



west virginia department of environmental protection

Office of Oil and Gas
601 57th Street, S.E.
Charleston, WV 25304
(304) 926-0450
fax: (304) 926-0452

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Monday, October 19, 2020
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
380 SOUTHPOINTE BOULEVARD, PLAZA II
SUITE 200
CANONSBURG, PA 15317

Re: Permit Modification Approval for TEN HIGH 1S-15HU
47-051-02027-00-00

Modified for optional additional string of intermediate casing and deviation prognosis.

TUG HILL OPERATING, LLC

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926-0450.

A blue ink signature of James A. Martin, written in a cursive style.

James A. Martin
Chief

Operator's Well Number: TEN HIGH 1S-15HU
Farm Name: LAWRENCE & SHIRLEY CONKLE ESTS
U.S. WELL NUMBER: 47-051-02027-00-00
Horizontal 6A New Drill
Date Modification Issued: October 19, 2020

Promoting a healthy environment.



west virginia department of environmental protection

Oil and Gas Conservation Commission
601 57th Street SE, Charleston, WV 25304
304-414-1239

Randall M. Albert, Chairman
dep.wv.gov

July 22, 2020

Department of Environmental Protection
Office of Oil and Gas
Charleston, WV 25304

RE: Application for Deep Well Permit – API #47-051-02027

COMPANY: Tug Hill Operating, LLC

FARM: Lawrence & Shirley Conkle Ests Ten High 1S-15HU

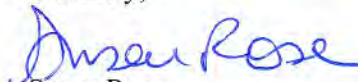
COUNTY: Marshall DISTRICT: Meade QUAD: Glen Easton

The deep well review of the application for the above company is **Approved to drill to Trenton for Point Pleasant completion.**

The applicant has complied with the provision of Chapter 22C-9, of the Code of West Virginia, nineteen hundred and thirty-one (1931), as amended, Oil and Gas Conservation Commission as follows:

1. Comments to Notice of Deviation filed? No.
2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners? Yes
3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells: **yes
4. Provided a plat showing that the productive interval of the well meets the requirements of the Rules of the Commission W. Va. C.S.R. § 39-1-4.2.

Sincerely,


Susan Rose
Administrator

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

1) Well Operator: Tug Hill Operating, LLC 494510851 Marshall Meade Glen Easton 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Ten High 1S-15HU Well Pad Name: Ten High

3) Farm Name/Surface Owner: Lawrence & Shirley Conkle, ests Public Road Access: Shepherd Ridge Lane CR 21/9

4) Elevation, current ground: 1310' Elevation, proposed post-construction: 1310'

5) Well Type (a) Gas X Oil Underground Storage
Other

(b) If Gas Shallow Deep X
Horizontal X

6) Existing Pad: Yes or No Yes

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7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Point Pleasant is the target formation at a depth of 11,608' - 11,747' thickness of 139' and anticipated pressure of approx. 9500 psi

8) Proposed Total Vertical Depth: 11,897'

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 21,170'

11) Proposed Horizontal Leg Length: 8,406.89'

12) Approximate Fresh Water Strata Depths: 70', 1059'

13) Method to Determine Fresh Water Depths: Offset well reports or noticeable flow at the flowline or when need to start soaping

14) Approximate Saltwater Depths: 2,167'

15) Approximate Coal Seam Depths: Sewickly Coal - 968' and Pittsburgh Coal - 1053'

16) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes X No

(a) If Yes, provide Mine Info: Name: Marshall County Coal Co. / Marshall County Mine
Depth: 1020' TVD and 290' subsea level
Seam: Pittsburgh #8
Owner: Murray Energy / Consolidated Coal Co.

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18)

CASING AND TUBING PROGRAM

TYPE	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor					*See attachment		
Fresh Water							
Coal							
Intermediate							
Production							
Tubing							
Liners							

TYPE	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor				*See attachment			
Fresh Water							
Coal							
Intermediate							
Production							
Tubing							
Liners							

PACKERS

Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			

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(10/14)

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API NO. 47-051

OPERATOR WELL NO. Ten High 1S-15HU

Well Pad Name: Ten High

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19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill through the Point Pleasant and TD Pilot Hole 150' into the Trenton. Log vertical section and run a solid cement plug back to proposed KOP. Drill curve and lateral per proposed well plan, run and cement production casing. Perform CBL from 60 deg to surface, make cleanout run, and stimulate.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Well to be completed with approximately 21,420,000 lb proppant and 331,169 bbl of water. Max rate = 80 bpm; max psi = 12,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 16.2

22) Area to be disturbed for well pad only, less access road (acres): 5.92

23) Describe centralizer placement for each casing string:

Will run 3 centralizers on surface casing at equal distance. Intermediate will have 1 centralizer every third joint. Production casing will have one centralizer every third joint in lateral, one centralizer every joint through curve, one centralizer every third joint to surface.

24) Describe all cement additives associated with each cement type:

*See Attachment

25) Proposed borehole conditioning procedures:

Will circulate a minimum of 3 hours at TD, short trip to curve, circulate bottoms up, check for flow, POOH

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*Note: Attach additional sheets as needed.

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CASING AND TUBING PROGRAM

Type	Size (in)	New Or Used	Grade	Weight per ft. (lb / ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.) / CTS
Conductor	30"	NEW	BW	BW	100'	100'	216FT^3(CTS)
Fresh Water	24"	NEW	S60	125.45	1,126'	1,126'	1,309FT^3(CTS)
Coal	18.625"	NEW	J55	106	2,800'	2,800'	2,371FT^3(CTS)
Intermediate #1	*13.325"	NEW	P110	68	6,801'	6,801'	4,382FT^3(CTS)
Intermediate #2	9.625"	NEW	P110	47	10,558'	10,558'	3,458FT^3(CTS)
Production	5.5"	NEW	P110	23	21,170'	21,170'	5,029FT^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		11,107'	
Liners							

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Type	Size (in.)	Wellbore Diameter (in.)	Wall Thickness (in.)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	38	1.0	2333	1866	CLASS A	1.2
Fresh Water	24"	28	0.75	2750	1330	SEE #24	1.2
Coal	18.625"	22	.531	2740	1140	SEE #24	1.2
Intermediate #1	*13.325"	17	0.455	6910	2340	SEE #24	1.99
Intermediate #2	9.625"	12.25	0.472	10730	7210	SEE #24	1.99
Production	5.5"	8.5	0.415	14530	10864	SEE #24	1.18
Tubing	2 7/8"						
Liners							

*Intermediate #1: To run if needed.

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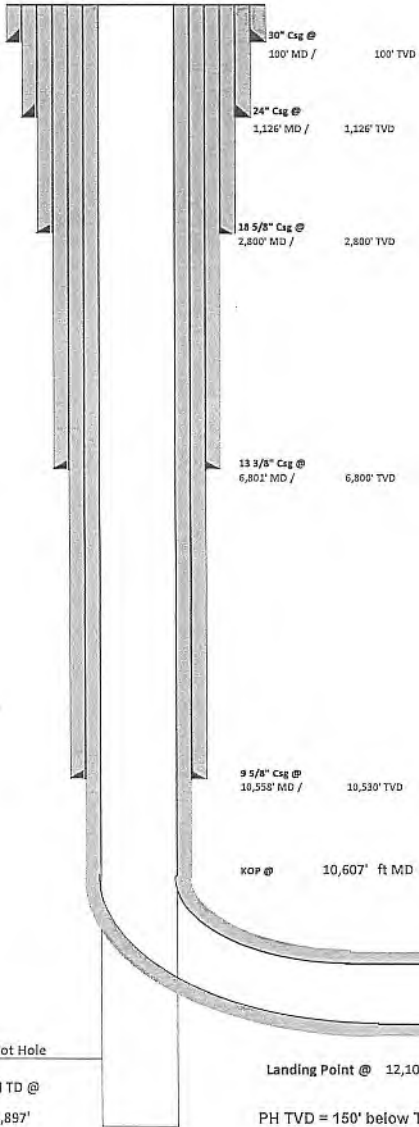


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WELL NAME: **Ten High 15-15HU**
 STATE: **West Virginia** COUNTY: **Marshall**
 DISTRICT: **Meade**
 DF Elev: **1,343'** GL Elev: **1,310'**
 TD: **9,066'**
 TH Latitude: **39.8067934**
 TH Longitude: **-80.68092341**
 BH Latitude: **39.784544**
 BH Longitude: **-80.663594**



FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	1,059'
Sewickley Coal	968'
Pittsburgh Coal	1,053'
Big Lima	2,968'
Berea	2,692'
Tully	6,625'
Marcellus	6,732'
Onondaga	6,784'
Salina	7,516'
Lockport	8,581'
Utica	11,432'
Point Pleasant	11,608'
Landing Depth	11,658'
Trenton	11,747'
Pilot Hole TD	11,897'

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	100'	100'	BW	BW	Surface
Surface	28	24	1,126'	1,126'	125.45	S60	Surface
Intermediate 1	22	18 5/8	2,800'	2,800'	106	J55	Surface
Intermediate 2	17	13 3/8	6,801'	6,800'	68	P110	Surface
Intermediate 3	12 1/4	9 5/8	10,558'	10,530'	47	HP110	Surface
Production	8 1/2	5 1/2	21,170'	11,817'	23	HCP110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	291	A	15.6	Air	None
Surface	1,478	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	2,345	A	15	Air	1 Centralizer every other jt
Intermediate 2	4,281	A	15	Air	1 Centralizer every other jt
Intermediate 3	2,614	A	14.5	Air	1 Centralizer every other jt
Production	4,494	A	15	Air / SOBMM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to stc

Joe, 10/24/19

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MWD

Pilot Hole
 PH TD @ 11,897'
 Landing Point @ 12,104' MD / 11,658' TVD
 PH TVD = 150' below Trenton Top

Lateral TD @ 21,170' ft MD
 11,817' ft TVD



TUG HILL
OPERATING

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Tug Hill Operating, LLC Casing and Cement Program

Ten High 1S-15HU

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	100'	CTS
Surface	24"	S60	28"	1,126'	CTS
Intermediate 1	18 5/8"	J55	22"	2,800'	CTS
Intermediate 2	13 3/8"	P110	17"	6,801'	CTS
Intermediate 3	9 5/8"	HP110	12 1/4"	10,558'	CTS
Production	5 1/2"	HCP110	8 1/2"	21,170'	CTS

Cement

Surface: Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Surface Cement mixed at 15.6 ppg, Y=1.2

Intermediate 1: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.0 ppg, Y=1.2

Intermediate 2: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.0 ppg, Y=1.2

Intermediate 3: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 14.5 ppg, Y=1.99

Production: 50:50 Poz: Premium NE-1 + .1% bwoc ASA-301 + 60lb/sk ASCA-1 + .35% bwoc BA-10A + .25% bwoc MPA-170, 44 lb sack + .5% bwoc R-3 + .75 gals/100sk FP-13L – Production Cement mixed at 15.2ppg, Y = 1.18

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Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Ten High 1S-15HU (C)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1310+33 @ 1343.00usft (Nabors X08)
Project:	Marshall County, West Virginia	MD Reference:	RKB=1310+33 @ 1343.00usft (Nabors X08)
Site:	Ten High	North Reference:	Grid
Well:	Ten High 1S-15HU (C)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev4		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
14,100.00	89.00	149.71	11,693.03	-1,980.00	1,332.05	14,454,560.07	1,731,357.83	39.80134271	-80.67620589	
14,200.00	89.00	149.71	11,694.78	-2,066.33	1,382.47	14,454,473.73	1,731,408.26	39.80110511	-80.67602746	
14,300.00	89.00	149.71	11,696.53	-2,152.67	1,432.90	14,454,387.39	1,731,458.69	39.80086751	-80.67584902	
14,400.00	89.00	149.71	11,698.29	-2,239.00	1,483.33	14,454,301.06	1,731,509.11	39.80062991	-80.67567059	
14,500.00	89.00	149.71	11,700.04	-2,325.34	1,533.76	14,454,214.72	1,731,559.54	39.80039231	-80.67549216	
14,600.00	89.00	149.71	11,701.79	-2,411.68	1,584.19	14,454,128.39	1,731,609.97	39.80015470	-80.67531374	
14,700.00	89.00	149.71	11,703.55	-2,498.01	1,634.62	14,454,042.05	1,731,660.40	39.79991710	-80.67513531	
14,800.00	89.00	149.71	11,705.30	-2,584.35	1,685.04	14,453,955.71	1,731,710.83	39.79967950	-80.67495688	
14,900.00	89.00	149.71	11,707.05	-2,670.69	1,735.47	14,453,869.38	1,731,761.26	39.79944189	-80.67477846	
15,000.00	89.00	149.71	11,708.81	-2,757.02	1,785.90	14,453,783.04	1,731,811.68	39.79920429	-80.67460004	
15,100.00	89.00	149.71	11,710.56	-2,843.36	1,836.33	14,453,696.71	1,731,862.11	39.79896669	-80.67442162	
15,200.00	89.00	149.71	11,712.31	-2,929.69	1,886.76	14,453,610.37	1,731,912.54	39.79872908	-80.67424320	
15,300.00	89.00	149.71	11,714.07	-3,016.03	1,937.18	14,453,524.03	1,731,962.97	39.79849148	-80.67406478	
15,400.00	89.00	149.71	11,715.82	-3,102.37	1,987.61	14,453,437.70	1,732,013.40	39.79825387	-80.67388636	
15,500.00	89.00	149.71	11,717.58	-3,188.70	2,038.04	14,453,351.36	1,732,063.82	39.79801627	-80.67370794	
15,600.00	89.00	149.71	11,719.33	-3,275.04	2,088.47	14,453,265.02	1,732,114.25	39.79777866	-80.67352953	
15,700.00	89.00	149.71	11,721.08	-3,361.38	2,138.90	14,453,178.69	1,732,164.68	39.79754106	-80.67335111	
15,800.00	89.00	149.71	11,722.84	-3,447.71	2,189.32	14,453,092.35	1,732,215.11	39.79730345	-80.67317270	
15,900.00	89.00	149.71	11,724.59	-3,534.05	2,239.75	14,453,006.02	1,732,265.54	39.79706585	-80.67299429	
16,000.00	89.00	149.71	11,726.34	-3,620.38	2,290.18	14,452,919.68	1,732,315.96	39.79682824	-80.67281588	
16,100.00	89.00	149.71	11,728.10	-3,706.72	2,340.61	14,452,833.34	1,732,366.39	39.79659063	-80.67263747	
16,200.00	89.00	149.71	11,729.85	-3,793.06	2,391.04	14,452,747.01	1,732,416.82	39.79635303	-80.67245906	
16,300.00	89.00	149.71	11,731.60	-3,879.39	2,441.46	14,452,660.67	1,732,467.25	39.79611542	-80.67228065	
16,400.00	89.00	149.71	11,733.36	-3,965.73	2,491.89	14,452,574.33	1,732,517.68	39.79587781	-80.67210224	
16,500.00	89.00	149.71	11,735.11	-4,052.06	2,542.32	14,452,488.00	1,732,568.10	39.79564020	-80.67192384	
16,600.00	89.00	149.71	11,736.86	-4,138.40	2,592.75	14,452,401.66	1,732,618.53	39.79540260	-80.67174544	
16,700.00	89.00	149.71	11,738.62	-4,224.74	2,643.18	14,452,315.33	1,732,668.96	39.79516499	-80.67156703	
16,800.00	89.00	149.71	11,740.37	-4,311.07	2,693.60	14,452,228.99	1,732,719.39	39.79492738	-80.67138863	
16,900.00	89.00	149.71	11,742.13	-4,397.41	2,744.03	14,452,142.65	1,732,769.82	39.79468977	-80.67121023	
17,000.00	89.00	149.71	11,743.88	-4,483.75	2,794.46	14,452,056.32	1,732,820.24	39.79445216	-80.67103184	
17,100.00	89.00	149.71	11,745.63	-4,570.08	2,844.89	14,451,969.98	1,732,870.67	39.79421455	-80.67085344	
17,200.00	89.00	149.71	11,747.39	-4,656.42	2,895.32	14,451,883.65	1,732,921.10	39.79397694	-80.67067504	
17,300.00	89.00	149.71	11,749.14	-4,742.75	2,945.75	14,451,797.31	1,732,971.53	39.79373933	-80.67049665	
17,400.00	89.00	149.71	11,750.89	-4,829.09	2,996.17	14,451,710.97	1,733,021.96	39.79350172	-80.67031825	
17,500.00	89.00	149.71	11,752.65	-4,915.43	3,046.60	14,451,624.64	1,733,072.38	39.79326411	-80.67013986	
17,600.00	89.00	149.71	11,754.40	-5,001.76	3,097.03	14,451,538.30	1,733,122.81	39.79302650	-80.66996147	
17,700.00	89.00	149.71	11,756.15	-5,088.10	3,147.46	14,451,451.96	1,733,173.24	39.79278889	-80.66978308	
17,800.00	89.00	149.71	11,757.91	-5,174.43	3,197.89	14,451,365.63	1,733,223.67	39.79255128	-80.66960469	
17,900.00	89.00	149.71	11,759.66	-5,260.77	3,248.31	14,451,279.29	1,733,274.10	39.79231367	-80.66942630	
18,000.00	89.00	149.71	11,761.41	-5,347.11	3,298.74	14,451,192.96	1,733,324.53	39.79207605	-80.66924792	
18,100.00	89.00	149.71	11,763.17	-5,433.44	3,349.17	14,451,106.62	1,733,374.95	39.79183844	-80.66906953	
18,200.00	89.00	149.71	11,764.92	-5,519.78	3,399.60	14,451,020.28	1,733,425.38	39.79160083	-80.66889115	
18,300.00	89.00	149.71	11,766.68	-5,606.12	3,450.03	14,450,933.95	1,733,475.81	39.79136322	-80.66871277	
18,400.00	89.00	149.71	11,768.43	-5,692.45	3,500.45	14,450,847.61	1,733,526.24	39.79112560	-80.66853439	
18,500.00	89.00	149.71	11,770.18	-5,778.79	3,550.88	14,450,761.28	1,733,576.67	39.79088799	-80.66835600	
18,600.00	89.00	149.71	11,771.94	-5,865.12	3,601.31	14,450,674.94	1,733,627.09	39.79065038	-80.66817763	
18,700.00	89.00	149.71	11,773.69	-5,951.46	3,651.74	14,450,588.60	1,733,677.52	39.79041276	-80.66799925	
18,800.00	89.00	149.71	11,775.44	-6,037.80	3,702.17	14,450,502.27	1,733,727.95	39.79017515	-80.66782087	
18,900.00	89.00	149.71	11,777.20	-6,124.13	3,752.59	14,450,415.93	1,733,778.38	39.78993753	-80.66764250	
19,000.00	89.00	149.71	11,778.95	-6,210.47	3,803.02	14,450,329.59	1,733,828.81	39.78969992	-80.66746412	
19,100.00	89.00	149.71	11,780.70	-6,296.81	3,853.45	14,450,243.26	1,733,879.23	39.78946231	-80.66728575	
19,200.00	89.00	149.71	11,782.46	-6,383.14	3,903.88	14,450,156.92	1,733,929.66	39.78922469	-80.66710738	
19,300.00	89.00	149.71	11,784.21	-6,469.48	3,954.31	14,450,070.59	1,733,980.09	39.78898707	-80.66692901	
19,400.00	89.00	149.71	11,785.96	-6,555.81	4,004.73	14,449,984.25	1,734,030.52	39.78874946	-80.66675064	
19,500.00	89.00	149.71	11,787.72	-6,642.15	4,055.16	14,449,897.91	1,734,080.95	39.78851184	-80.66657227	



Planning Report - Geographic

4705102027 MOD

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Ten High 1S-15HU (C)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1310+33 @ 1343.00usft (Nabors X08)
Project:	Marshall County, West Virginia	MD Reference:	RKB=1310+33 @ 1343.00usft (Nabors X08)
Site:	Ten High	North Reference:	Grid
Well:	Ten High 1S-15HU (C)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev4		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
19,600.00	89.00	149.71	11,789.47	-6,728.49	4,105.59	14,449,811.58	1,734,131.37	39.78827423	-80.66639390
19,700.00	89.00	149.71	11,791.23	-6,814.82	4,156.02	14,449,725.24	1,734,181.80	39.78803661	-80.66621554
19,800.00	89.00	149.71	11,792.98	-6,901.16	4,206.45	14,449,638.90	1,734,232.23	39.78779899	-80.66603717
19,900.00	89.00	149.71	11,794.73	-6,987.49	4,256.87	14,449,552.57	1,734,282.66	39.78756138	-80.66585881
20,000.00	89.00	149.71	11,796.49	-7,073.83	4,307.30	14,449,466.23	1,734,333.09	39.78732376	-80.66568045
20,100.00	89.00	149.71	11,798.24	-7,160.17	4,357.73	14,449,379.90	1,734,383.51	39.78708614	-80.66550209
20,200.00	89.00	149.71	11,799.99	-7,246.50	4,408.16	14,449,293.56	1,734,433.94	39.78684852	-80.66532373
20,300.00	89.00	149.71	11,801.75	-7,332.84	4,458.59	14,449,207.22	1,734,484.37	39.78661090	-80.66514537
20,400.00	89.00	149.71	11,803.50	-7,419.18	4,509.02	14,449,120.89	1,734,534.80	39.78637329	-80.66496702
20,500.00	89.00	149.71	11,805.25	-7,505.51	4,559.44	14,449,034.55	1,734,585.23	39.78613567	-80.66478866
20,600.00	89.00	149.71	11,807.01	-7,591.85	4,609.87	14,448,948.22	1,734,635.66	39.78589805	-80.66461030
20,700.00	89.00	149.71	11,808.76	-7,678.18	4,660.30	14,448,861.88	1,734,686.08	39.78566043	-80.66443195
20,800.00	89.00	149.71	11,810.51	-7,764.52	4,710.73	14,448,775.54	1,734,736.51	39.78542281	-80.66425360
20,900.00	89.00	149.71	11,812.27	-7,850.86	4,761.16	14,448,689.21	1,734,786.94	39.78518519	-80.66407525
21,000.00	89.00	149.71	11,814.02	-7,937.19	4,811.58	14,448,602.87	1,734,837.37	39.78494757	-80.66389690
21,100.00	89.00	149.71	11,815.78	-8,023.53	4,862.01	14,448,516.53	1,734,887.80	39.78470995	-80.66371855
21,169.83	89.00	149.71	11,817.00	-8,083.82	4,897.23	14,448,456.25	1,734,923.01	39.78454402	-80.66359401
PBHL/TD 21169.83 MD/11817.00 TVD									
21,169.84	89.00	149.71	11,817.00	-8,083.82	4,897.23	14,448,456.24	1,734,923.01	39.78454400	-80.66359400

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Ten High 1S-15HU LP r1 - hit/miss target - Shape - Point	0.00	0.00	11,656.00	-121.25	246.01	14,456,418.81	1,730,271.79	39.80645800	-80.68004900
- plan misses target center by 111.63usft at 11964.82usft MD (11642.11 TVD, -199.86 N, 167.97 E)									
Ten High 1S-15HU LP r1 - Point	0.00	0.01	11,656.00	-159.07	181.24	14,456,380.99	1,730,207.03	39.80635478	-80.68028007
- plan misses target center by 41.82usft at 11948.12usft MD (11638.41 TVD, -188.05 N, 156.76 E)									
Ten High 1S-15HU BHL - plan hits target center - Point	0.00	0.00	11,817.00	-8,083.82	4,897.23	14,448,456.24	1,734,923.01	39.78454400	-80.66359400

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,208.00	1,208.00	20" Casing @ 1175 TVD	20	24	
3,013.52	3,013.00	13 3/8" Casing @ 2980 TVD	13-3/8	17-1/2	
10,586.98	10,558.00	9 5/8" Casing @ 10525 TVD	9-5/8	12-1/4	

RECEIVED
Office of Oil and Gas

NOV 14 2019

WV Department of
Environmental Protection



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Ten High 1S-15HU (C)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1310+33 @ 1343.00usft (Nabors X08)
Project:	Marshall County, West Virginia	MD Reference:	RKB=1310+33 @ 1343.00usft (Nabors X08)
Site:	Ten High	North Reference:	Grid
Well:	Ten High 1S-15HU (C)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev4		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,033.00	2,033.00	0.00	0.00	KOP Begin 1°/100' build
2,233.00	2,232.96	3.16	-1.48	Begin 2.00° tangent
4,233.00	4,231.74	66.42	-30.97	Begin 1°/100' drop
4,433.00	4,431.70	69.59	-32.45	Begin vertical hold section
9,034.30	9,033.00	69.59	-32.45	Begin 2°/100' build
9,430.90	9,426.76	96.29	-63.60	Begin 11.90° tangent
10,605.59	10,576.21	253.89	-247.49	Begin 6°/100' build/turn
11,554.01	11,448.34	58.28	-77.00	Begin 8°/100' build/turn
12,104.01	11,658.00	-300.00	263.00	Begin 2°/100' turn
12,764.47	11,669.61	-826.95	658.56	Begin 89.00° lateral
21,169.83	11,817.00	-8,083.82	4,897.23	PBHL/TD 21169.83 MD/11817.00 TVD

RECEIVED
Office of Oil and Gas

NOV 14 2019

WM Department of
Environmental Protection

4705102027 mod



Well Site Safety Plan

Tug Hill Operating, LLC

Ju
10/24/19

Well Name: Ten High 1S-15HU

Pad Location: Ten High
Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

NORTHING -4,406,362.22

EASTING -527,312.91

September 2019

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Office of Oil and Gas

NOV 14 2019

WV Department of
Environmental Protection

TEN HIGH 1S LEASE
UTICA UNIT - 623.86 AC. ±
WELL 15HU
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. 478,155.79	E. 1,636,745.94
NAD'83 GEO.	LAT-(N) 39.806793	LONG-(W) 80.680923
NAD'83 UTM (M)	N. 4,406,362.22	E. 527,312.91

LANDING POINT

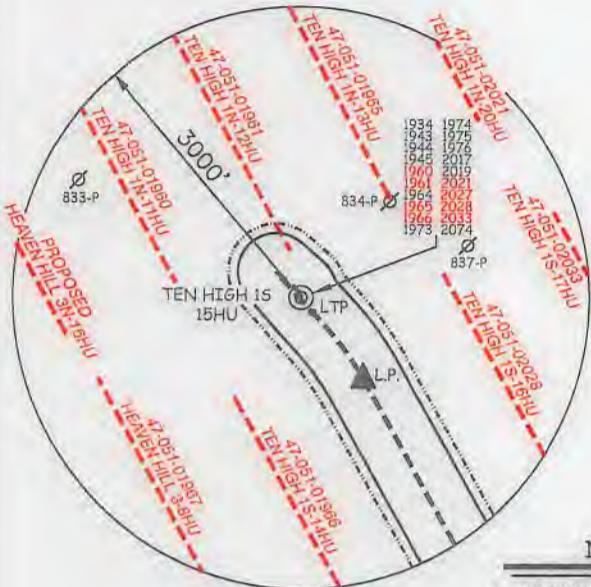
NAD'83 S.P.C.(FT)	N. 477,317.7	E. 1,637,390.8
NAD'83 GEO.	LAT-(N) 39.804516	LONG-(W) 80.678589
NAD'83 UTM (M)	N. 4,406,110.2	E. 527,513.6

BOTTOM HOLE

NAD'83 S.P.C.(FT)	N. 469,988.5	E. 1,641,509.0
NAD'83 GEO.	LAT-(N) 39.784544	LONG-(W) 80.663594
NAD'83 UTM (M)	N. 4,403,898.3	E. 528,805.6

T.H. LONGITUDE 80°40'00"
B.H. LONGITUDE 80°37'30"
2,595' B.H.
9,668' T.H.

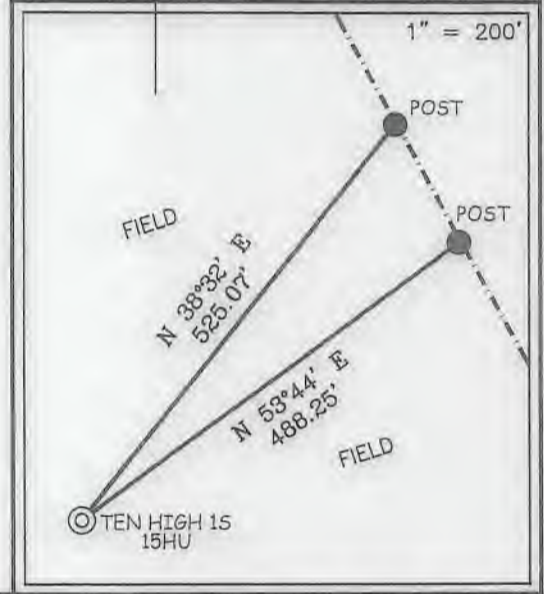
B.H.



NOTES ON SURVEY

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. WERE FOUND WITHIN 825' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'.
- PROPOSED LATERAL OR TOP HOLE OF TEN HIGH 1S-15HU (47-051-02027) IS WITHIN 3000' OF THE TOP HOLES OR LATERALS OF THE FOLLOWING:
HEAVEN HILL 3-8HU (47-051-01967),
PROPOSED HEAVEN HILL 3N-16HU,
TEN HIGH 1N-11HU (47-051-01960),
TEN HIGH 1N-12HU (47-051-01961),
TEN HIGH 1N-13HU (47-051-01965),
TEN HIGH 1S-14HU (47-051-01966),
TEN HIGH 1S-16HU (47-051-02028),
TEN HIGH 1S-17HU (47-051-02033),
TEN HIGH 1N-20HU (47-051-02021).

REFERENCES

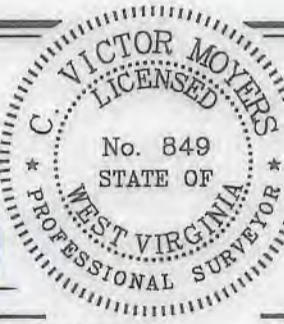


12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.6634
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296
slsw.com

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 AUGUST 29, 20 17
REVISED 09/01/17, 01/12/18, 03/22/18, 04/05/18, 10/01/19, 11/12/19, & 07/08/20

OPERATORS WELL NO. TEN HIGH 1S-15HU

API WELL NO. 47 - 051 - 02027
STATE COUNTY PERMIT

MOD

MINIMUM DEGREE OF ACCURACY 1 / 2500
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK)
FILE NO. 8655P15HUR7.dwg
SCALE 1" = 2000'
TEN HIGH 1S-15HU Rev4

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 = 1,323.00' ELEVATION 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 ADDITIONAL SHEETS ACREAGE 139.79±

PROPOSED WORK: LEASE NO. SEE ADDITIONAL SHEETS
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 POINT PLEASANT
ESTIMATED DEPTH TVD: 11,897' / TMD: 21,170'

COUNTY NAME
PERMIT

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

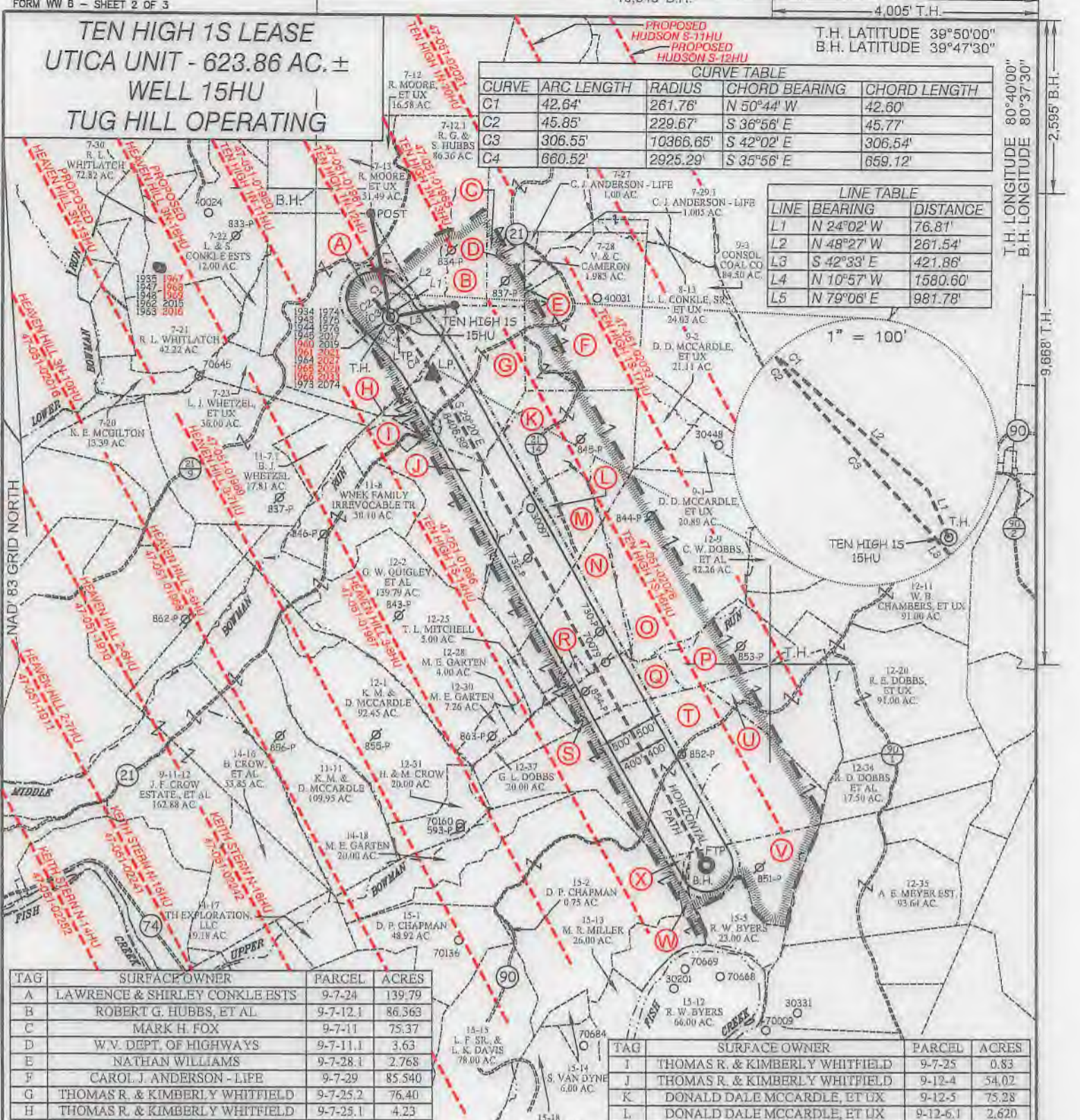
DESIGNATED AGENT DIANNA STAMPER
ADDRESS 5400 D BIG TYLER ROAD
CHARLESTON, WV 25313

**TEN HIGH 1S LEASE
UTICA UNIT - 623.86 AC. ±
WELL 15HU
TUG HILL OPERATING**

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

CURVE TABLE				
CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	42.64'	261.76'	N 50°44' W	42.60'
C2	45.85'	229.67'	S 36°56' E	45.77'
C3	306.55'	10366.65'	S 42°02' E	306.54'
C4	660.52'	2925.29'	S 35°56' E	659.12'

LINE TABLE		
LINE	BEARING	DISTANCE
L1	N 24°02' W	76.81'
L2	N 48°27' W	261.54'
L3	S 42°33' E	421.86'
L4	N 10°57' W	1580.60'
L5	N 79°06' E	981.78'



TAG	SURFACE OWNER	PARCEL	ACRES
A	LAWRENCE & SHIRLEY CONKLE ESTS	9-7-24	139.79
B	ROBERT G. HUBBS, ET AL	9-7-12.1	86.363
C	MARK H. FOX	9-7-11	75.37
D	W.V. DEPT. OF HIGHWAYS	9-7-11.1	3.63
E	NATHAN WILLIAMS	9-7-28.1	2.768
F	CAROL J. ANDERSON - LIFE	9-7-29	85.540
G	THOMAS R. & KIMBERLY WHITFIELD	9-7-25.2	76.40
H	THOMAS R. & KIMBERLY WHITFIELD	9-7-25.1	4.23

TAG	SURFACE OWNER	PARCEL	ACRES
I	THOMAS R. & KIMBERLY WHITFIELD	9-7-25	0.83
J	THOMAS R. & KIMBERLY WHITFIELD	9-12-4	54.02
K	DONALD DALE MCCARDLE, ET UX	9-12-5	75.28
L	DONALD DALE MCCARDLE, ET UX	9-12-6.1	2.620
M	DONALD DALE MCCARDLE, ET UX	9-12-6	53.38
N	DONALD DALE MCCARDLE, ET UX	9-12-7	53.00
O	DONALD DALE MCCARDLE, ET UX	9-12-8	117.85
P	OLIVER CROW	9-12-22	38.58
Q	EVERETT F. MOORE HEIRS	9-12-24	70.00
R	ROBERT MCCARDLE, ET UX	9-12-29	7.50
S	MICHAEL J. GUNTO, ET UX	9-12-33	10.00
T	DAVID P. CHAPMAN	9-12-32	150.00
U	DAVID P. CHAPMAN	9-12-21	50.00
V	DAVID P. CHAPMAN	9-12-33	32.00
W	ROBERT FRANK KOTSON, ET AL	9-15-4	26.40
X	SUSAN VAN DYNE	9-15-3	167.00



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26031 | 304.462.5634
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.348.3952
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296
slsvv.com

P.S. 849 *C. Victor Moyers*



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

LEGEND

- UNIT BOUNDARY
- LEASED TRACTS INSIDE UNIT BOUNDARY
- SURFACE LINE
- PROPOSED UTICA
- WELL LATERAL
- 400' OFFSET LINE
- 500' OFFSET LINE
- TIE LINE
- CREEK
- ROAD
- PROPOSED FIRST TAKE POINT
- PROPOSED LAST TAKE POINT
- COUNTY ROUTE
- PROPOSED WELL
- EXISTING WELL
- PERMITTED WELL
- SURFACE OWNER (SEE TABLE)
- LEASE # (SEE ADDITIONAL SHEETS)

SCALE 1" = 2000' FILE NO. 8655P15HUR7.dwg
TEN HIGH 1S-15HU Rev4
DATE AUGUST 29, 2017
REVISED 09/01/17, 01/12/18, 03/22/18, 04/05/18, 10/01/19, 11/12/19, & 07/08/20
OPERATORS WELL NO. TEN HIGH 1S-15HU
API WELL NO. 47-051-02027
NO. STATE COUNTY PERMIT

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS
M&D

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

T.H. LONGITUDE 80°40'00"
B.H. LONGITUDE 80°37'30"
2,595' B.H.
1,189.9'
COUNTY NAME PERMIT

TEN HIGH 1S LEASE
 UTICA UNIT - 623.86 AC. ±
 WELL 15HU
 TUG HILL OPERATING



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

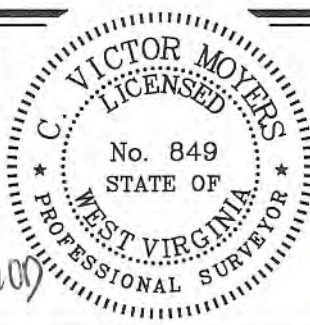
No.	Lease Name or No.	Tag	Parcel	Grantors, Lessors, etc.	Deed Book/Page
1	10*15662	A	9-7-24	LARRY LEE CONKLE, ET AL	863 354
2	10*15501	B	9-7-12.1	RONALD AND EDNA MOORE	661 449
3	10*47051.094.0	C	9-7-11	MARK H FOX	864 163
4	10*19565	D	9-7-11.1	WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS	947 566
5	10*19183	E	9-7-28.1	EVELYN M WILLIAM	720 180
6	10*15524	F	9-7-29	CAROL J ANDERSON ETAL	901 563
7	10*15481	G	9-7-25.2	DEAN P RIGBY AND SUSAN RIGBY, ET AL	908 197
8	10*47051.303.1	H	9-7-25.1	THOMAS R WHITFIELD, ET AL	890 401
9	10*47051.303.1	I	9-7-25	THOMAS R WHITFIELD, ET AL	890 401
10	10*15481	J	9-12-4	DEAN P RIGBY AND SUSAN RIGBY, ET AL	908 197
11	10*47051.222.1	K	9-12-5	DONALD D MCCARDLE AND LUCY MCCARDLE	879 314
12	10*47051.222.1	L	9-12-6.1	DONALD D MCCARDLE AND LUCY MCCARDLE	879 314
13	10*47051.222.1	M	9-12-6	DONALD D MCCARDLE AND LUCY MCCARDLE	879 314
14	10*16056	N	9-12-7	JEFFREY A LAUSIN AND KATHLEEN R LAUSIN, ET AL	942 443
15	10*47051.289.1	O	9-12-8	JANICE M HIXSON AND HARRY C HIXSON, ET AL	898 461
16	10*15474	P	9-12-22	CLARK C SAMPSON, ET AL	907 495
17	10*19724	Q	9-12-24	VENABLE ROYALTY LTD A TEXAS LIMITED PARTNERSHIP	935 216
18	10*15484	R	9-12-29	LISA R IMHOFF AND CHAD IMHOFF, ET AL	913 552
19	10*47051.311.0	S	9-12-23	MICHAEL J GUNTO AND ROSEMARY GUNTO	905 16
20	10*47051.140.1	T	9-12-32	DAVID P CHAPMAN & DEBORAH BORCK-CHAPMAN, ET AL	866 318
21	10*47051.140.1	U	9-12-21	DAVID P CHAPMAN & DEBORAH BORCK-CHAPMAN, ET AL	866 318
22	10*47051.140.1	V	9-12-33	DAVID P CHAPMAN & DEBORAH BORCK-CHAPMAN, ET AL	866 318
23	10*16402	W	9-15-4	VALERIE L WAGNER, ET AL	921 464
24	10*15752	X	9-15-3	KIM O CHAMBERS AND DEBRA CHAMBERS, ET AL	906 258

FILE NO. 8655P15HUR7.dwg
 TEN HIGH 1S-15HU Rev4

DATE AUGUST 29, 20 17
 REVISED 09/01/17, 01/12/18, 03/22/18, 04/05/18, 10/01/19,
 11/12/19, & 07/08/20

OPERATORS WELL NO. TEN HIGH 1S-15HU

API WELL NO. 47 — 051 — 02027
 STATE COUNTY PERMIT



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



P.S. 849 *C. Victor Moyers*

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

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

COUNTY NAME

PERMIT

4705102097 mos

WW-6A1
(5/13)

Operator's Well No. Ten High 1S-15HU

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
----------------------	-----------------------	-----------------------	---------	-----------

*See attached pages

**Acknowledgement of Possible Permitting/Approval
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: Tug Hill Operating, LLC
 By: Amy L. Morris *Amy L. Morris*
 Its: Permitting Specialist - Appalachia Region

WW-6A1 Well Bore Tracts

Operator's Well No. Ten High 1S - 15HU

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*17484	9-7-25.2	G	NELDA S JACKSON	TH EXPLORATION LLC	1/8+	921 330	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17485	9-7-25.2	G	MARGIE ANN JACKSON ROBBINS GRAHAM	TH EXPLORATION LLC	1/8+	921 91	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17526	9-7-25.2	G	JEFFREY L REEVES AND JODY L REEVES	TH EXPLORATION LLC	1/8+	921 370	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17527	9-7-25.2	G	JAMES MICHAEL EZELL AND LUCILLE D EZELL	TH EXPLORATION LLC	1/8+	921 111	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17538	9-7-25.2	G	CHERYL RANKIN-KING	TH EXPLORATION LLC	1/8+	952 160	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17552	9-7-25.2	G	JOHN BEVACQUA AND PATRICIA A BEVACQUA	TH EXPLORATION LLC	1/8+	921 144	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17554	9-7-25.2	G	MICHAEL T RANKIN	TH EXPLORATION LLC	1/8+	921 361	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17561	9-7-25.2	G	ROGER L TYRRELL AND KATHRYN L TYRRELL	TH EXPLORATION LLC	1/8+	927 24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17564	9-7-25.2	G	JAMES RONALD NICKOLSON AND TRACEY E NICKOLSON	TH EXPLORATION LLC	1/8+	921 340	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17565	9-7-25.2	G	JESSE ALLEN JACKSON AND ELIZABETH D JACKSON	TH EXPLORATION LLC	1/8+	921 327	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17566	9-7-25.2	G	NATHAN P ERDOSSY AND BARBARA T ERDOSSY	TH EXPLORATION LLC	1/8+	921 108	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17588	9-7-25.2	G	JAMES M JACKSON	TH EXPLORATION LLC	1/8+	921 325	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17589	9-7-25.2	G	MARY CHRISTINE MCKENNA	TH EXPLORATION LLC	1/8+	921 332	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17677	9-7-25.2	G	GEORGE M GONTA JR	TH EXPLORATION LLC	1/8+	921 89	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17744	9-7-25.2	G	SAM PRESLEY EZELL DIVERSICARE OF PELL CITY	TH EXPLORATION LLC	1/8+	921 116	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17983	9-7-25.2	G	HOLLY SUE CUTHBERT	TH EXPLORATION LLC	1/8+	925 380	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18021	9-7-25.2	G	CHRISTOPHER A HANIFAN AND JACKIE F HANIFAN	TH EXPLORATION LLC	1/8+	927 267	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18022	9-7-25.2	G	DALE P WARD AND CYNTHIA J WARD	TH EXPLORATION LLC	1/8+	927 264	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19524	9-7-25.2	G	THE ESTATE OF AGNES IRENE EZELL CLARK BY DAVID M EDWARDS, EXECUTOR	TH EXPLORATION LLC	1/8+	942 633	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19692	9-7-25.2	G	KENDRA WALISA	TH EXPLORATION LLC	1/8+	924 484	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19693	9-7-25.2	G	MARIO R FUNARI	TH EXPLORATION LLC	1/8+	936 145	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19695	9-7-25.2	G	GENERAL RECEIVER OF MARSHALL COUNTY ATTN: BERNIE TWIGG	TH EXPLORATION LLC	1/8+	944 333	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19695.1	9-7-25.2	G	GENERAL RECEIVER OF MARSHALL COUNTY ATTN: BERNIE TWIGG	TH EXPLORATION LLC	1/8+	944 333	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19939	9-7-25.2	G	ROBERT J MILLS & SHERRA SUE MILLS	TH EXPLORATION LLC	1/8+	949 212	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22630	9-7-25.2	G	AGENA FOUNDATION INC MORGAN STANLEY WEALTH MANAGEMENT	TH EXPLORATION LLC	1/8+	1035 11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*25628	9-7-25.2	G	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1025 631	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*26496	9-7-25.2	G	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1028 558	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.10	9-7-25.2	G	ROBERT E GORBY AND NANCY GORBY	TH EXPLORATION LLC	1/8+	908 47	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.11	9-7-25.2	G	ELIZABETH ESTEP	TH EXPLORATION LLC	1/8+	908 37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.12	9-7-25.2	G	ALICE GORBY MARTIN	TH EXPLORATION LLC	1/8+	908 52	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.13	9-7-25.2	G	JAMES A GORBY	TH EXPLORATION LLC	1/8+	908 42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.14	9-7-25.2	G	JUSTIN RINE AND BECKY RINE	TH EXPLORATION LLC	1/8+	907 639	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.15	9-7-25.2	G	LARRY D TAUNT AND NANCY L TAUNT	TH EXPLORATION LLC	1/8+	908 14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.16	9-7-25.2	G	WILLIAM K STERN AND BETTY L STERN	TH EXPLORATION LLC	1/8+	908 64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.17	9-7-25.2	G	RALPH E HUNTER JR AND CHARLOTTE HUNTER	TH EXPLORATION LLC	1/8+	908 9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.18	9-7-25.2	G	BRITTNEY MENEAR	TH EXPLORATION LLC	1/8+	908 57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.19	9-7-25.2	G	JASON RINE AND HEATHER RINE	TH EXPLORATION LLC	1/8+	907 629	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.20	9-7-25.2	G	BARBARA A BUZZARD	TH EXPLORATION LLC	1/8+	908 24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.21	9-7-25.2	G	GARY T WARD AND SHARON D WARD	TH EXPLORATION LLC	1/8+	908 19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.22	9-7-25.2	G	SALLY DAVIS COLE	TH EXPLORATION LLC	1/8+	908 74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.23	9-7-25.2	G	RONALD S CRIM	TH EXPLORATION LLC	1/8+	908 79	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.24	9-7-25.2	G	JO DEE K DAVIS	TH EXPLORATION LLC	1/8+	908 136	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.25	9-7-25.2	G	JOANNE WELCH	TH EXPLORATION LLC	1/8+	908 141	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.26	9-7-25.2	G	WENDY L SMARKEL	TH EXPLORATION LLC	1/8+	908 69	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.27	9-7-25.2	G	TIMI J HOBBS	TH EXPLORATION LLC	1/8+	908 277	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.28	9-7-25.2	G	KAREN S GAST	TH EXPLORATION LLC	1/8+	908 150	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.29	9-7-25.2	G	PATSY JO RAJU	TH EXPLORATION LLC	1/8+	908 155	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.30	9-7-25.2	G	LAURIE DRIGGERS MANDERSON	TH EXPLORATION LLC	1/8+	908 165	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.32	9-7-25.2	G	JOSEPH GORBY DAKAN	TH EXPLORATION LLC	1/8+	908 175	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.33	9-7-25.2	G	NANCY C HOUSLEY	TH EXPLORATION LLC	1/8+	908 187	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.34	9-7-25.2	G	JOHN CIAFFAGLIONE	TH EXPLORATION LLC	1/8+	908 170	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.35	9-7-25.2	G	DEBRA L CIAFFAGLIONE	TH EXPLORATION LLC	1/8+	908 192	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.5	9-7-25.2	G	HAROLD S BROWN II AND MARIA A BROWN	TH EXPLORATION LLC	1/8+	907 641	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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WW-6A1 Well Bore Tracts

Operator's Well No. Ten High 1S - 15HU

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*47051.223.6	9-7-25.2	G	JOSHUA RINE AND REBECCA RINE	TH EXPLORATION LLC	1/8+	907 634	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.7	9-7-25.2	G	JACK R WILSON JR AND JANE A WILSON	TH EXPLORATION LLC	1/8+	908 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.8	9-7-25.2	G	DAVID M WILSON	TH EXPLORATION LLC	1/8+	907 649	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.9	9-7-25.2	G	LINDA DELBERT	TH EXPLORATION LLC	1/8+	908 32	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.303.1	9-7-25.2	G	THOMAS R WHITFIELD	TH EXPLORATION LLC	1/8+	890 401	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.303.2	9-7-25.2	G	KIMBERLY A WHITFIELD	TH EXPLORATION LLC	1/8+	890 403	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*15481	9-12-4	J	DEAN P RIGBY AND SUSAN RIGBY	TH EXPLORATION LLC	1/8+	908 197	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*15482	9-12-4	J	SUSAN NELSON	TH EXPLORATION LLC	1/8+	908 203	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*15686	9-12-4	J	JOHN OMER BOLTZ	TH EXPLORATION LLC	1/8+	908 160	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*15750	9-12-4	J	SANDRA K TRULL	TH EXPLORATION LLC	1/8+	908 229	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16058	9-12-4	J	MATTIE RUTH JACKSON PRESCOTT	TH EXPLORATION LLC	1/8+	908 231	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16118	9-12-4	J	RUBY RIDDLE JACKSON	TH EXPLORATION LLC	1/8+	908 233	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16297	9-12-4	J	ROBERT A LEADBETTER AND M REBECCA LEADBETTER	TH EXPLORATION LLC	1/8+	908 235	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16298	9-12-4	J	GEOFFREY A SHIEFER AND STEPHANIE L SCHIEFER	TH EXPLORATION LLC	1/8+	908 238	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16383	9-12-4	J	ROBERT STEPHEN DRIGGERS	TH EXPLORATION LLC	1/8+	908 224	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16414	9-12-4	J	MARY ELIZABETH DRIGGERS	TH EXPLORATION LLC	1/8+	908 208	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16415	9-12-4	J	TERENCE J ANDERSON AND NANCY J ANDERSON	TH EXPLORATION LLC	1/8+	908 213	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16416	9-12-4	J	CYNTHIA HUDSON	TH EXPLORATION LLC	1/8+	908 219	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16424	9-12-4	J	ROBERT J RIGBY	TH EXPLORATION LLC	1/8+	908 241	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16448	9-12-4	J	RALPH L AND JUANITA L CRIM	TH EXPLORATION LLC	1/8+	908 584	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16478	9-12-4	J	MARION L AND EMILY CAMPBELL	TH EXPLORATION LLC	1/8+	908 245	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16514	9-12-4	J	ALEX R CAMPBELL & JOYCE A CAMPBELL	TH EXPLORATION LLC	1/8+	908 248	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16515	9-12-4	J	ANNA MARIE JACKSON	TH EXPLORATION LLC	1/8+	908 251	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16516	9-12-4	J	WILSON ANDREW JACKSON	TH EXPLORATION LLC	1/8+	908 253	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16545	9-12-4	J	ROBERT G FOUNDS AND ELLEN FOUNDS	TH EXPLORATION LLC	1/8+	908 260	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16662	9-12-4	J	RICHARD THOMAS MIMS & VICKIE J MIMS	TH EXPLORATION LLC	1/8+	908 263	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16666	9-12-4	J	MICHAEL P PYLE	TH EXPLORATION LLC	1/8+	908 255	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16667	9-12-4	J	CHARLES F PYLE AND GAIL ANN PYLE	TH EXPLORATION LLC	1/8+	908 266	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16668	9-12-4	J	JACK I PYLE AND MERRILEE ANN PYLE	TH EXPLORATION LLC	1/8+	908 257	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16669	9-12-4	J	JOHN S DADO AND PATRICIA S DADO	TH EXPLORATION LLC	1/8+	908 269	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16686	9-12-4	J	CHERYLE M TRACEY	TH EXPLORATION LLC	1/8+	927 475	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16688	9-12-4	J	SHERRYLY PYLE BAIR	TH EXPLORATION LLC	1/8+	927 481	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16689	9-12-4	J	JOHN C FOUNDS	TH EXPLORATION LLC	1/8+	927 478	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16690	9-12-4	J	RICARDO ORTIZ	TH EXPLORATION LLC	1/8+	921 352	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16720	9-12-4	J	DONNA ELAINE BRASKETT	TH EXPLORATION LLC	1/8+	921 152	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16738	9-12-4	J	CHARLES A RINE AND RUTH K RINE	TH EXPLORATION LLC	1/8+	908 274	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16742	9-12-4	J	PAUL C WILSON	TH EXPLORATION LLC	1/8+	927 490	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16747	9-12-4	J	WILLIAM DALE BRASKETT	TH EXPLORATION LLC	1/8+	921 96	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16787	9-12-4	J	HERBERT B CAMPBEL & DONNA D CAMPBELL	TH EXPLORATION LLC	1/8+	942 451	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16798	9-12-4	J	PATRICK A RANKIN AND ROBIN A RANKIN	TH EXPLORATION LLC	1/8+	921 364	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16800	9-12-4	J	JAMES KENNETH JACKSON AND JULIE JACKSON	TH EXPLORATION LLC	1/8+	921 93	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16802	9-12-4	J	CHRISTOPHER RICHARDSON AND TAMMY RICHARDSON	TH EXPLORATION LLC	1/8+	921 495	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16804	9-12-4	J	WILLIAM N TAYLOR AND SHERRY D TAYLOR	TH EXPLORATION LLC	1/8+	921 510	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16806	9-12-4	J	VIRGINIA WHITMAN TRUST DTD 7-25-1984 JON WHITMAN TRUSTEE	TH EXPLORATION LLC	1/8+	921 528	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16807	9-12-4	J	DAVID TULLER AND SUSAN STORTS TULLER	TH EXPLORATION LLC	1/8+	921 513	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16808	9-12-4	J	MICHAEL L ORTIZ	TH EXPLORATION LLC	1/8+	921 349	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16815	9-12-4	J	HAROLD W PYLE	TH EXPLORATION LLC	1/8+	921 357	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16819	9-12-4	J	TERESA ORTIZ BIGGS	TH EXPLORATION LLC	1/8+	921 147	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16821	9-12-4	J	SHEILA BRASKETT WEICHEY	TH EXPLORATION LLC	1/8+	921 516	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16836	9-12-4	J	RICK A STORTS AND LENORE A STORTS	TH EXPLORATION LLC	1/8+	921 507	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16837	9-12-4	J	TERRY L POFF AND THELMA A POFF	TH EXPLORATION LLC	1/8+	927 472	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16838	9-12-4	J	ROBERT G FUNARI	TH EXPLORATION LLC	1/8+	821 82	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16839	9-12-4	J	JAMES B FOUNDS AND LYNN M MOWERY	TH EXPLORATION LLC	1/8+	921 73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16863	9-12-4	J	TINA MOORE	TH EXPLORATION LLC	1/8+	921 334	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16868	9-12-4	J	MICHAEL W STORTS AND JESSICA M STORTS	TH EXPLORATION LLC	1/8+	921 504	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16879	9-12-4	J	MARK E STORTS AND LESLEY A STORTS	TH EXPLORATION LLC	1/8+	921 501	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16880	9-12-4	J	BEVERLY ANN STORTS	TH EXPLORATION LLC	1/8+	921 498	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

4705102027

WW-6A1 Well Bore Tracts

Operator's Well No. Ten High 1S - 15HU

4,000,102,027 MOD

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*22630	9-12-4	J	AGENA FOUNDATION INC MORGAN STANLEY WEALTH MANAGEMENT	TH EXPLORATION LLC	1/8+	1035 11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*25628	9-12-4	J	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1025 631	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.1	9-12-4	J	JEAN ANNE GORBY STORCH AIF JOHN HERMAN STORCH	TH EXPLORATION LLC	1/8+	877 216	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.10	9-12-4	J	ROBERT E GORBY AND NANCY GORBY	TH EXPLORATION LLC	1/8+	908 47	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.11	9-12-4	J	ELIZABETH ESTEP	TH EXPLORATION LLC	1/8+	908 37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.12	9-12-4	J	ALICE GORBY MARTIN	TH EXPLORATION LLC	1/8+	908 52	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.13	9-12-4	J	JAMES A GORBY	TH EXPLORATION LLC	1/8+	908 42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.14	9-12-4	J	JUSTIN RINE AND BECKY RINE	TH EXPLORATION LLC	1/8+	907 639	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.15	9-12-4	J	LARRY D TAUNT AND NANCY L TAUNT	TH EXPLORATION LLC	1/8+	908 14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.16	9-12-4	J	WILLIAM K STERN AND BETTY L STERN	TH EXPLORATION LLC	1/8+	908 64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.17	9-12-4	J	RALPH E HUNTER JR AND CHARLOTTE HUNTER	TH EXPLORATION LLC	1/8+	908 9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.18	9-12-4	J	BRITTNEY MENEAR	TH EXPLORATION LLC	1/8+	908 57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.19	9-12-4	J	JASON RINE AND HEATHER RINE	TH EXPLORATION LLC	1/8+	907 629	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.20	9-12-4	J	BARBARA A BUZZARD	TH EXPLORATION LLC	1/8+	908 24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.21	9-12-4	J	GARY T WARD AND SHARON D WARD	TH EXPLORATION LLC	1/8+	908 19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.22	9-12-4	J	SALLY DAVIS COLE	TH EXPLORATION LLC	1/8+	908 74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.23	9-12-4	J	RONALD S CRIM	TH EXPLORATION LLC	1/8+	908 79	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.24	9-12-4	J	JO DEE K DAVIS	TH EXPLORATION LLC	1/8+	908 136	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.25	9-12-4	J	JOANNE WELCH	TH EXPLORATION LLC	1/8+	908 141	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.26	9-12-4	J	WENDY L SMARKEL	TH EXPLORATION LLC	1/8+	908 69	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.27	9-12-4	J	TIMI J HOBBS	TH EXPLORATION LLC	1/8+	908 277	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.28	9-12-4	J	KAREN S GAST	TH EXPLORATION LLC	1/8+	908 150	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.29	9-12-4	J	PATSY JO RAJU	TH EXPLORATION LLC	1/8+	908 155	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.30	9-12-4	J	LAURIE DRIGGERS MANDERSON	TH EXPLORATION LLC	1/8+	908 165	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.31	9-12-4	J	JANICE M GONTA GAVALIK	TH EXPLORATION LLC	1/8+	908 180	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.32	9-12-4	J	JOSEPH GORBY DAKAN	TH EXPLORATION LLC	1/8+	908 175	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.33	9-12-4	J	NANCY C HOUSLEY	TH EXPLORATION LLC	1/8+	908 187	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.34	9-12-4	J	JOHN CIAFFAGLIONE	TH EXPLORATION LLC	1/8+	908 170	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.35	9-12-4	J	DEBRA L CIAFFAGLIONE	TH EXPLORATION LLC	1/8+	908 192	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.5	9-12-4	J	HAROLD S BROWN II AND MARIA A BROWN	TH EXPLORATION LLC	1/8+	907 641	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.6	9-12-4	J	JOSHUA RINE AND REBECCA RINE	TH EXPLORATION LLC	1/8+	907 634	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.7	9-12-4	J	JACK R WILSON JR AND JANE A WILSON	TH EXPLORATION LLC	1/8+	908 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.8	9-12-4	J	DAVID M WILSON	TH EXPLORATION LLC	1/8+	907 649	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.223.9	9-12-4	J	LINDA DELBERT	TH EXPLORATION LLC	1/8+	908 32	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.222.1	9-12-5	K	DONALD D MCCARDLE AND LUCY MCCARDLE	TH EXPLORATION LLC	1/8+	879 314	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.222.1	9-12-6	M	DONALD D MCCARDLE AND LUCY MCCARDLE	TH EXPLORATION LLC	1/8+	879 314	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16056	9-12-7	N	JEFFREY A LAUSIN AND KATHLEEN R LAUSIN	TH EXPLORATION LLC	1/8+	942 443	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.222.1	9-12-7	N	DONALD D MCCARDLE AND LUCY MCCARDLE	TH EXPLORATION LLC	1/8+	879 314	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.222.10	9-12-7	N	CHRISTINA CAIN	TH EXPLORATION LLC	1/8+	905 27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.222.11	9-12-7	N	MARK DAVID HUNT	TH EXPLORATION LLC	1/8+	904 451	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.222.12	9-12-7	N	MELISSA ELAINE SCHROTH	TH EXPLORATION LLC	1/8+	904 453	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.222.13	9-12-7	N	BRETT J LAUSIN SR	TH EXPLORATION LLC	1/8+	907 205	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.222.14	9-12-7	N	MICHAEL E LAUSIN AND SHARON G LAUSIN	TH EXPLORATION LLC	1/8+	913 526	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.222.2	9-12-7	N	PATRICIA A GULUTZ AND THOMAS L GULUTZ	TH EXPLORATION LLC	1/8+	888 640	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.222.3	9-12-7	N	SHARON L SMITH	TH EXPLORATION LLC	1/8+	894 487	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.222.4	9-12-7	N	KENNETH M MCCARDLE AND DELORES MCCARDLE	TH EXPLORATION LLC	1/8+	888 642	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.222.5	9-12-7	N	DONALD B WESLEY AND SUSAN J WESLEY	TH EXPLORATION LLC	1/8+	895 76	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.222.6	9-12-7	N	DIANA S GRAFTON AND TIMOTHY A GRAFTON	TH EXPLORATION LLC	1/8+	898 571	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.222.7	9-12-7	N	FREDRICK M YEATER AND SHERI C YEATER	TH EXPLORATION LLC	1/8+	898 626	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.222.8	9-12-7	N	LEONARD O HABERBOSCH	TH EXPLORATION LLC	1/8+	902 442	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.222.9	9-12-7	N	TERRIE L LAUSIN	TH EXPLORATION LLC	1/8+	904 591	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19724	9-12-24	Q	VENABLE ROYALTY LTD A TEXAS LIMITED PARTNERSHIP	AMERICAN PETROLEUM PARTNERS LLC	1/8+	935 216	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

American Petroleum Partners Operating LLC to TH Exploration LLC: 40/408

WW-6A1 Well Bore Tracts

Operator's Well No. Ten High 1S - 15HU

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*47051.140.1	9-12-32	T	DAVID P CHAPMAN & DEBORAH BORCK-CHAPMAN	TH EXPLORATION LLC	1/8+	866	318	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.140.2	9-12-32	T	DOROTHY SULLIVAN POA JAMES REID SULLIVAN	TH EXPLORATION LLC	1/8+	873	501	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.140.1	9-12-33	V	DAVID P CHAPMAN & DEBORAH BORCK-CHAPMAN	TH EXPLORATION LLC	1/8+	866	318	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.140.2	9-12-33	V	DOROTHY SULLIVAN POA JAMES REID SULLIVAN	TH EXPLORATION LLC	1/8+	873	501	N/A	N/A	N/A	N/A	N/A	N/A	N/A

470510207
 in

STATE OF WEST VIRGINIA §
§
COUNTY OF MARSHALL §

Jan Pest
MARSHALL County 12:43:01 PM
Instrument No 1404876
Date Recorded 05/20/2016
Document Type ABN
Pages Recorded 20
Book-Page 36-148
Recording Fee \$20.00
Additional \$8.00

ASSIGNMENT AND CONVEYANCE

THIS ASSIGNMENT AND CONVEYANCE (the "Assignment") is made and entered into this 17th day of May, 2016 (the "Effective Date"), by and between CHEVRON U.S.A. INC. (hereinafter "Assignor") and TH EXPLORATION, LLC (hereinafter "Assignee") pursuant to the terms of that certain Acreage Trade Agreement between the Assignor and the Assignee dated May 2, 2016 (the "Acreage Trade Agreement"). Capitalized terms used but not defined herein and defined in the Acreage Trade Agreement shall have the meanings given to such terms in the Acreage Trade Agreement.

WITNESSETH:

WHEREAS, Assignor desires to assign, set over, and transfer to Assignee all of Assignor's right, title, and interest in and to those certain Oil and Gas Leases situated in Marshall County, West Virginia, as described in Exhibit "A", and as depicted in Exhibits "A-1" and "A-2", attached hereto and made a part hereof (hereinafter the "Leases"); and

WHEREAS, Assignor desires to assign, set over, and transfer to Assignee all of Assignor's right, title, and interest in and to the Leases as described below.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and subject to the limited warranties, restrictions and conditions hereinafter mentioned, the parties hereto, intending to be legally bound, do covenant and agree as follows:

1. Assignment. Assignor does hereby grant, bargain, sell, convey, deliver, assign, set over and transfer, as of the Effective Date, to Assignee, its respective successors and assigns, forever, all of Assignor's right, title and interest in and to the Leases, and the lands covered thereby, together with all rights incident thereto and appurtenances thereon, except that Assignor accepts and reserves from this Assignment the Chevron ORRI previously conveyed to Assignor and as described in that certain Memorandum of Assignment of Oil and Gas Lease Interests dated November 6, 2012 by and between Cornell Holdings Incorporated and Chevron U.S.A. Inc., which is recorded at Book 0028, Page 0239 in the Office of the County Clerk of Marshall County, West Virginia.

TO HAVE AND TO HOLD such right, title and interest in and to the Leases unto Assignee or its designee, and their respective successors and assigns, forever, in accordance with the provisions of this Assignment.

2. Special Warranty. Assignor represents and warrants that Assignor has not conveyed or otherwise encumbered (other than Permitted Encumbrances) its interest in the Conveyed Interests since the time that Assignor obtained its interests in the Leases. Assignor does covenant, promise and agree, to and with the Assignee, its respective successors and assigns, to forever specially warrant and defend the title to the Leases or portions thereof included under this Assignment, unto the Assignee and its respective successors and assigns, against the lawful claims of Assignor, and all persons claiming, or to claim, the same or any part thereof, by, through or under Assignor.

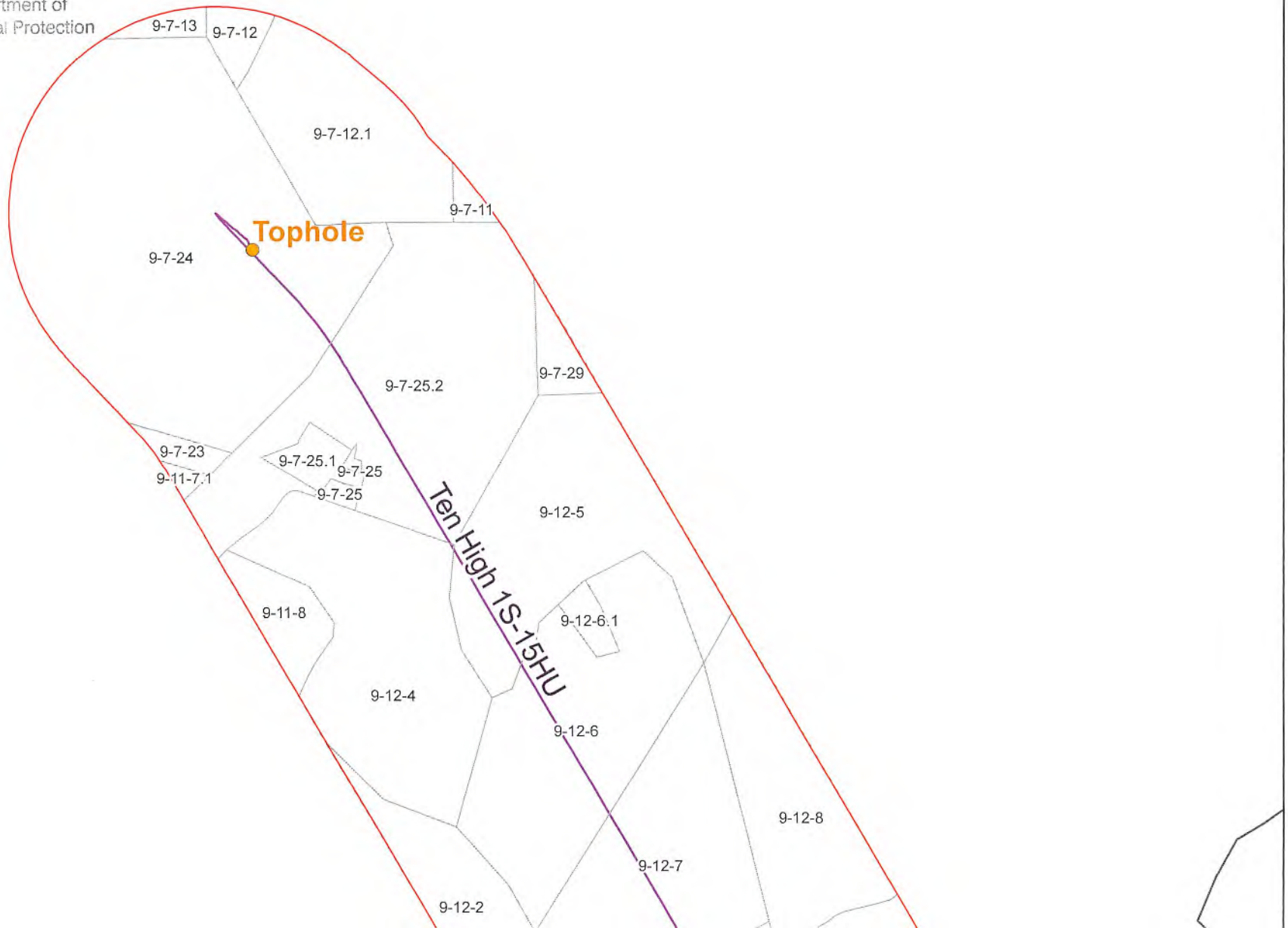
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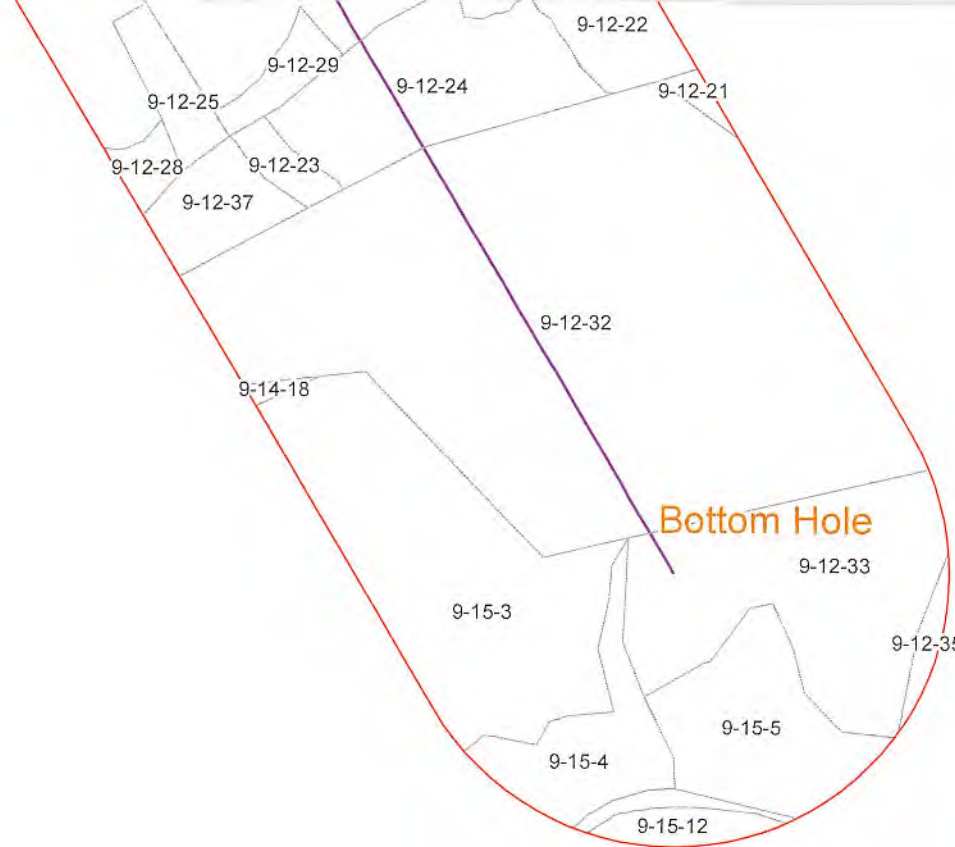
Ten High 1S-15HU

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Environmental Protection





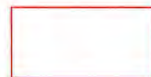
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 False northing: 0.0000
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 Latitude of origin: 0.0000
 Units: Foot US

CONFIDENTIAL

0 390 780 1,560 Feet



TUG HILL
OPERATING

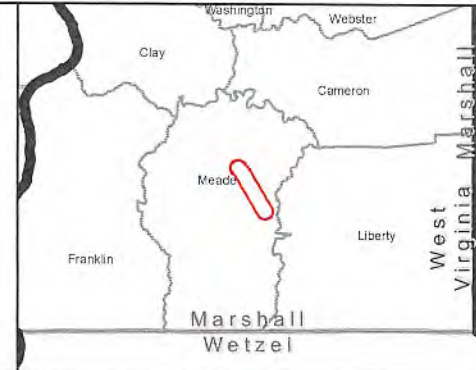


1500 Foot Buffer



Well of Interest

Ten High 1S-15HU
Operators within 1500 Feet of Well Borehole



**Offset Operators within 1500'
Ten High 1S - 15HU**

County	District	Parcel	Owner	Address
MARSHALL	MEADE	9-11-7.1	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-11-8	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-12-2	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-12-4	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-12-5	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-12-6	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-12-6.1	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-12-7	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-12-8	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-12-21	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-12-22	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-12-23	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-12-24	AEHUSA WOLFBERRY I	1200 Post Oak Blvd Houston, TX 77056
MARSHALL	MEADE	9-12-25	AEHUSA WOLFBERRY I	1200 Post Oak Blvd Houston, TX 77056
MARSHALL	MEADE	9-12-28	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-12-29	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-12-32	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-12-33	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-12-35	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-12-37	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-14-18	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-15-3	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107

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MARSHALL	MEADE	9-15-4	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-15-5	RICHARD W. BYERS	16474 Fish Creek Road Cameron, WV 26033
MARSHALL	MEADE	9-15-12	SOUTHWESTERN ENERGY COMPANY	10000 Energy Drive Spring, TX 77389
MARSHALL	MEADE	9-7-11	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-7-12	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-7-12.1	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-7-13	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-7-23	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-7-24	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-7-25	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-7-25.1	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-7-25.2	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-7-29	TH EXPLORATION LLC	1320 S. University Drive Suite 500 Fort Worth, TX 76107

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