

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

API 47 - 051 - 01964 County Marshall District Meade  
Quad Glen Easton 7.5' Pad Name Ten High Field/Pool Name \_\_\_\_\_  
Farm name Lawrence & Shirley Conkle, ests. Well Number Ten High 1S-5HM  
Operator (as registered with the OOG) Tug Hill Operating, LLC  
Address 1320 S. University Drive, Suite 500 City Ft. Worth State TX Zip 76107

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As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4,406,352.60 Easting 527,326.35  
Landing Point of Curve Northing 4,406,043.7 Easting 527,016.4  
Bottom Hole Northing 4,403,437.6 Easting 528,569.8

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Elevation (ft) 1310' 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 10/27/2017 Date drilling commenced 12/21/2018 Date drilling ceased 1/5/2019  
Date completion activities began 3/26/2019 Date completion activities ceased 6/19/2019  
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 70' Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 1595' Void(s) encountered (Y/N) depths N  
Coal depth(s) ft Sewickely Coal - 968-974' and Pittsburgh Coal - 1053-1058' Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

Reviewed by:  
*Jim Theobald*  
10/23/2020

API 47-051 - 01964 Farm name Lawrence & Shirley Conkle, ests. Well number Ten High 1S-5HM

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"	1,134'	NEW	54.5#	N/A	Y
Coal	17 1/2"	13 3/8"	1,134'	NEW	54.5#	N/A	Y
Intermediate 1	12 1/4"	9 5/8"	2,875'	NEW	36#	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8 3/4"	5 1/2"	17,496'	NEW	20#	N/A	Y
Tubing		2 3/8"	8,748'	NEW	4.7#	N/A	Y
Packer type and depth set							

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Comment Details \_\_\_\_\_

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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	A		15.6	1.19		0	8
Surface	A	1227	15.6	1.19	1534	0	8
Coal	A	1227	15.6	1.19	1534	0	8
Intermediate 1	A	902	15.6	1.19	1243	0	8
Intermediate 2							
Intermediate 3							
Production	A	4280	14.5	1.17	2872	0	8
Tubing							

Drillers TD (ft) 17,519' Loggers TD (ft) \_\_\_\_\_

Deepest formation penetrated Marcellus Plug back to (ft) n/a

Plug back procedure n/a

Kick off depth (ft) 17,519'

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 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 \_\_\_\_\_





**Ten High 1S-5HM  
PEFORATION RECORD**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
Toe	4/20/2019	17,341	17,392	48	Marcellus
1	4/22/2019	17,120	17,266	48	Marcellus
2	4/23/2019	16,944	17,090	48	Marcellus
3	4/24/2019	16,769	16,915	48	Marcellus
4	4/24/2019	16,593	16,740	48	Marcellus
5	4/25/2019	16,418	16,564	48	Marcellus
6	4/25/2019	16,243	16,389	48	Marcellus
7	4/26/2019	16,067	16,213	48	Marcellus
8	4/26/2019	15,892	16,038	48	Marcellus
9	4/27/2019	15,716	15,863	48	Marcellus
10	4/28/2019	15,541	15,687	48	Marcellus
11	4/28/2019	15,366	15,512	48	Marcellus
12	4/29/2019	15,190	15,336	48	Marcellus
13	4/30/2019	15,015	15,161	48	Marcellus
14	4/30/2019	14,839	14,986	48	Marcellus
15	5/1/2019	14,664	14,810	48	Marcellus
16	5/1/2019	14,489	14,635	48	Marcellus
17	5/2/2019	14,313	14,459	48	Marcellus
18	5/3/2019	14,138	14,284	48	Marcellus
19	5/3/2019	13,962	14,109	48	Marcellus
20	5/3/2019	13,787	13,933	48	Marcellus
21	5/5/2019	13,612	13,758	48	Marcellus
22	5/5/2019	13,436	13,582	48	Marcellus
23	5/6/2019	13,261	13,407	48	Marcellus
24	5/7/2019	13,085	13,232	48	Marcellus
25	5/8/2019	12,910	13,056	48	Marcellus
26	5/8/2019	12,735	12,881	48	Marcellus
27	5/9/2019	12,559	12,705	48	Marcellus
28	5/10/2019	12,384	12,530	48	Marcellus
29	5/11/2019	12,208	12,355	48	Marcellus
30	5/11/2019	12,033	12,179	48	Marcellus
31	5/12/2019	11,858	12,004	48	Marcellus
32	5/13/2019	11,682	11,828	48	Marcellus
33	5/14/2019	11,507	11,653	48	Marcellus
34	5/14/2019	11,331	11,478	48	Marcellus
35	5/15/2019	11,156	11,302	48	Marcellus
36	5/16/2019	10,981	11,127	48	Marcellus
37	5/16/2019	10,805	10,951	48	Marcellus
38	5/17/2019	10,630	10,776	48	Marcellus
39	5/17/2019	10,454	10,601	48	Marcellus
40	5/18/2019	10,279	10,425	48	Marcellus
41	5/19/2019	10,104	10,250	48	Marcellus
42	5/19/2019	9,928	10,074	48	Marcellus
43	5/20/2019	9,753	9,899	48	Marcellus
44	5/21/2019	9,577	9,724	48	Marcellus
45	5/22/2019	9,402	9,548	48	Marcellus

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46	5/22/2019	9,227	9,373	48	Marcellus
47	5/23/2019	9,051	9,197	48	Marcellus
48	5/23/2019	8,876	9,022	48	Marcellus
49	5/24/2019	8,700	8,847	48	Marcellus
50	5/24/2019	8,525	8,671	48	Marcellus
51	5/25/2019	8,350	8,496	48	Marcellus
52	5/26/2019	8,174	8,320	48	Marcellus
53	5/26/2019	7,999	8,145	48	Marcellus
54	5/27/2019	7,823	7,970	48	Marcellus
55	5/27/2019	7,648	7,794	48	Marcellus
56	5/27/2019	7,473	7,619	48	Marcellus

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Ten High 1S-5HM

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 (bbis)	Amount of Nitrogen/other (units)
Toe	31.3	6963	6185	4673	0	647	0
1	88.7	7947	5689	4589	369975	7187	0
2	88.6	7805	5860	4726	444530	8701	0
3	89.4	7730	5518	4727	438570	8511	0
4	89.4	7438	5425	4850	439230	7851	0
5	84.2	8387	5803	4577	440520	7918	0
6	82.1	8414	5780	4850	440050	8348	0
7	89.1	7717	5757	4666	436740	8371	0
8	89.6	7665	5688	5062	437630	7734	0
9	84.2	7962	5432	4679	413740	8074	0
10	81.3	8253	5471	4763	444300	8247	0
11	88.8	7440	5157	4863	440000	7906	0
12	89.5	7496	5298	4489	441300	8106	0
13	84.8	7456	5452	4788	439010	7936	0
14	89.3	7345	5285	4637	437190	8116	0
15	89.1	7600	5345	5039	440620	7872	0
16	88.6	7426	5175	5112	397600	7517	0
17	89.1	7445	5127	4689	441150	8098	0
18	89.4	7409	5374	4964	440010	7718	0
19	89.6	7399	5468	4599	434900	7909	0
20	87.6	7201	5409	4622	425830	7655	0
21	88.3	7340	5843	4534	319940	6668	0
22	89.8	7300	5655	4664	438160	8290	0
23	89.6	7215	5355	4441	439280	8083	0
24	88.4	7380	5907	4847	440630	7829	0
25	85.9	6853	5503	4859	439830	7940	0
26	84.5	7463	5239	4560	439400	7698	0
27	84.4	6792	5346	4679	438990	7722	0
28	84.7	7049	5854	5110	441240	7610	0
29	88.7	7057	5381	4785	436310	7445	0
30	89	6942	5352	4870	439960	7684	0
31	87.4	6787	5313	4642	439170	7809	0
32	89.1	6972	5574	4968	441810	7821	0

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33	88.9	6783	5674	4816	438540	7619	0
34	89.6	7169	6803	4886	440600	7500	0
35	89.3	6813	5287	4882	440660	7611	0
36	89.5	6856	5459	4860	440460	7495	0
37	89.5	7181	5528	4839	436420	7690	0
38	89.1	7072	5661	4749	439430	7746	0
39	89.4	6964	5547	4783	440380	7914	0
40	89.5	6890	5515	4832	441340	7721	0
41	89.8	6930	5753	4593	440870	7453	0
42	89.4	6715	5569	4726	439270	7446	0
43	87.1	6931	5730	4605	440470	7584	0
44	88.6	7018	5500	4695	440110	7442	0
45	88.9	7017	5511	4980	440200	7801	0
46	86.2	7362	5900	4179	439280	7673	0
47	89.8	6917	5821	4946	442600	7397	0
48	86.6	6974	5275	4768	441840	7679	0
49	88.6	6773	5231	5401	412170	7522	0
50	89.7	6683	5064	4522	438350	7734	0
51	89.5	6557	5736	4729	453505	7947	0
52	89.7	6635	5664	4608	442440	7497	0
53	89.4	6464	5158	4694	439170	7714	0
54	89.8	6708	5780	4723	441910	7322	0
55	89.2	6392	5366	4873	441230	7799	0
56	89.6	6531	6298	4794	442700	7355	0

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TEN HIGH 1N-5HM

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	2035	2207	2035	2207	Sandstone
Big Lime	2207	2338	2207	2339	Limestone
Big Injun	2338	2633	2339	2634	Sandstone
Weir	2633	2831	2634	2833	Sandstone
Berea	2831	3093	2833	3096	Sandstone
Gordon	3093	3178	3096	3181	Sandstone
Fifty Foot	3178	3760	3181	3765	Sandstone
Speechley	3760	5221	3765	5299	Sandstone
Benson	5221	5593	5299	5706	Sandstone
Alexander	5593	6215	5706	6382	Siltstone
Rhinestreet	6215	6663	6382	6915	Black shale
Middlesex	6663	6737	6915	7027	Black shale
Geneseo/Burkett	6737	6764	7027	7071	Black shale
Tully	6764	6790	7071	7120	Limestone
Hamilton	6790	6870	7120	7306	Grey shale
Marcellus	6870	-	7306	-	Black shale

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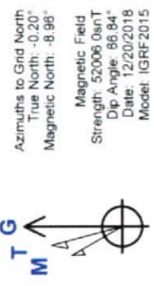


**Well:** Ten High 1S-05HM (P)  
**Site:** Ten High  
**Project:** Marshall County, West Virginia.  
**Design:** rev7  
**Rig:** Nabors X08

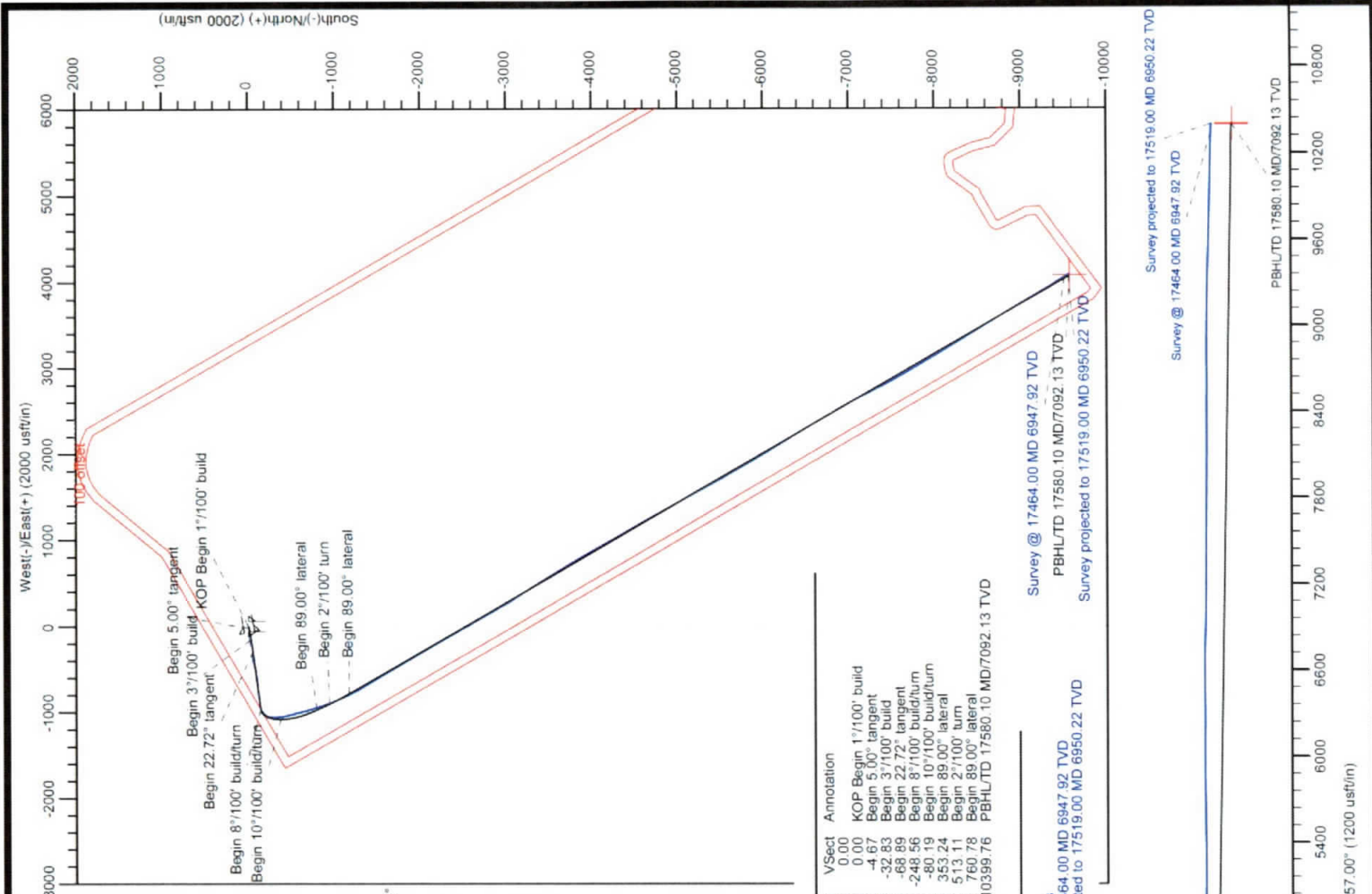
Geodetic System: Universal Transverse Mercator (US Survey Feet)  
 Datum: NAD83 West Virginia - HARN  
 Ellipsoid GRS 1980  
 Zone: Zone 17N (84 W to 78 W)

System Datum: Mean Sea Level  
 Depth Reference: RKB=1310+33 @ 1343.00usft (Nabors X08)  
 Northing 14456508.50 Easting 39.80670630 Longitude -80.68076696  
 Latitude 39.80670630

Total Corr. (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.96°



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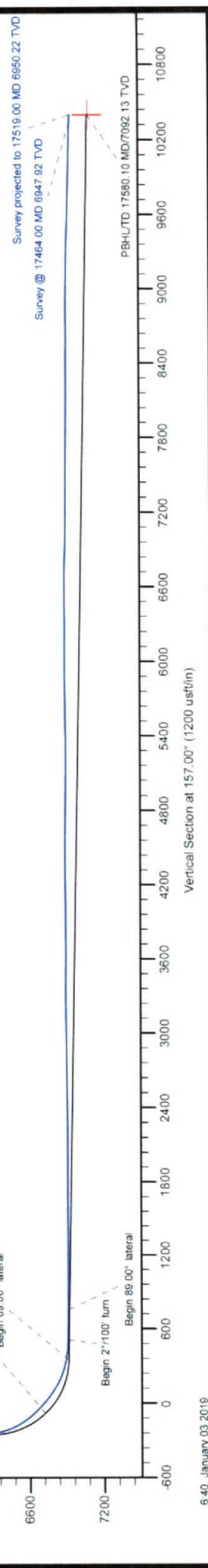
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2033.00	0.00	0.00	2033.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 1°/100° build
3	2533.00	5.00	259.38	2532.37	-4.02	-21.43	1.00	259.38	-4.67	Begin 5.00° tangent
4	4039.37	5.00	259.38	4033.00	-28.21	-150.47	0.00	0.00	-32.83	Begin 3°/100° build
5	4630.48	22.72	262.36	4604.62	-48.30	-290.07	3.00	3.78	-68.89	Begin 22.72° tangent
6	6386.08	22.72	262.36	6223.93	-138.45	-962.25	0.00	0.00	-248.56	Begin 8°/100° buildthum
7	6966.60	45.00	180.12	6724.62	-371.50	-1080.35	8.00	-104.80	-80.19	Begin 10°/100° buildthum
8	7459.32	89.00	155.00	6917.79	-795.40	-969.71	10.00	-34.06	353.24	Begin 89.00° lateral
9	7619.32	89.00	155.00	6917.79	-940.38	-902.10	0.00	0.00	513.11	Begin 2°/100° turn
10	7867.87	89.00	150.03	6922.14	-1160.77	-787.44	2.00	-90.08	760.78	Begin 89.00° lateral
11	17580.10	89.00	150.03	7092.13	-9572.92	4063.77	0.00	0.00	0399.76	PBHLTD 17580.10 MD/7092.13 TVD

ANNOTATIONS SURVEYS

MD	Inc	Azi	TVD	+N-S	+E-W	VSect	Annotation
192.00	0.08	108.78	192.00	-0.04	0.13	0.09	
17464.00	87.60	147.13	6947.92	-9517.60	4049.85	10343.40	MWD surveys
17519.00	87.60	147.13	6950.22	-9563.76	4079.67	10397.54	Survey @ 17464.00 MD 6947.92 TVD
							Survey @ 17519.00 MD 6950.22 TVD

Survey @ 17464.00 MD 6947.92 TVD  
 PBHLTD 17580.10 MD/7092.13 TVD  
 Survey projected to 17519.00 MD 6950.22 TVD



# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/20/2019
Job End Date:	5/27/2019
State:	West Virginia
County:	Marshall
API Number:	47-051-01964-00-00
Operator Name:	Tug Hill Operating, LLC
Well Name and Number:	Ten High 1S-05HM
Latitude:	39.80670630
Longitude:	-80.68076686
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	0
Total Base Water Volume (gal):	18,892,735
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	86.40661	Density = 8.340
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.13033	

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SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676)	Halliburton	Proppant				Listed Below				
SAND- PREMIUM WHITE-30/50 BULK	Halliburton	Proppant				Listed Below				
Items above are Trade Names with the exception of Base Water. Items below are the individual ingredients.										
							14808-60-7	100.00000	13.35409	
							64742-47-8	30.00000	0.02255	
							7631-99-4	60.00000	0.01762	
							69418-26-4	30.00000	0.01628	
							Proprietary	60.00000	0.01254	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
							7647-01-0	7.50000	0.00977	
							7647-14-5	10.00000	0.00543	
							12125-02-9	10.00000	0.00543	
							93-83-4	5.00000	0.00271	
							67-56-1	100.00000	0.00254	
							Proprietary	5.00000	0.00104	
							69011-36-5	5.00000	0.00104	
							64-17-5	60.00000	0.00029	

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			Oxyalkylated phenolic resin	Proprietary	30.00000	0.00019
			Phosphoric Acid Salt	Proprietary	5.00000	0.00017
			Heavy aromatic petroleum naphtha	64742-94-5	30.00000	0.00014
			Modified thiourea polymer	Proprietary	30.00000	0.00014
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00000	0.00002
			Naphthalene	91-20-3	5.00000	0.00002
			Propargyl alcohols	107-19-7	5.00000	0.00002
			Ethoxylated alcohols	Proprietary	5.00000	0.00002
			1,2,4 Trimethylbenzene	95-63-6	1.00000	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(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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11,626' AS DRILLED B.H.

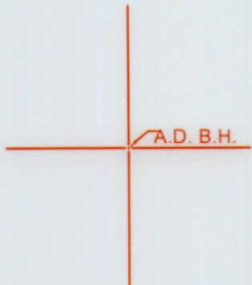
3,961' AS DRILLED T.H.

**TEN HIGH 1S LEASE  
WELL 5HM  
TUG HILL OPERATING**

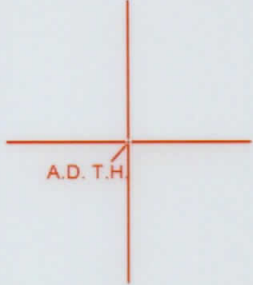
T.H. LATITUDE 39°50'00"  
B.H. LATITUDE 39°47'30"

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)			
NAD'83 S.P.C.(FT)	N. 478,123.48	E. 1,636,789.50	
NAD'83 GEO.	LAT-(N) 39.806706	LONG-(W) 80.680767	
NAD'83 UTM (M)	N. 4,406,352.80	E. 527,326.35	
<u>LANDING POINT</u>			
NAD'83 S.P.C.(FT)	N. 476,919.8	E. 1,636,007.8	
NAD'83 GEO.	LAT-(N) 39.803374	LONG-(W) 80.683492	
NAD'83 UTM (M)	N. 4,405,981.9	E. 527,094.3	
<u>BOTTOM HOLE</u>			
NAD'83 S.P.C.(FT)	N. 468,429.3	E. 1,640,722.6	
NAD'83 GEO.	LAT-(N) 39.780236	LONG-(W) 80.666320	
NAD'83 UTM (M)	N. 4,403,419.2	E. 528,573.9	

T.H. LONGITUDE 80°40'00"  
B.H. LONGITUDE 80°37'30"  
4,104' AS DRILLED B.H.  
9,700' T.H.



<b>AS DRILLED COORDINATES FOR WELL NO. 5HM</b>			
(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)			
NAD'83 S.P.C.(FT)	N. 478,123.48	E. 1,636,789.50	
NAD'83 GEO.	LAT-(N) 39.806706	LONG-(W) 80.680767	
NAD'83 UTM (M)	N. 4,406,352.80	E. 527,326.35	
<u>LANDING POINT</u>			
NAD'83 S.P.C.(FT)	N. 477,124.4	E. 1,635,906.3	
NAD'83 GEO.	LAT-(N) 39.803932	LONG-(W) 80.683863	
NAD'83 UTM (M)	N. 4,406,043.7	E. 527,052.4	
<u>BOTTOM HOLE</u>			
NAD'83 S.P.C.(FT)	N. 468,489.7	E. 1,640,710.1	
NAD'83 GEO.	LAT-(N) 39.780401	LONG-(W) 80.666367	
NAD'83 UTM (M)	N. 4,403,437.6	E. 528,569.8	



**NOTES ON SURVEY**

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS > 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN - 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'
- AS-DRILLED DATA PROVIDED BY TUG HILL OPERATING, LLC.
- PLAT UPDATED TO SHOW AS-DRILLED PATH.



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

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. 849 *C. Victor Moyers*

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.  
DATE MARCH 24, 20 20  
REVISED \_\_\_\_\_, 20 \_\_\_\_\_  
OPERATORS WELL NO. TEN HIGH 1S-5HM  
API WELL NO. 47 - 051 - 1964  
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8655P5HMAD.dwg  
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  INJECTION  WASTE DISPOSAL  IF "GAS" PRODUCTION  STORAGE  DEEP  SHALLOW

LOCATION: ELEVATION GROUND = 1,317.20' PROPOSED = 1,310.06' WATERSHED MIDDLE BOWMAN RUN OF FISH CREEK (HUC 10)  
DISTRICT MEADE COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'

SURFACE OWNER LAWRENCE & SHIRLEY CONKLE ESTS ACREAGE 139.79±  
ROYALTY OWNER ANDY PAUL & JACKIE KUHN, ET AL - SEE ABOVE AND SHEETS 3-5 ACREAGE 139.79±

PROPOSED WORK: 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: 6,865' / TMD: 17,476'

WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER  
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS CT CORPORATION SYSTEM  
FORT WORTH, TX 76107 ADDRESS 5400 D BIG TYLER ROAD  
CHARLESTON, WV 25313

COUNTY NAME  
PERMIT



# TUG HILL OPERATING WELL 5HM TEN HIGH 12 LEASE



**BOTTOM HOLE**

NAD83 UTM (M) N. 403,419.2 E. 528,523.9  
 NAD83 GEO. LAT (N) 39.780539 LONG (W) 80.889250  
 NAD83 S.P.C (FT) N. 488,429.3 E. 1,940,752.9

**LANDING POINT**

NAD83 UTM (M) N. 408,352.80 E. 527,359.35  
 NAD83 GEO. LAT (N) 39.803274 LONG (W) 80.883495  
 NAD83 S.P.C (FT) N. 478,919.8 E. 1,938,007.8

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

NAD83 UTM (M) N. 408,352.80 E. 527,359.35  
 NAD83 GEO. LAT (N) 39.803274 LONG (W) 80.883495  
 NAD83 S.P.C (FT) N. 478,919.8 E. 1,938,007.8

**AS DRILLED COORDINATES  
FOR WELL NO. 5HM**

**BOTTOM HOLE**

NAD83 UTM (M) N. 403,419.2 E. 528,523.9  
 NAD83 GEO. LAT (N) 39.780539 LONG (W) 80.889250  
 NAD83 S.P.C (FT) N. 488,429.3 E. 1,940,752.9

**LANDING POINT**

NAD83 UTM (M) N. 408,352.80 E. 527,359.35  
 NAD83 GEO. LAT (N) 39.803274 LONG (W) 80.883495  
 NAD83 S.P.C (FT) N. 477,124.4 E. 1,935,508.3

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

NAD83 UTM (M) N. 408,352.80 E. 527,359.35  
 NAD83 GEO. LAT (N) 39.803274 LONG (W) 80.883495  
 NAD83 S.P.C (FT) N. 478,123.48 E. 1,938,789.50



H.H. LONGITUDE 80.889250  
B.H. LONGITUDE 80.883495

H.T. 1007.9  
H.B. 8107.3

### NOTES ON SURVEY

1. NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS > 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
2. WELL SPOT CIRCLE & TOP MARK SCALE IS 1" = 2000'
3. AS-DRILLED DATA PROVIDED BY TUG HILL OPERATING, LLC.
4. PLAT UPDATED TO SHOW AS-DRILLED PATH

1254 East Beckley Avenue | Beckley, WV 26001 | 304.262.2288  
 1612 Kanawha Boulevard East | Charleston, WV 25301 | 304.262.2922  
 12 Ventnor Drive P.O. Box 150 | Glenville, WV 26021 | 304.683.2834  
 sls.com

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

*C. Victor Moyers*  
 P. S. 849



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.  
 DATE MARCH 24 2020  
 OPERATORS WELL NO. TEN HIGH 12-5HM  
 REVISED 2020  
 API WELL NO. 47-051-1964  
 STATE COUNTY PERMIT

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

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

LOCATION: PROPOSED = 1,310.08' ELEVATION  
 MIDDLE BOWMAN RUN OF FISH CREEK (HUC 10) WATERSHED  
 MARSHALL COUNTY MEADE DISTRICT  
 SURFACE OWNER: LAWRENCE & SHIRLEY CONKLE ESTS  
 ROYALTY OWNER: ANDY PAUL & JACKIE KUHN, ET AL - SEE ABOVE AND SHEETS 3-5

PROPOSED WORK: 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: 8,865' TMD: 17,476'

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

DESIGNATED AGENT: DIANNA STAMPER  
 CT CORPORATION SYSTEM  
 ADDRESS: 2400 D BIG TYLER ROAD CHARLESTON, WV 25313

PERMIT: \_\_\_\_\_  
 COUNTY NAME: \_\_\_\_\_



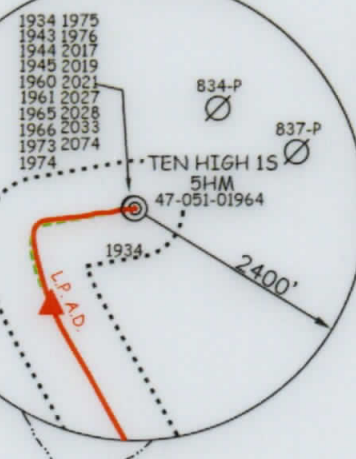
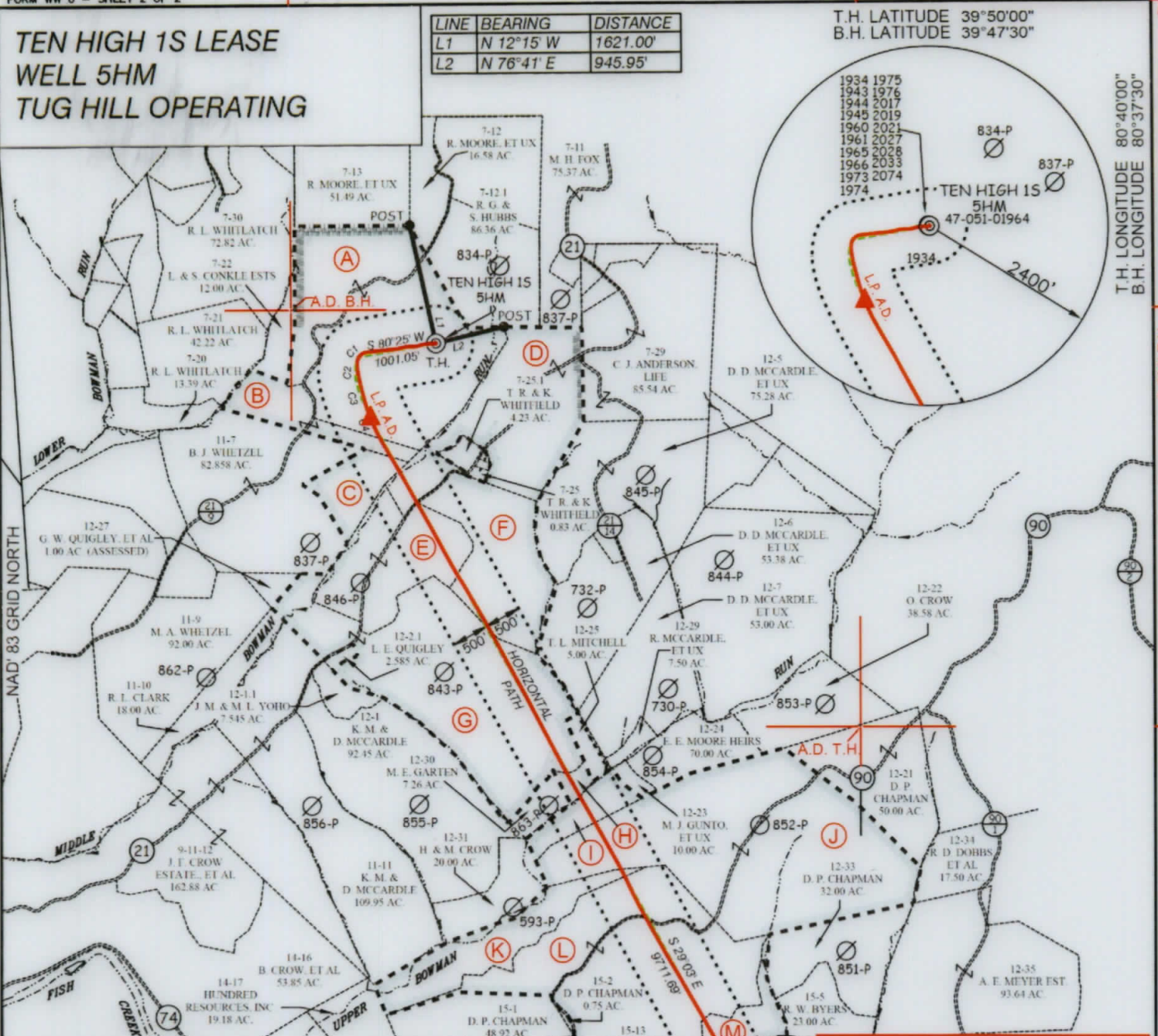
11,626' AS DRILLED B.H.

3,961' AS DRILLED T.H.

**TEN HIGH 1S LEASE  
WELL 5HM  
TUG HILL OPERATING**

LINE	BEARING	DISTANCE
L1	N 12°15' W	1621.00'
L2	N 76°41' E	945.95'

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



T.H. LONGITUDE 80°40'00"  
B.H. LONGITUDE 80°37'30"  
4,104' AS DRILLED B.H.  
9,700' T.H.

TAG	SURFACE OWNER	PARCEL	ACRES
A	LAWRENCE & SHIRLEY CONKLE ESTS	9-7-24	139.79
B	LARRY J. WHITZEL, ET UX	9-7-23	36.00
C	BRENDA J. WHITZEL	9-11-7.1	17.81
D	THOMAS R. & KIMBERLY WHITFIELD	9-7-25.2	76.40
E	THOMAS R. & KIMBERLY WHITFIELD	9-12-4	54.02
F	WNEK FAMILY IRREVOCABLE TR	9-11-8	50.10
G	GERALD W. QUIGLEY, ET AL	9-12-2	139.79
H	MYRTLE ELIZABETH GARTEN	9-12-28	4.00
I	GARY L. DOBBS	9-12-37	20.00
J	DAVID P. CHAPMAN	9-12-32	150.00
K	MYRTLE ELIZABETH GARTEN	9-14-18	20.00
L	SUSAN VAN DYNE	9-15-3	167.00
M	ROBERT FRANK KOTSON, ET AL	9-15-4	26.40

**AS DRILLED COORDINATES FOR WELL NO. 5HM**

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

NAD83 S.P.C. (FT)	N 478,123.48	E 1,636,789.50
NAD83 GEO.	LAT-(N) 39.806706	LONG-(W) 80.680767
NAD83 UTM (M)	N 4,406,352.60	E 527,326.35

**LANDING POINT**

NAD83 S.P.C. (FT)	N 477,124.4	E 1,635,806.3
NAD83 GEO.	LAT-(N) 39.803932	LONG-(W) 80.683863
NAD83 UTM (M)	N 4,406,043.7	E 527,062.4

**BOTTOM HOLE**

NAD83 S.P.C. (FT)	N 468,489.7	E 1,640,710.1
NAD83 GEO.	LAT-(N) 39.780401	LONG-(W) 80.666367
NAD83 UTM (M)	N 4,403,437.6	E 526,569.8

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	125.55'	113.21'	S 44°44' W	119.21'
C2	270.07'	543.72'	S 00°25' E	267.30'
C3	389.15'	1644.99'	S 19°58' E	388.24'
C4	355.73'	3708.21'	S 25°48' E	355.59'



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26031 | 304.482.5654  
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.548.3952  
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296  
slsvw.com

**LEGEND**  
AS DRILLED ————  
PROPOSED - - - - -

P.S. 849

*C. Victor Moyers*

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

NAD83 S.P.C. (FT)	N 478,123.48	E 1,636,789.50
NAD83 GEO.	LAT-(N) 39.806706	LONG-(W) 80.680767
NAD83 UTM (M)	N 4,406,352.60	E 527,326.35

**LANDING POINT**

NAD83 S.P.C. (FT)	N 475,919.8	E 1,636,007.8
NAD83 GEO.	LAT-(N) 39.803374	LONG-(W) 80.683492
NAD83 UTM (M)	N 4,405,981.9	E 527,094.3

**BOTTOM HOLE**

NAD83 S.P.C. (FT)	N 468,429.3	E 1,640,722.6
NAD83 GEO.	LAT-(N) 39.780236	LONG-(W) 80.666320
NAD83 UTM (M)	N 4,403,419.2	E 528,573.9



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

SCALE 1" = 2000' FILE NO. 8655P5HMAD.dwg  
DATE MARCH 24, 20 20  
REVISED \_\_\_\_\_, 20 \_\_\_\_  
OPERATORS WELL NO. TEN HIGH 1S-5HM  
API WELL NO. 47 - 051 - 1964  
NO. STATE COUNTY PERMIT

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

**LEGEND**

LEASE LINE	—————
SURFACE LINE	-----
WELL LATERAL	-----
OFFSET LINE	-----
TIE LINE	-----
CREEK	~~~~~
ROAD	=====
COUNTY ROUTE	⊙
PROPOSED WELL	⊙
EXISTING WELL	⊙
PERMITTED WELL	⊙
TAX MAP-PARCEL	00-00
LEASE # (SEE PAGES 1,3,4,&5)	(A)

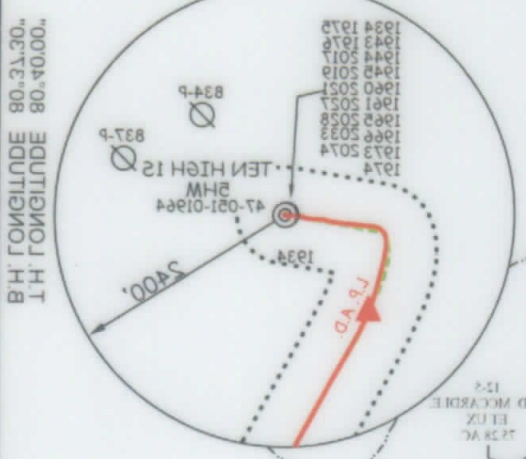
WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER  
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5400 D BIG TYLER ROAD  
FORT WORTH, TX 76107 CHARLESTON, WV 25313



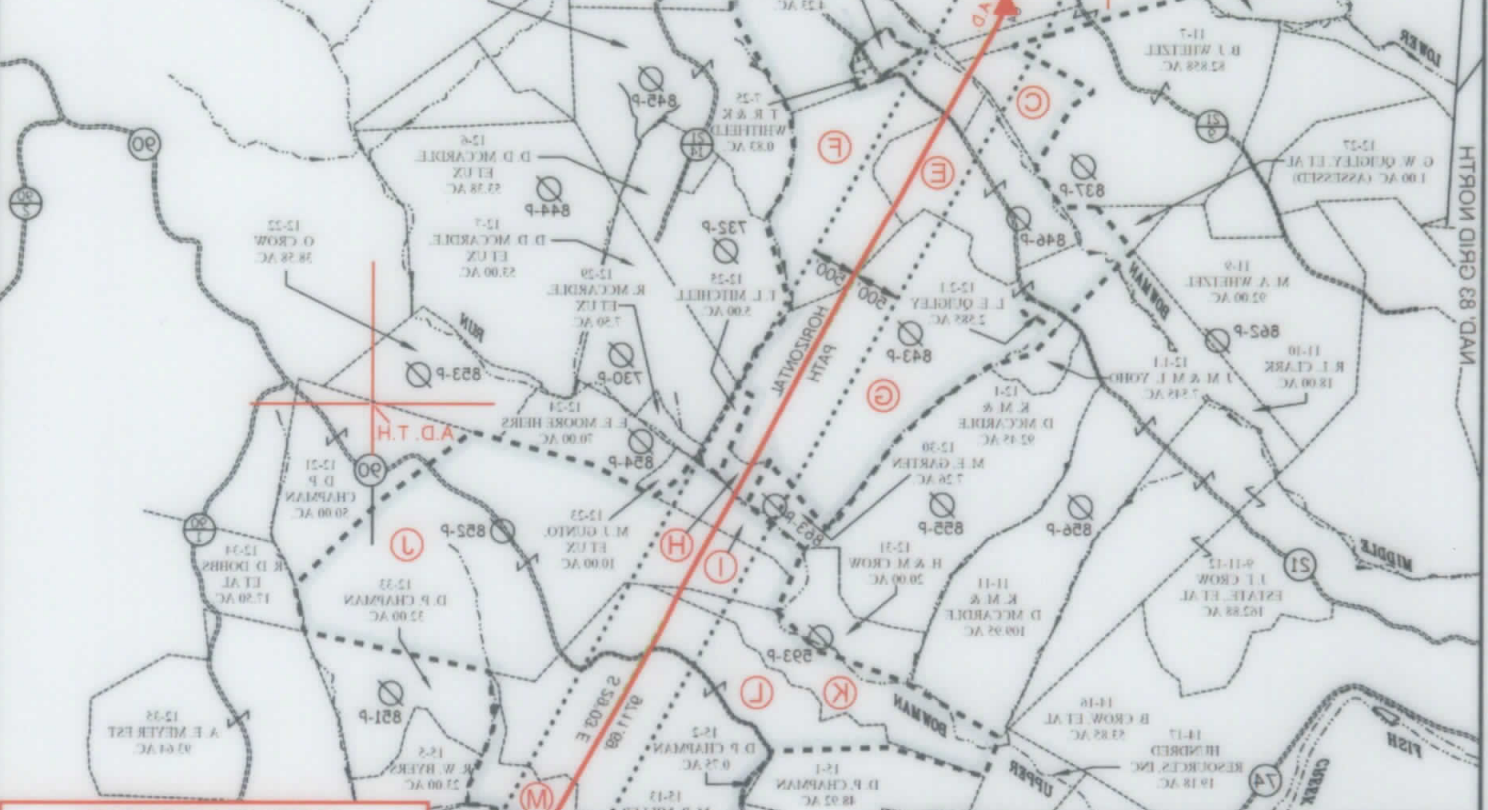
**TUG HILL OPERATING  
WELL 5HM  
TEN HIGH 12 LEASE**

LINE	BEARING	DISTANCE
L1	N 12°15' W	1621.00'
L2	N 78°41' E	948.95'

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



T.H. LONGITUDE 80°47'00"  
B.H. LONGITUDE 80°37'30"



**AS DRILLED COORDINATES FOR WELL NO. 5HM**

POINT	NAD83 UTM (M)	NAD83 S.P.C. (FT)	NAD83 GEO.
BOTTOM HOLE	N 4402.981 9 E 527.094 3	N 4789.918 8 E 1288.007 8	LAT (N) 39.80328 LONG (W) 80.88250
LANDING POINT	N 4408.252 80 E 527.258 25	N 4777.24 4 E 1292.808 3	LAT (N) 39.80276 LONG (W) 80.88072
25' C NORTH ZONE (UTM) ZONE 17 NORTH	N 4408.252 80 E 527.258 25	N 4787.23 48 E 1288.789 20	LAT (N) 39.80276 LONG (W) 80.88072

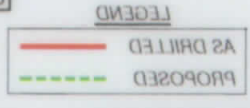
CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	128.55'	113.21'	S 44°44' W	119.21'
C2	270.07'	200.25'	S 00°25' E	267.30'
C3	388.15'	164.99'	S 19°58' E	388.24'
C4	352.73'	370.81'	S 25°48' E	352.59'

TAG	SURFACE OWNER	PARCEL	ACRES
A	LAWRENCE & SHIRLEY CONKLE ESTS	9-7-24	139.29
B	LARRY A. WHEATZ, ET UX	9-7-23	36.00
C	BRINDA J. WHEATZ	9-11-71	17.81
D	THOMAS R. & KIMBERLY WHEATZ	9-7-22	26.40
E	THOMAS R. & KIMBERLY WHEATZ	9-12-4	24.05
F	WEEK FAMILY IRREVOCABLE TR	9-11-8	20.10
G	GERALD W. QUIGLEY ET AL	9-12-2	129.29
H	MYRLE ELZABETH GARDEN	9-12-28	4.00
I	GARY I. DOBBS	9-12-27	20.00
J	DAVID P. CHAPMAN	9-12-25	120.00
K	MYRLE ELZABETH GARDEN	9-14-18	20.00
L	SUSAN VAN DYKE	9-12-3	167.00
M	ROBERT FRANK KOZON ET AL	9-12-4	26.40



1254 East Beckley Highway | Beckley, WV 26011 | 304.222.2188  
1612 Cannonville Boulevard East | Charleston, WV 25301 | 304.242.2822  
12 Vinton Drive | P.O. Box 180 | Glenville, WV 26021 | 304.481.2824

*C. Victor Moyers*  
P.S. 849



**LEGEND**

- LEASE LINE
- SURFACE LINE
- WELL LATERAL
- OFFSET LINE
- THE LINE
- CREEK
- ROAD
- COUNTY ROUTE
- PROPOSED WELL
- EXISTING WELL
- PERMITTED WELL
- TAX MAP - PARCEL

LEASE # (SEE PAGES 1, 2, 4, & 5) (A)

COUNTY NAME: PERMIT



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

NO. STATE COUNTY PERMIT

WELL OPERATORS WELL NO. TEN HIGH 12-5HM

DATE MARCH 24, 2020

SCALE 1" = 2000'

FILE NO. 88525PHMAD.dwg

STATE OF WEST VIRGINIA

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

DESIGNATED AGENT: DIANNA STAMPER  
CT CORPORATION SYSTEM  
ADDRESS: 5400 D BIG TYLER ROAD  
CHARLESTON, WV 25313