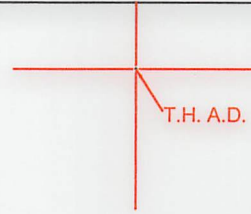
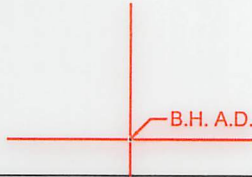
NAD'83 S.P.C.(FT) N. 470,219.7 E. 1,612,313.1
NAD'83 GEO. LAT-(N) 39.784094 LONG-(W) 80.767486
NAD'83 UTM (M) N. 4,403,820.1 E. 519,909.7

BOTTOM HOLE

NAD'83 S.P.C.(FT) N. 481,944.8 E. 1,605,732.0
NAD'83 GEO. LAT-(N) 39.816023 LONG-(W) 80.791501
NAD'83 UTM (M) N. 4,407,358.7 E. 517,845.1

T.H. LONGITUDE 80°45'00"
B.H. LONGITUDE 80°45'00"

4,791' T.H. A.D.
6,310' B.H. A.D.

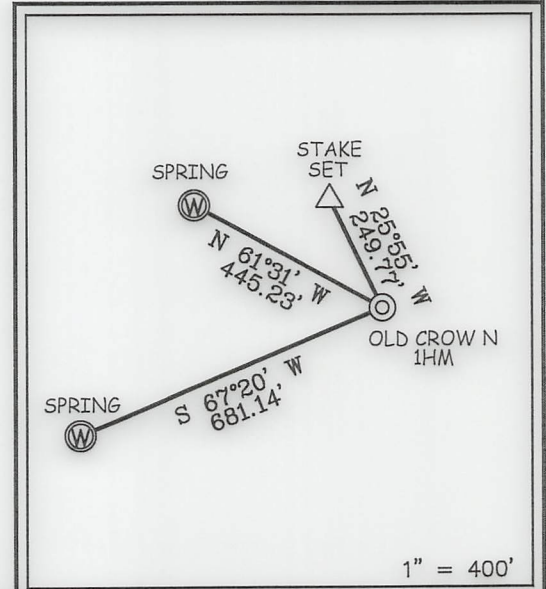


MAP/PARCEL	ADJOINING SURFACE OWNER LIST	ACRES
5-8A-13	LETHA I. RUCKMAN	2.993
5-8A-14	BOARD OF EDUCATION	137 SQ RODS
5-8A-32	JONATHAN DAVID BOPP	0.580
5-8A-33	ELAIN & JEFFREY D. WILLS	2.51
5-8A-34	NORMAN G. JOHNSON ET UX - LIFE	11,123 SQ. FT.
5-8A-36	WILLIAM J. GAMBLE ET UX	1.031
5-8A-42	ROBERT M. WHITE	7.23
5-8A-43	CHARLES G. STEIN & EVA A. WADE	0.17
5-8A-44	CHARLES G. STEIN & EVA A. WADE	0.18
5-8A-48	RAYMOND A., JR. & LARLETTE SCOTT	2.12
5-8A-49	RAYMOND A., JR. & LARLETTE SCOTT	0.159
5-8A-54	DONALD D. & CHRISTINE S. DANIELS	0.68
5-8A-54.1	DONALD D. & CHRISTINE S. DANIELS	0.69
5-8-2	CONSOLIDATED COAL COMPANY-MURRAY ENERGY	136.87
5-8-4.1	FRANCES E. NIEMAN	33.46
5-8-9.1	SCOTT E. JACKSON, TAMMY S. SOUTH & MARION JACKSON	1.957
5-11-1.2	JAY A. CONNER, ET UX	5.824
5-11-1.3	JAY A. CONNER, ET UX	4.256
5-11-1.5	PAUL & SANDY WHITT	3.507
5-11-1.7	WILLIAM S. & MARY K. ADAMS	8.00
5-11-6	ROBERT & REBECCA ARRICK	1.29
5-11-7	MT. HOBART MISSIONARY BAPTIST CHURCH	0.25
5-11-8	MT. HOBART MISSIONARY BAPTIST CHURCH	0.8
5-11-9.2	MICHAEL R. BRYAN	3.143
5-11-9.4	JACK S. HUGGINS, ET UX	4.129
5-11-9.5	SOUTHERN COUNTRY FARMS INC.	2.559
5-11-9.6	SOUTHERN COUNTRY FARMS INC.	2.488
5-11-9.9	LEONARD L. PARSONS, ET UX	5.89
5-11-9.10	JOHN A. & JANET L. BEUCKE	2.348

NOTES ON SURVEY

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS OR DWELLINGS > 2500 SQ. FT. WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'.
- BASED ON WV DOT COUNTY ROUTE 74 IS A 40' STRIP OF LAND ACQUIRED IN NUMEROUS DEEDS.
- PLAT UPDATED TO SHOW AS-DRILLED PATH.
- AS DRILLED DATA PROVIDED BY TUG HILL OPERATING.

REFERENCES



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296
slsvv.com

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 THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 677 Gregory A. Smith



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE JANUARY 17, 2023

REVISED _____

OPERATORS WELL NO. OLD CROW N-1HM

API WELL NO. 47 - 051 - 2189
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8796P1HMAD.dwg
OLD CROW NORTH 1HM REV1

HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS



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

LOCATION: GROUND = 1,283.80' ELEVATION PROPOSED = 1,264.99' WATERSHED TRIBUTARY OF FISH CREEK (HUC-10)

DISTRICT FRANKLIN COUNTY MARSHALL QUADRANGLE POWHATAN POINT 7.5'

SURFACE OWNER DONNA VIVIAN YOHO (TOD) GARY LANCE YOHO ACREAGE 71.205±

ROYALTY OWNER DONNA VIVIAN YOHO, ET AL ACREAGE 71.205±

PROPOSED WORK: LEASE NO. SEE WW-6A1

DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT AND REPLUG OTHER

PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION MARCELLUS ESTIMATED DEPTH TVD: 6,679' / TMD: 20,814'

WELL OPERATOR TUG HILL OPERATING, LLC
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500
FORT WORTH, TX 76107

DESIGNATED AGENT DARREN BROWN - CT CORPORATION
ADDRESS 5400 D BIG TYLER ROAD
CHARLESTON, WV 25313-1561

COUNTY NAME PERMIT

03/17/2023

**OLD CROW N LEASE
WELL 1HM
TUG HILL OPERATING**

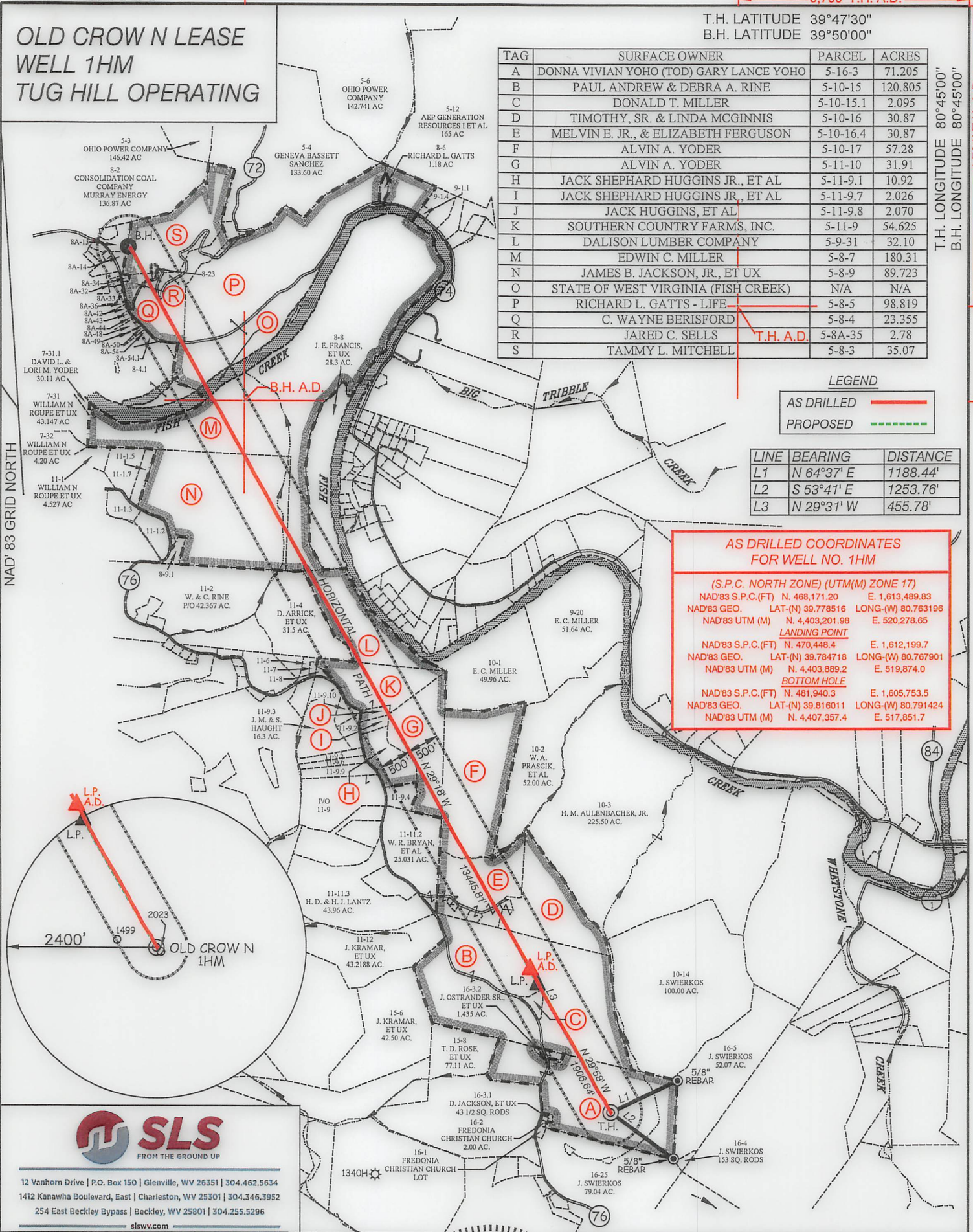
T.H. LATITUDE 39°47'30"
B.H. LATITUDE 39°50'00"

TAG	SURFACE OWNER	PARCEL	ACRES
A	DONNA VIVIAN YOHO (TOD) GARY LANCE YOHO	5-16-3	71.205
B	PAUL ANDREW & DEBRA A. RINE	5-10-15	120.805
C	DONALD T. MILLER	5-10-15.1	2.095
D	TIMOTHY, SR. & LINDA MCGINNIS	5-10-16	30.87
E	MELVIN E. JR., & ELIZABETH FERGUSON	5-10-16.4	30.87
F	ALVIN A. YODER	5-10-17	57.28
G	ALVIN A. YODER	5-11-10	31.91
H	JACK SHEPHARD HUGGINS JR., ET AL	5-11-9.1	10.92
I	JACK SHEPHARD HUGGINS JR., ET AL	5-11-9.2	2.026
J	JACK HUGGINS, ET AL	5-11-9.8	2.070
K	SOUTHERN COUNTRY FARMS, INC.	5-11-9	54.625
L	DALISON LUMBER COMPANY	5-9-31	32.10
M	EDWIN C. MILLER	5-8-7	180.31
N	JAMES B. JACKSON, JR., ET UX	5-8-9	89.723
O	STATE OF WEST VIRGINIA (FISH CREEK)	N/A	N/A
P	RICHARD L. GATTS - LIFE	5-8-5	98.819
Q	C. WAYNE BERISFORD	5-8-4	23.355
R	JARED C. SELLS	5-8A-35	2.78
S	TAMMY L. MITCHELL	5-8-3	35.07

T.H. LONGITUDE 80°45'00"
B.H. LONGITUDE 80°45'00"

6,310' B.H. A.D.
4,791' T.H. A.D.

NAD'83 GRID NORTH



LEGEND

AS DRILLED ————

PROPOSED - - - - -

LINE	BEARING	DISTANCE
L1	N 64°37' E	1188.44'
L2	S 53°41' E	1253.76'
L3	N 29°31' W	455.78'

AS DRILLED COORDINATES FOR WELL NO. 1HM

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17)

NAD'83 S.P.C.(FT)	N. 468,171.20	E. 1,613,489.83
NAD'83 GEO.	LAT-(N) 39.778516	LONG-(W) 80.763196
NAD'83 UTM (M)	N. 4,403,201.98	E. 520,278.65

LANDING POINT

NAD'83 S.P.C.(FT)	N. 470,448.4	E. 1,612,199.7
NAD'83 GEO.	LAT-(N) 39.784718	LONG-(W) 80.767901
NAD'83 UTM (M)	N. 4,403,889.2	E. 519,874.0

BOTTOM HOLE

NAD'83 S.P.C.(FT)	N. 481,940.3	E. 1,605,732.0
NAD'83 GEO.	LAT-(N) 39.816011	LONG-(W) 80.791424
NAD'83 UTM (M)	N. 4,407,357.4	E. 517,851.7



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296
slswv.com



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

P.S. 677 *Gregory A. Smith*

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17)		
NAD'83 S.P.C.(FT)	N. 468,171.20	E. 1,613,489.83
NAD'83 GEO.	LAT-(N) 39.778516	LONG-(W) 80.763196
NAD'83 UTM (M)	N. 4,403,201.98	E. 520,278.65
LANDING POINT		
NAD'83 S.P.C.(FT)	N. 470,219.7	E. 1,612,313.1
NAD'83 GEO.	LAT-(N) 39.784094	LONG-(W) 80.767486
NAD'83 UTM (M)	N. 4,403,820.1	E. 519,909.7
BOTTOM HOLE		
NAD'83 S.P.C.(FT)	N. 481,944.8	E. 1,605,732.0
NAD'83 GEO.	LAT-(N) 39.816023	LONG-(W) 80.791501
NAD'83 UTM (M)	N. 4,407,358.7	E. 517,845.1

LEGEND

LEASE LINE ————

SURFACE LINE ————

WELL LATERAL ————

OFFSET LINE ————

TIE LINE ————

CREEK ————

ROAD ————

COUNTY ROUTE ————

PROPOSED WELL ————

EXISTING WELL ————

PERMITTED WELL ————

TAX MAP-PARCEL ————

SURFACE OWNER (SEE TABLE) ————

LEASE # (SEE WW-6A1) ————

SCALE 1" = 2000' FILE NO. 8796P1HMAD.dwg
DATE JANUARY 17, 2023
REVISED
OPERATORS WELL NO. OLD CROW N-1HM
API WELL 47 — 051 — 2189
NO. STATE COUNTY PERMIT

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DARREN BROWN - CT CORPORATION
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5098 WASHINGTON ST. W, STE 407
FORT WORTH, TX 76107 CHARLESTON, WV 25313-1561

03/17/2023

COUNTY NO. PERMIT