



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

Harold D. Ward, Cabinet Secretary
www.dep.wv.gov

Wednesday, March 10, 2021
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 GOUDY 1S-8HM
47-051-02228-00-00

Extended lateral length

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 handwritten signature in blue ink, appearing to read 'James A. Martin', is positioned above the printed name and title.

James A. Martin
Chief

Operator's Well Number: GOUDY 1S-8HM
Farm Name: TH EXPLORATION III, LLC
U.S. WELL NUMBER: 47-051-02228-00-00
Horizontal 6A New Drill
Date Modification Issued: March 10, 2021

Promoting a healthy environment.

03/12/2021

WW-6B
(04/15)

Modification

API NO. 47-051 - 02228
OPERATOR WELL NO. Goudy 1S-8HM
Well Pad Name: Goudy

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 Franklin New Martinsville
Operator ID County District Quadrangle

2) Operator's Well Number: Goudy 1S-8HM Well Pad Name: Goudy

3) Farm Name/Surface Owner: TH Exploration III, LLC Public Road Access: Wells Hill Road (County Route 2/2)

4) Elevation, current ground: 1242' Elevation, proposed post-construction: 1242'

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

(b) If Gas Shallow Deep
Horizontal

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus is the target formation at a depth of 6366 - 6424' thickness of 58' and anticipated pressure of approx. 3800 psi

Bany Stiles
1-14-21

8) Proposed Total Vertical Depth: 6,524'

9) Formation at Total Vertical Depth: Onondaga

10) Proposed Total Measured Depth: 20,504'

11) Proposed Horizontal Leg Length: 13,561.90'

12) Approximate Fresh Water Strata Depths: 70', 863'

13) Method to Determine Fresh Water Depths: Use shallow offset wells to determine deepest freshwater. Or determine using predrill tests, testing while drilling or petrophysical evaluation of resistivity.

14) Approximate Saltwater Depths: 1,480'

15) Approximate Coal Seam Depths: Sewickly Coal - 762' and Pittsburgh Coal - 857'

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 No

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(a) If Yes, provide Mine Info: Name: _____
Depth: _____
Seam: _____
Owner: _____

WV Department of
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18)

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	120'	120'	259FT^3(CTS)
Fresh Water	13 3/8"	NEW	H40	48#	970'	970'	1024ft^3(CTS)
Coal	13 3/8"	NEW	H40	48#	970'	970'	1024ft^3(CTS)
Intermediate	9 5/8"	NEW	J55	36#	2,654'	2,654'	879ft^3(CTS)
Production	5 1/2"	NEW	P110	20#	20,504'	20,504'	5221ft^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#		7,270'	
Liners							

1-14-21
Bang Staley

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"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	13 3/8"	17 1/2"	.33	2,740	2,192	SEE #24	1.2
Coal	13 3/8"	17 1/2"	.33	2,740	2,192	SEE#24	1.2
Intermediate	9 5/8"	12 1/4"	.352	3,520	2,816	SEE#24	1.19
Production	5 1/2"	8 7/8_8 3/4	.361	12,640	10,112	SEE#24	1.17/1.19
Tubing	2 3/8"		.19	11,200	8,960		
Liners							

PACKERS

Kind:	N/A				RECEIVED Office of Oil and Gas
Sizes:	N/A				FEB 25 2021
Depths Set:	N/A				WV Department of Environmental Protection

WW-6B
(10/14)

API NO. 47-051 - 02228
OPERATOR WELL NO. Goudy 1S-8HM
Well Pad Name: Goudy

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

Drill through the Marcellus and TD Pilot Hole 100' into the Onondaga. 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.

Bang Stapp 1-14-21

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

Well to be completed with approximately 33,900,000 lb. proppant and 610,000 bbl of water. Max rate = 80 bpm; max psi = 9,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 11.56 acres

22) Area to be disturbed for well pad only, less access road (acres): 5.81 acres

23) Describe centralizer placement for each casing string:

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

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

Sfc - Premium NE-1 + 2% CaCl; Int1 - Premium NE-1 + 1.5% CaCl + Flake; Int2 - Lead: Premium NE-1 + 5% BA-90 + .85% R-3 + 3% KCl + .75 gals/100sk FP-13L + 1% MPA-170 Tail: Premium NE-1 + .1% R-3 + 5% KCl + 1% CD-32 + .4% FL-52 + .2% ASA-301 + .6% Sodium Metasilicate; Kick Plug - Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L; Prod - Lead: 50:50 (Poz:Class H) + .3% R-3 + .3% MPA-250 + .75 gal/100sk FP-13L Tail: 25:75 (Poz:Class H) + .3% R-3 + .3% MPA-250 + .375 gal/100sk FP-13L

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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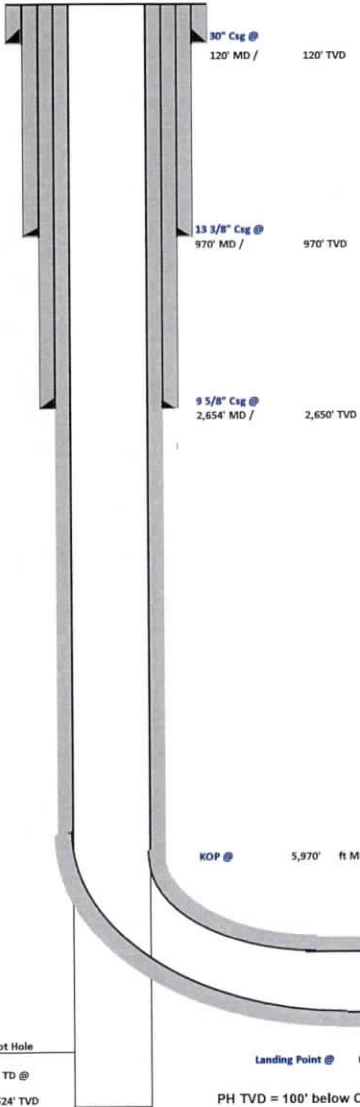


WELL NAME: Goudy 15-BHM
 STATE: WV COUNTY: Marshall
 DISTRICT: Franklin
 DF Elev: 1,242' GL Elev: 1,242'
 TD: 20,504'
 TH Latitude: 39.73698552
 TH Longitude: -80.82870249
 BH Latitude: 39.701202
 BH Longitude: -80.807493

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	863
Sewickley Coal	762
Pittsburgh Coal	857
Big Lime	1909
Weir	2297
Berea	2452
Gordon	2798
Rhinestreet	5805
Genesee/Burkett	6317
Tully	6337
Hamilton	6357
Marcellus	6366
Landing Depth	6401
Onondaga	6424
Pilot Hole Depth	6524

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	120'	120'	BW	BW	Surface
Surface	17.5	13 3/8	970'	970'	54.5	J55	Surface
Intermediate 1	12 1/4	9 5/8	2,654'	2,650'	36	J55	Surface
Production	8 7/8 x 8 3/4	5 1/2	20,504'	6,637'	20	CYHP110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,030	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	886	A	15	Air	1 Centralizer every other jt
Production	4,797	A	14.5	Air / SOBM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc



Bony Stehly 1-14-21

Pilot Hole
 PH TD @ 6,524' TVD
 Landing Point @ 6,945' MD / 6,401' TVD
 PH TVD = 100' below Onondaga Top

Lateral TD @ 20,504' ft MD
 6,637' ft TVD

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Tug Hill Operating, LLC Casing and Cement Program

Goudy 1S-8HM

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	13 3/8"	J55	17 1/2"	970'	CTS
Intermediate	9 5/8"	J55	12 1/4"	2,654'	CTS
Production	5 1/2"	CYHP110	8 7/8 x 8 3/4"	20,504'	CTS

Cement

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

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

Intermediate: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.19

Kick Off Plug: Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L - KOP Plug

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 = 1.19

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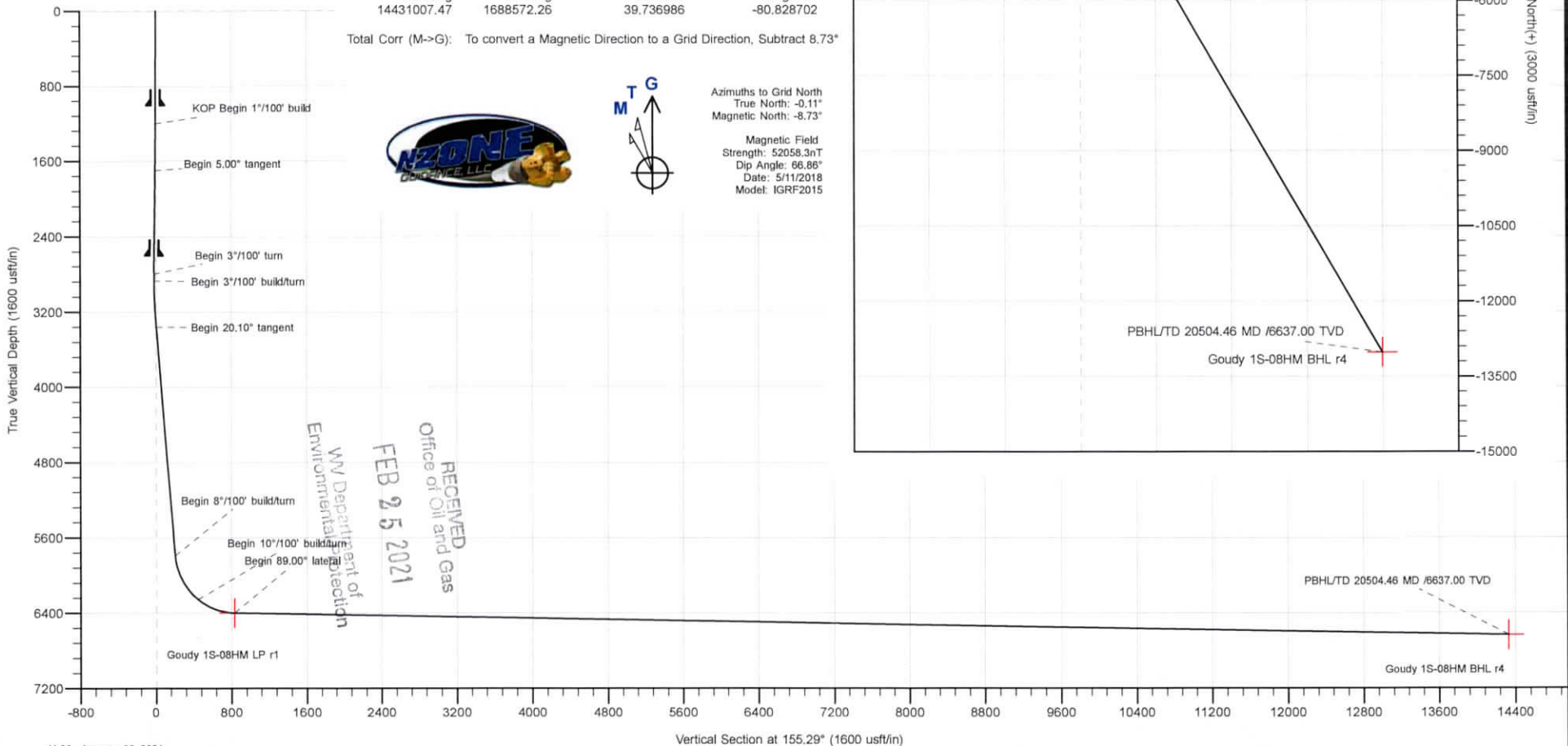
Well: Goudy 1S-08HM (I)
 Site: Goudy
 Project: Marshall County, West Virginia.
 Design: rev5

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 1°/100' build
3	1700.00	5.00	255.00	1699.37	-5.64	-21.06	1.00	255.00	-3.68	Begin 5.00° tangent
4	2804.84	5.00	255.00	2800.00	-30.57	-114.07	0.00	0.00	-19.92	Begin 3°/100' turn
5	2877.92	5.00	229.64	2872.81	-33.45	-119.58	3.00	-102.63	-19.60	Begin 3°/100' build/turn
6	3381.52	20.10	232.36	3362.96	-100.90	-205.32	3.00	3.59	5.83	Begin 20.10° tangent
7	5969.65	20.10	232.36	5793.45	-644.10	-909.66	0.00	0.00	204.84	Begin 8°/100' build/turn
8	6524.35	50.00	167.33	6255.51	-923.71	-940.07	8.00	-83.20	446.13	Begin 10°/100' build/turn
9	6945.10	89.00	149.98	6401.00	-1279.19	-792.80	10.00	-26.42	830.63	Begin 89.00° lateral
10	20504.46	89.00	149.98	6637.00-13017.51	5990.44	0.00	0.00	0.0014329.72		PBHL/TD 20504.46 MD /6637.00 TVD

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: GL @ 1241.00usft
 Northing: 14431007.47 Easting: 1688572.26 Latitude: 39.736986 Longitude: -80.828702

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.73°



Azimuths to Grid North
 True North: -0.11°
 Magnetic North: -8.73°

Magnetic Field
 Strength: 52058.3nT
 Dip Angle: 66.86°
 Date: 5/11/2018
 Model: IGRF2015

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Planning Report - Geographic

Database:	DB_Dec2220_v16	Local Co-ordinate Reference:	Well Goudy 1S-08HM (I)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1241.00usft
Project:	Marshall County, West Virginia.	MD Reference:	GL @ 1241.00usft
Site:	Goudy	North Reference:	Grid
Well:	Goudy 1S-08HM (I)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev5		

Project	Marshall County, West Virginia.		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD83 West Virginia - HARN		
Map Zone:	Zone 17N (84 W to 78 W)		

Site	Goudy				
Site Position:		Northing:	14,430,942.40 usft	Latitude:	39.736807
From:	Lat/Long	Easting:	1,688,559.77 usft	Longitude:	-80.828748
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "		

Well	Goudy 1S-08HM (I)					
Well Position	+N-S	0.00 usft	Northing:	14,431,007.47 usft	Latitude:	39.736986
	+E-W	0.00 usft	Easting:	1,688,572.25 usft	Longitude:	-80.828703
Position Uncertainty	0.00 usft		Wellhead Elevation:	usft	Ground Level:	1,241.00 usft
Grid Convergence:	0.11 °					

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/11/2018	-8.62	66.86	52,058.29004157

Design	rev5			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (°)
	0.00	0.00	0.00	155.29

Plan Survey Tool Program	Date	1/6/2021		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	20,504.46 rev5 (Original Hole)	MWD MWD - Standard	

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Planning Report - Geographic

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Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1241.00usft
Project:	Marshall County, West Virginia.	MD Reference:	GL @ 1241.00usft
Site:	Goudy	North Reference:	Grid
Well:	Goudy 1S-08HM (I)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev5		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,700.00	5.00	255.00	1,699.37	-5.64	-21.06	1.00	1.00	0.00	255.00	
2,804.84	5.00	255.00	2,800.00	-30.57	-114.07	0.00	0.00	0.00	0.00	
2,877.92	5.00	229.64	2,872.81	-33.45	-119.58	3.00	0.00	-34.70	-102.63	
3,381.52	20.10	232.36	3,362.96	-100.90	-205.32	3.00	3.00	0.54	3.59	
5,969.65	20.10	232.36	5,793.45	-644.10	-909.66	0.00	0.00	0.00	0.00	
6,524.35	50.00	167.33	6,255.51	-923.71	-940.07	8.00	5.39	-11.72	-83.20	
6,945.11	89.00	149.98	6,401.00	-1,279.19	-792.80	10.00	9.27	-4.12	-26.42	
20,504.46	89.00	149.98	6,637.00	-13,017.51	5,990.44	0.00	0.00	0.00	0.00	Goudy 1S-08HM BHL

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Wellbore:	Original Hole		
Design:	rev5		

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Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	14,431,007.47	1,688,572.25	39.736986	-80.828703
100.00	0.00	0.00	100.00	0.00	0.00	14,431,007.47	1,688,572.25	39.736986	-80.828703
200.00	0.00	0.00	200.00	0.00	0.00	14,431,007.47	1,688,572.25	39.736986	-80.828703
300.00	0.00	0.00	300.00	0.00	0.00	14,431,007.47	1,688,572.25	39.736986	-80.828703
400.00	0.00	0.00	400.00	0.00	0.00	14,431,007.47	1,688,572.25	39.736986	-80.828703
500.00	0.00	0.00	500.00	0.00	0.00	14,431,007.47	1,688,572.25	39.736986	-80.828703
600.00	0.00	0.00	600.00	0.00	0.00	14,431,007.47	1,688,572.25	39.736986	-80.828703
700.00	0.00	0.00	700.00	0.00	0.00	14,431,007.47	1,688,572.25	39.736986	-80.828703
800.00	0.00	0.00	800.00	0.00	0.00	14,431,007.47	1,688,572.25	39.736986	-80.828703
900.00	0.00	0.00	900.00	0.00	0.00	14,431,007.47	1,688,572.25	39.736986	-80.828703
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,431,007.47	1,688,572.25	39.736986	-80.828703
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,431,007.47	1,688,572.25	39.736986	-80.828703
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,431,007.47	1,688,572.25	39.736986	-80.828703
KOP Begin 1°/100' build									
1,300.00	1.00	255.00	1,299.99	-0.23	-0.84	14,431,007.25	1,688,571.41	39.736985	-80.828706
1,400.00	2.00	255.00	1,399.96	-0.90	-3.37	14,431,006.57	1,688,568.88	39.736983	-80.828715
1,500.00	3.00	255.00	1,499.86	-2.03	-7.58	14,431,005.44	1,688,564.67	39.736980	-80.828730
1,600.00	4.00	255.00	1,599.67	-3.61	-13.48	14,431,003.86	1,688,558.77	39.736976	-80.828751
1,700.00	5.00	255.00	1,699.37	-5.64	-21.06	14,431,001.83	1,688,551.19	39.736970	-80.828778
Begin 5.00° tangent									
1,800.00	5.00	255.00	1,798.98	-7.90	-29.48	14,430,999.57	1,688,542.77	39.736964	-80.828808
1,900.00	5.00	255.00	1,898.60	-10.15	-37.90	14,430,997.32	1,688,534.36	39.736958	-80.828838
2,000.00	5.00	255.00	1,998.22	-12.41	-46.32	14,430,995.06	1,688,525.94	39.736952	-80.828868
2,100.00	5.00	255.00	2,097.84	-14.67	-54.73	14,430,992.81	1,688,517.52	39.736946	-80.828897
2,200.00	5.00	255.00	2,197.46	-16.92	-63.15	14,430,990.55	1,688,509.10	39.736939	-80.828927
2,300.00	5.00	255.00	2,297.08	-19.18	-71.57	14,430,988.30	1,688,500.68	39.736933	-80.828957
2,400.00	5.00	255.00	2,396.70	-21.43	-79.99	14,430,986.04	1,688,492.26	39.736927	-80.828987
2,500.00	5.00	255.00	2,496.32	-23.69	-88.41	14,430,983.78	1,688,483.84	39.736921	-80.829017
2,599.99	5.00	255.00	2,595.94	-25.94	-96.83	14,430,981.53	1,688,475.43	39.736915	-80.829047
2,699.99	5.00	255.00	2,695.56	-28.20	-105.25	14,430,979.27	1,688,467.01	39.736909	-80.829077
2,799.99	5.00	255.00	2,795.17	-30.46	-113.66	14,430,977.02	1,688,458.59	39.736903	-80.829107
2,804.84	5.00	255.00	2,800.00	-30.57	-114.07	14,430,976.91	1,688,458.18	39.736902	-80.829109
Begin 3°/100' turn									
2,877.92	5.00	229.64	2,872.81	-33.45	-119.58	14,430,974.02	1,688,452.68	39.736894	-80.829128
Begin 3°/100' build/turn									
2,899.99	5.66	230.06	2,894.79	-34.77	-121.14	14,430,972.70	1,688,451.11	39.736891	-80.829134
2,999.99	8.66	231.16	2,994.00	-42.66	-130.79	14,430,964.81	1,688,441.46	39.736889	-80.829168
3,099.99	11.66	231.70	3,092.42	-53.65	-144.58	14,430,953.83	1,688,427.67	39.736839	-80.829217
3,199.99	14.66	232.02	3,189.78	-67.70	-162.49	14,430,939.78	1,688,409.77	39.736801	-80.829281
3,299.99	17.66	232.23	3,285.82	-84.77	-184.45	14,430,922.70	1,688,387.80	39.736754	-80.829359
3,381.52	20.10	232.36	3,362.96	-100.90	-205.32	14,430,906.57	1,688,366.93	39.736710	-80.829434
Begin 20.10° tangent									
3,399.99	20.10	232.36	3,380.31	-104.78	-210.35	14,430,902.69	1,688,361.91	39.736699	-80.829452
3,499.99	20.10	232.36	3,474.22	-125.77	-237.56	14,430,881.71	1,688,334.69	39.736641	-80.829549
3,599.99	20.10	232.36	3,568.13	-146.76	-264.78	14,430,860.72	1,688,307.48	39.736584	-80.829646
3,699.99	20.10	232.36	3,662.03	-167.74	-291.99	14,430,839.73	1,688,280.26	39.736526	-80.829742
3,799.99	20.10	232.36	3,755.94	-188.73	-319.20	14,430,818.74	1,688,253.05	39.736469	-80.829839
3,899.99	20.10	232.36	3,849.85	-209.72	-346.42	14,430,797.75	1,688,225.84	39.736411	-80.829936
3,999.99	20.10	232.36	3,943.76	-230.71	-373.63	14,430,776.77	1,688,198.62	39.736354	-80.830033
4,099.99	20.10	232.36	4,037.67	-251.69	-400.85	14,430,755.78	1,688,171.41	39.736296	-80.830130
4,199.99	20.10	232.36	4,131.58	-272.68	-428.06	14,430,734.79	1,688,144.19	39.736239	-80.830227
4,299.99	20.10	232.36	4,225.49	-293.67	-455.27	14,430,713.80	1,688,116.98	39.736181	-80.830324
4,399.99	20.10	232.36	4,319.40	-314.66	-482.49	14,430,692.82	1,688,089.76	39.736124	-80.830421
4,499.99	20.10	232.36	4,413.31	-335.65	-509.70	14,430,671.83	1,688,062.55	39.736066	-80.830518



Planning Report - Geographic

Database: DB_Dec2220_v16
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia.
 Site: Goudy
 Well: Goudy 1S-08HM (I)
 Wellbore: Original Hole
 Design: rev5

Local Co-ordinate Reference: Well Goudy 1S-08HM (I)
 TVD Reference: GL @ 1241.00usft
 MD Reference: GL @ 1241.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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FEB 25 2021

Planned Survey

WV Department of Environmental Protection

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,599.99	20.10	232.36	4,507.21	-356.63	-536.92	14,430,650.84	1,688,035.34	39.736009	-80.830615
4,699.99	20.10	232.36	4,601.12	-377.62	-564.13	14,430,629.85	1,688,008.12	39.735952	-80.830712
4,799.99	20.10	232.36	4,695.03	-398.61	-591.34	14,430,608.86	1,687,980.91	39.735894	-80.830809
4,899.99	20.10	232.36	4,788.94	-419.60	-618.56	14,430,587.88	1,687,953.69	39.735837	-80.830906
4,999.99	20.10	232.36	4,882.85	-440.58	-645.77	14,430,566.89	1,687,926.48	39.735779	-80.831003
5,099.99	20.10	232.36	4,976.76	-461.57	-672.99	14,430,545.90	1,687,899.27	39.735722	-80.831100
5,199.99	20.10	232.36	5,070.67	-482.56	-700.20	14,430,524.91	1,687,872.05	39.735664	-80.831197
5,299.99	20.10	232.36	5,164.58	-503.55	-727.41	14,430,503.93	1,687,844.84	39.735607	-80.831294
5,399.99	20.10	232.36	5,258.49	-524.54	-754.63	14,430,482.94	1,687,817.62	39.735549	-80.831391
5,499.99	20.10	232.36	5,352.39	-545.52	-781.84	14,430,461.95	1,687,790.41	39.735492	-80.831487
5,599.99	20.10	232.36	5,446.30	-566.51	-809.06	14,430,440.96	1,687,763.20	39.735434	-80.831584
5,699.99	20.10	232.36	5,540.21	-587.50	-836.27	14,430,419.97	1,687,735.98	39.735377	-80.831681
5,799.99	20.10	232.36	5,634.12	-608.49	-863.48	14,430,398.99	1,687,708.77	39.735319	-80.831778
5,899.99	20.10	232.36	5,728.03	-629.47	-890.70	14,430,378.00	1,687,681.55	39.735262	-80.831875
5,969.65	20.10	232.36	5,793.45	-644.09	-909.66	14,430,363.38	1,687,662.60	39.735221	-80.831943
Begin 8°/100' build/turn									
5,999.99	20.52	225.47	5,821.90	-651.01	-917.58	14,430,356.46	1,687,654.68	39.735203	-80.831971
6,099.99	23.62	205.71	5,914.69	-681.40	-938.80	14,430,326.07	1,687,633.45	39.735119	-80.832047
6,199.99	28.59	191.37	6,004.55	-722.97	-952.23	14,430,284.50	1,687,620.02	39.735005	-80.832095
6,299.99	34.63	181.31	6,089.74	-774.92	-957.60	14,430,232.55	1,687,614.65	39.734862	-80.832114
6,399.99	41.27	174.03	6,168.59	-836.23	-954.82	14,430,171.25	1,687,617.43	39.734694	-80.832105
6,499.99	48.26	168.49	6,239.57	-905.70	-943.93	14,430,101.77	1,687,628.32	39.734503	-80.832066
6,524.35	50.00	167.33	6,255.51	-923.71	-940.07	14,430,083.76	1,687,632.18	39.734454	-80.832053
Begin 10°/100' build/turn									
6,599.99	56.85	163.32	6,300.57	-982.39	-924.60	14,430,025.08	1,687,647.65	39.734292	-80.831998
6,699.99	66.06	158.88	6,348.33	-1,065.33	-896.05	14,429,942.14	1,687,676.20	39.734065	-80.831897
6,799.99	75.38	155.04	6,381.32	-1,152.04	-859.08	14,429,855.43	1,687,713.18	39.733826	-80.831766
6,899.99	84.76	151.52	6,398.55	-1,239.90	-814.81	14,429,767.58	1,687,757.45	39.733585	-80.831609
6,945.10	89.00	149.98	6,401.00	-1,279.19	-792.80	14,429,728.29	1,687,779.45	39.733477	-80.831531
Begin 89.00° lateral									
6,999.99	89.00	149.98	6,401.95	-1,326.70	-765.34	14,429,680.77	1,687,806.91	39.733346	-80.831434
7,099.99	89.00	149.98	6,403.69	-1,413.27	-715.32	14,429,594.20	1,687,856.94	39.733108	-80.831257
7,199.99	89.00	149.98	6,405.44	-1,499.84	-665.29	14,429,507.63	1,687,906.96	39.732870	-80.831079
7,299.99	89.00	149.98	6,407.18	-1,586.41	-615.26	14,429,421.06	1,687,956.99	39.732632	-80.830902
7,399.99	89.00	149.98	6,408.92	-1,672.98	-565.24	14,429,334.49	1,688,007.01	39.732394	-80.830725
7,499.99	89.00	149.98	6,410.66	-1,759.55	-515.21	14,429,247.92	1,688,057.04	39.732156	-80.830547
7,599.98	89.00	149.98	6,412.40	-1,846.12	-465.19	14,429,161.35	1,688,107.07	39.731918	-80.830370
7,699.98	89.00	149.98	6,414.14	-1,932.69	-415.16	14,429,074.78	1,688,157.09	39.731680	-80.830193
7,799.98	89.00	149.98	6,415.88	-2,019.26	-365.13	14,428,988.21	1,688,207.12	39.731442	-80.830015
7,899.98	89.00	149.98	6,417.62	-2,105.83	-315.11	14,428,901.64	1,688,257.15	39.731204	-80.829838
7,999.98	89.00	149.98	6,419.36	-2,192.40	-265.08	14,428,815.07	1,688,307.17	39.730966	-80.829660
8,099.98	89.00	149.98	6,421.10	-2,278.97	-215.05	14,428,728.50	1,688,357.20	39.730728	-80.829483
8,199.98	89.00	149.98	6,422.84	-2,365.54	-165.03	14,428,641.93	1,688,407.22	39.730490	-80.829306
8,299.98	89.00	149.98	6,424.58	-2,452.11	-115.00	14,428,555.36	1,688,457.25	39.730252	-80.829128
8,399.98	89.00	149.98	6,426.32	-2,538.68	-64.98	14,428,468.80	1,688,507.28	39.730014	-80.828951
8,499.98	89.00	149.98	6,428.06	-2,625.25	-14.95	14,428,382.23	1,688,557.30	39.729776	-80.828774
8,599.98	89.00	149.98	6,429.80	-2,711.82	35.08	14,428,295.66	1,688,607.33	39.729538	-80.828596
8,699.98	89.00	149.98	6,431.54	-2,798.39	85.10	14,428,209.09	1,688,657.36	39.729300	-80.828419
8,799.98	89.00	149.98	6,433.28	-2,884.96	135.13	14,428,122.52	1,688,707.38	39.729062	-80.828242
8,899.98	89.00	149.98	6,435.02	-2,971.53	185.15	14,428,035.95	1,688,757.41	39.728824	-80.828064
8,999.98	89.00	149.98	6,436.76	-3,058.10	235.18	14,427,949.38	1,688,807.43	39.728586	-80.827887
9,099.98	89.00	149.98	6,438.50	-3,144.67	285.21	14,427,862.81	1,688,857.46	39.728348	-80.827710
9,199.98	89.00	149.98	6,440.25	-3,231.24	335.23	14,427,776.24	1,688,907.49	39.728110	-80.827532
9,299.98	89.00	149.98	6,441.99	-3,317.81	385.26	14,427,689.67	1,688,957.51	39.727872	-80.827355



Planning Report - Geographic

Database: DB_Dec2220_v16
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia.
 Site: Goudy
 Well: Goudy 1S-08HM (I)
 Wellbore: Original Hole
 Design: rev5

Local Co-ordinate Reference: Well Goudy 1S-08HM (I)
 TVD Reference: GL @ 1241.00usft
 MD Reference: GL @ 1241.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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FEB 25 2021

WV Department of
 Environmental Protection

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,399.98	89.00	149.98	6,443.73	-3,404.38	435.29	14,427,603.10	1,689,007.54	39.727634	-80.827178
9,499.98	89.00	149.98	6,445.47	-3,490.94	485.31	14,427,516.53	1,689,057.56	39.727396	-80.827000
9,599.98	89.00	149.98	6,447.21	-3,577.51	535.34	14,427,429.96	1,689,107.59	39.727158	-80.826823
9,699.98	89.00	149.98	6,448.95	-3,664.08	585.36	14,427,343.39	1,689,157.62	39.726920	-80.826646
9,799.98	89.00	149.98	6,450.69	-3,750.65	635.39	14,427,256.82	1,689,207.64	39.726682	-80.826468
9,899.98	89.00	149.98	6,452.43	-3,837.22	685.42	14,427,170.25	1,689,257.67	39.726444	-80.826291
9,999.98	89.00	149.98	6,454.17	-3,923.79	735.44	14,427,083.68	1,689,307.70	39.726206	-80.826114
10,099.98	89.00	149.98	6,455.91	-4,010.36	785.47	14,426,997.11	1,689,357.72	39.725968	-80.825936
10,199.98	89.00	149.98	6,457.65	-4,096.93	835.50	14,426,910.54	1,689,407.75	39.725730	-80.825759
10,299.98	89.00	149.98	6,459.39	-4,183.50	885.52	14,426,823.97	1,689,457.77	39.725492	-80.825582
10,399.98	89.00	149.98	6,461.13	-4,270.07	935.55	14,426,737.40	1,689,507.80	39.725254	-80.825404
10,499.98	89.00	149.98	6,462.87	-4,356.64	985.57	14,426,650.83	1,689,557.83	39.725016	-80.825227
10,599.98	89.00	149.98	6,464.61	-4,443.21	1,035.60	14,426,564.26	1,689,607.85	39.724778	-80.825050
10,699.98	89.00	149.98	6,466.35	-4,529.78	1,085.63	14,426,477.69	1,689,657.88	39.724540	-80.824872
10,799.98	89.00	149.98	6,468.09	-4,616.35	1,135.65	14,426,391.12	1,689,707.91	39.724302	-80.824695
10,899.98	89.00	149.98	6,469.83	-4,702.92	1,185.68	14,426,304.55	1,689,757.93	39.724064	-80.824518
10,999.98	89.00	149.98	6,471.57	-4,789.49	1,235.70	14,426,217.98	1,689,807.96	39.723826	-80.824340
11,099.98	89.00	149.98	6,473.31	-4,876.06	1,285.73	14,426,131.41	1,689,857.98	39.723588	-80.824163
11,199.98	89.00	149.98	6,475.06	-4,962.63	1,335.76	14,426,044.84	1,689,908.01	39.723350	-80.823986
11,299.98	89.00	149.98	6,476.80	-5,049.20	1,385.78	14,425,958.27	1,689,958.04	39.723112	-80.823809
11,399.98	89.00	149.98	6,478.54	-5,135.77	1,435.81	14,425,871.70	1,690,008.06	39.722874	-80.823631
11,499.98	89.00	149.98	6,480.28	-5,222.34	1,485.84	14,425,785.13	1,690,058.09	39.722636	-80.823454
11,599.98	89.00	149.98	6,482.02	-5,308.91	1,535.86	14,425,698.57	1,690,108.12	39.722398	-80.823277
11,699.98	89.00	149.98	6,483.76	-5,395.48	1,585.89	14,425,612.00	1,690,158.14	39.722160	-80.823099
11,799.98	89.00	149.98	6,485.50	-5,482.05	1,635.91	14,425,525.43	1,690,208.17	39.721921	-80.822921
11,899.98	89.00	149.98	6,487.24	-5,568.62	1,685.94	14,425,438.86	1,690,258.19	39.721683	-80.822745
11,999.98	89.00	149.98	6,488.98	-5,655.19	1,735.97	14,425,352.29	1,690,308.22	39.721445	-80.822567
12,099.98	89.00	149.98	6,490.72	-5,741.76	1,785.99	14,425,265.72	1,690,358.25	39.721207	-80.822390
12,199.98	89.00	149.98	6,492.46	-5,828.33	1,836.02	14,425,179.15	1,690,408.27	39.720969	-80.822213
12,299.98	89.00	149.98	6,494.20	-5,914.90	1,886.05	14,425,092.58	1,690,458.30	39.720731	-80.822036
12,399.98	89.00	149.98	6,495.94	-6,001.47	1,936.07	14,425,006.01	1,690,508.32	39.720493	-80.821858
12,499.98	89.00	149.98	6,497.68	-6,088.04	1,986.10	14,424,919.44	1,690,558.35	39.720255	-80.821681
12,599.98	89.00	149.98	6,499.42	-6,174.61	2,036.12	14,424,832.87	1,690,608.38	39.720017	-80.821504
12,699.97	89.00	149.98	6,501.16	-6,261.17	2,086.15	14,424,746.30	1,690,658.40	39.719779	-80.821326
12,799.97	89.00	149.98	6,502.90	-6,347.74	2,136.18	14,424,659.73	1,690,708.43	39.719541	-80.821149
12,899.97	89.00	149.98	6,504.64	-6,434.31	2,186.20	14,424,573.16	1,690,758.46	39.719303	-80.820972
12,999.97	89.00	149.98	6,506.38	-6,520.88	2,236.23	14,424,486.59	1,690,808.48	39.719065	-80.820794
13,099.97	89.00	149.98	6,508.12	-6,607.45	2,286.26	14,424,400.02	1,690,858.51	39.718827	-80.820617
13,199.97	89.00	149.98	6,509.87	-6,694.02	2,336.28	14,424,313.45	1,690,908.53	39.718589	-80.820440
13,299.97	89.00	149.98	6,511.61	-6,780.59	2,386.31	14,424,226.88	1,690,958.56	39.718351	-80.820263
13,399.97	89.00	149.98	6,513.35	-6,867.16	2,436.33	14,424,140.31	1,691,008.59	39.718113	-80.820085
13,499.97	89.00	149.98	6,515.09	-6,953.73	2,486.36	14,424,053.74	1,691,058.61	39.717875	-80.819908
13,599.97	89.00	149.98	6,516.83	-7,040.30	2,536.39	14,423,967.17	1,691,108.64	39.717637	-80.819731
13,699.97	89.00	149.98	6,518.57	-7,126.87	2,586.41	14,423,880.60	1,691,158.67	39.717399	-80.819553
13,799.97	89.00	149.98	6,520.31	-7,213.44	2,636.44	14,423,794.03	1,691,208.69	39.717161	-80.819376
13,899.97	89.00	149.98	6,522.05	-7,300.01	2,686.46	14,423,707.46	1,691,258.72	39.716923	-80.819199
13,999.97	89.00	149.98	6,523.79	-7,386.58	2,736.49	14,423,620.89	1,691,308.74	39.716685	-80.819022
14,099.97	89.00	149.98	6,525.53	-7,473.15	2,786.52	14,423,534.32	1,691,358.77	39.716447	-80.818844
14,199.97	89.00	149.98	6,527.27	-7,559.72	2,836.54	14,423,447.75	1,691,408.80	39.716209	-80.818667
14,299.97	89.00	149.98	6,529.01	-7,646.29	2,886.57	14,423,361.18	1,691,458.82	39.715971	-80.818490
14,399.97	89.00	149.98	6,530.75	-7,732.86	2,936.60	14,423,274.61	1,691,508.85	39.715733	-80.818313
14,499.97	89.00	149.98	6,532.49	-7,819.43	2,986.62	14,423,188.04	1,691,558.87	39.715495	-80.818135
14,599.97	89.00	149.98	6,534.23	-7,906.00	3,036.65	14,423,101.47	1,691,608.90	39.715257	-80.817958
14,699.97	89.00	149.98	6,535.97	-7,992.57	3,086.67	14,423,014.90	1,691,658.93	39.715019	-80.817781
14,799.97	89.00	149.98	6,537.71	-8,079.14	3,136.70	14,422,928.34	1,691,708.95	39.714781	-80.817603

03/12/2021



Planning Report - Geographic

Database: DB_Dec2220_v16
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia.
 Site: Goudy
 Well: Goudy 1S-08HM (I)
 Wellbore: Original Hole
 Design: rev5

Local Co-ordinate Reference: Well Goudy 1S-08HM (I)
 TVD Reference: GL @ 1241.00usft
 MD Reference: GL @ 1241.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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 FEB 25 2021
 WV Department of
 Environmental Protection

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
14,899.97	89.00	149.98	6,539.45	-8,165.71	3,186.73	14,422,841.77	1,691,758.98	39.714543	-80.817426
14,999.97	89.00	149.98	6,541.19	-8,252.28	3,236.75	14,422,755.20	1,691,809.01	39.714305	-80.817249
15,099.97	89.00	149.98	6,542.93	-8,338.85	3,286.78	14,422,668.63	1,691,859.03	39.714067	-80.817072
15,199.97	89.00	149.98	6,544.68	-8,425.42	3,336.81	14,422,582.06	1,691,909.06	39.713829	-80.816894
15,299.97	89.00	149.98	6,546.42	-8,511.99	3,386.83	14,422,495.49	1,691,959.08	39.713591	-80.816717
15,399.97	89.00	149.98	6,548.16	-8,598.56	3,436.86	14,422,408.92	1,692,009.11	39.713353	-80.816540
15,499.97	89.00	149.98	6,549.90	-8,685.13	3,486.88	14,422,322.35	1,692,059.14	39.713115	-80.816363
15,599.97	89.00	149.98	6,551.64	-8,771.70	3,536.91	14,422,235.78	1,692,109.16	39.712877	-80.816185
15,699.97	89.00	149.98	6,553.38	-8,858.27	3,586.94	14,422,149.21	1,692,159.19	39.712639	-80.816008
15,799.97	89.00	149.98	6,555.12	-8,944.84	3,636.96	14,422,062.64	1,692,209.22	39.712401	-80.815831
15,899.97	89.00	149.98	6,556.86	-9,031.40	3,686.99	14,421,976.07	1,692,259.24	39.712162	-80.815654
15,999.97	89.00	149.98	6,558.60	-9,117.97	3,737.01	14,421,889.50	1,692,309.27	39.711924	-80.815476
16,099.97	89.00	149.98	6,560.34	-9,204.54	3,787.04	14,421,802.93	1,692,359.29	39.711686	-80.815299
16,199.97	89.00	149.98	6,562.08	-9,291.11	3,837.07	14,421,716.36	1,692,409.32	39.711448	-80.815122
16,299.97	89.00	149.98	6,563.82	-9,377.68	3,887.09	14,421,629.79	1,692,459.35	39.711210	-80.814945
16,399.97	89.00	149.98	6,565.56	-9,464.25	3,937.12	14,421,543.22	1,692,509.37	39.710972	-80.814767
16,499.97	89.00	149.98	6,567.30	-9,550.82	3,987.15	14,421,456.65	1,692,559.40	39.710734	-80.814590
16,599.97	89.00	149.98	6,569.04	-9,637.39	4,037.17	14,421,370.08	1,692,609.42	39.710496	-80.814413
16,699.97	89.00	149.98	6,570.78	-9,723.96	4,087.20	14,421,283.51	1,692,659.45	39.710258	-80.814236
16,799.97	89.00	149.98	6,572.52	-9,810.53	4,137.22	14,421,196.94	1,692,709.48	39.710020	-80.814058
16,899.97	89.00	149.98	6,574.26	-9,897.10	4,187.25	14,421,110.37	1,692,759.50	39.709782	-80.813881
16,999.97	89.00	149.98	6,576.00	-9,983.67	4,237.28	14,421,023.80	1,692,809.53	39.709544	-80.813704
17,099.97	89.00	149.98	6,577.74	-10,070.24	4,287.30	14,420,937.23	1,692,859.56	39.709306	-80.813527
17,199.97	89.00	149.98	6,579.49	-10,156.81	4,337.33	14,420,850.66	1,692,909.58	39.709068	-80.813349
17,299.97	89.00	149.98	6,581.23	-10,243.38	4,387.36	14,420,764.09	1,692,959.61	39.708830	-80.813172
17,399.97	89.00	149.98	6,582.97	-10,329.95	4,437.38	14,420,677.52	1,693,009.63	39.708592	-80.812995
17,499.97	89.00	149.98	6,584.71	-10,416.52	4,487.41	14,420,590.95	1,693,059.66	39.708354	-80.812818
17,599.97	89.00	149.98	6,586.45	-10,503.09	4,537.43	14,420,504.38	1,693,109.69	39.708116	-80.812640
17,699.96	89.00	149.98	6,588.19	-10,589.66	4,587.46	14,420,417.81	1,693,159.71	39.707878	-80.812463
17,799.96	89.00	149.98	6,589.93	-10,676.23	4,637.49	14,420,331.24	1,693,209.74	39.707640	-80.812286
17,899.96	89.00	149.98	6,591.67	-10,762.80	4,687.51	14,420,244.67	1,693,259.77	39.707402	-80.812109
17,999.96	89.00	149.98	6,593.41	-10,849.37	4,737.54	14,420,158.11	1,693,309.79	39.707164	-80.811932
18,099.96	89.00	149.98	6,595.15	-10,935.94	4,787.57	14,420,071.54	1,693,359.82	39.706926	-80.811754
18,199.96	89.00	149.98	6,596.89	-11,022.51	4,837.59	14,419,984.97	1,693,409.84	39.706688	-80.811577
18,299.96	89.00	149.98	6,598.63	-11,109.08	4,887.62	14,419,898.40	1,693,459.87	39.706450	-80.811400
18,399.96	89.00	149.98	6,600.37	-11,195.65	4,937.64	14,419,811.83	1,693,509.90	39.706212	-80.811223
18,499.96	89.00	149.98	6,602.11	-11,282.22	4,987.67	14,419,725.26	1,693,559.92	39.705974	-80.811045
18,599.96	89.00	149.98	6,603.85	-11,368.79	5,037.70	14,419,638.69	1,693,609.95	39.705736	-80.810868
18,699.96	89.00	149.98	6,605.59	-11,455.36	5,087.72	14,419,552.12	1,693,659.98	39.705498	-80.810691
18,799.96	89.00	149.98	6,607.33	-11,541.93	5,137.75	14,419,465.55	1,693,710.00	39.705260	-80.810514
18,899.96	89.00	149.98	6,609.07	-11,628.50	5,187.77	14,419,378.98	1,693,760.03	39.705022	-80.810337
18,999.96	89.00	149.98	6,610.81	-11,715.07	5,237.80	14,419,292.41	1,693,810.05	39.704783	-80.810159
19,099.96	89.00	149.98	6,612.55	-11,801.63	5,287.83	14,419,205.84	1,693,860.08	39.704545	-80.809982
19,199.96	89.00	149.98	6,614.30	-11,888.20	5,337.85	14,419,119.27	1,693,910.11	39.704307	-80.809805
19,299.96	89.00	149.98	6,616.04	-11,974.77	5,387.88	14,419,032.70	1,693,960.13	39.704069	-80.809628
19,399.96	89.00	149.98	6,617.78	-12,061.34	5,437.91	14,418,946.13	1,694,010.16	39.703831	-80.809450
19,499.96	89.00	149.98	6,619.52	-12,147.91	5,487.93	14,418,859.56	1,694,060.18	39.703593	-80.809273
19,599.96	89.00	149.98	6,621.26	-12,234.48	5,537.96	14,418,772.99	1,694,110.21	39.703355	-80.809096
19,699.96	89.00	149.98	6,623.00	-12,321.05	5,587.98	14,418,686.42	1,694,160.24	39.703117	-80.808919
19,799.96	89.00	149.98	6,624.74	-12,407.62	5,638.01	14,418,599.85	1,694,210.26	39.702879	-80.808742
19,899.96	89.00	149.98	6,626.48	-12,494.19	5,688.04	14,418,513.28	1,694,260.29	39.702641	-80.808564
19,999.96	89.00	149.98	6,628.22	-12,580.76	5,738.06	14,418,426.71	1,694,310.32	39.702403	-80.808387
20,099.96	89.00	149.98	6,629.96	-12,667.33	5,788.09	14,418,340.14	1,694,360.34	39.702165	-80.808210
20,199.96	89.00	149.98	6,631.70	-12,753.90	5,838.12	14,418,253.57	1,694,410.37	39.701927	-80.808033
20,299.96	89.00	149.98	6,633.44	-12,840.47	5,888.14	14,418,167.00	1,694,460.39	39.701689	-80.807856

03/12/2021



Planning Report - Geographic

Database:	DB_Dec2220_v16	Local Co-ordinate Reference:	Well Goudy 1S-08HM (I)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1241.00usft
Project:	Marshall County, West Virginia.	MD Reference:	GL @ 1241.00usft
Site:	Goudy	North Reference:	Grid
Well:	Goudy 1S-08HM (I)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev5		

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WV Department of
Environmental Protection

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
20,399.96	89.00	149.98	6,635.18	-12,927.04	5,938.17	14,418,080.43	1,694,510.42	39.701451	-80.807678	
20,499.96	89.00	149.98	6,636.92	-13,013.61	5,988.19	14,417,993.86	1,694,560.45	39.701213	-80.807501	
20,504.46	89.00	149.98	6,637.00	-13,017.51	5,990.44	14,417,989.97	1,694,562.70	39.701202	-80.807493	
PBHL/TD 20504.46 MD /6637.00 TVD										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
Goudy 1S-08HM LP r1 - hit/miss target - Shape - plan misses target center by 0.16usft at 6945.00usft MD (6401.00 TVD, -1279.10 N, -792.85 E) - Point	0.00	0.01	6,401.00	-1,279.02	-792.71	14,429,728.45	1,687,779.54	39.733477	-80.831531	
Goudy 1S-08HM BHL r4 - plan hits target center - Point	0.00	0.01	6,637.00	-13,017.51	5,990.44	14,417,989.97	1,694,562.70	39.701202	-80.807493	

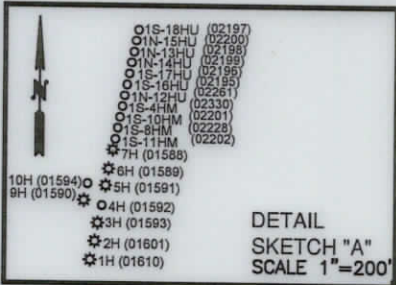
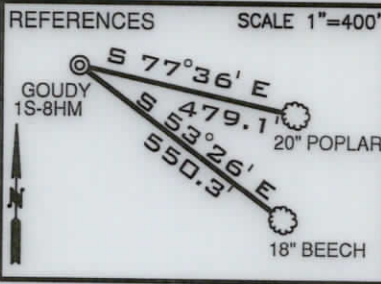
Casing Points						
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")		
1,000.00	1,000.00	13 3/8" Casing	13-3/8	17		
2,604.07	2,600.00	9 5/8" Casing	9-5/8	12-1/4		

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Local Coordinates	
				Comment	
1,200.00	1,200.00	0.00	0.00	KOP Begin 1°/100' build	
1,700.00	1,699.37	-5.64	-21.06	Begin 5.00° tangent	
2,804.84	2,800.00	-30.57	-114.07	Begin 3°/100' turn	
2,877.92	2,872.81	-33.45	-119.58	Begin 3°/100' build/turn	
3,381.52	3,362.96	-100.90	-205.32	Begin 20.10° tangent	
5,969.65	5,793.45	-644.09	-909.66	Begin 8°/100' build/turn	
6,524.35	6,255.51	-923.71	-940.07	Begin 10°/100' build/turn	
6,945.10	6,401.00	-1,279.19	-792.80	Begin 89.00° lateral	
20,504.46	6,637.00	-13,017.51	5,990.44	PBHL/TD 20504.46 MD /6637.00 TVD	

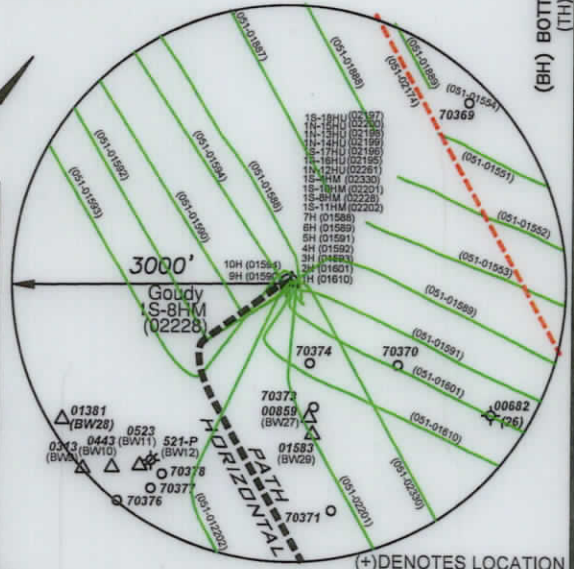
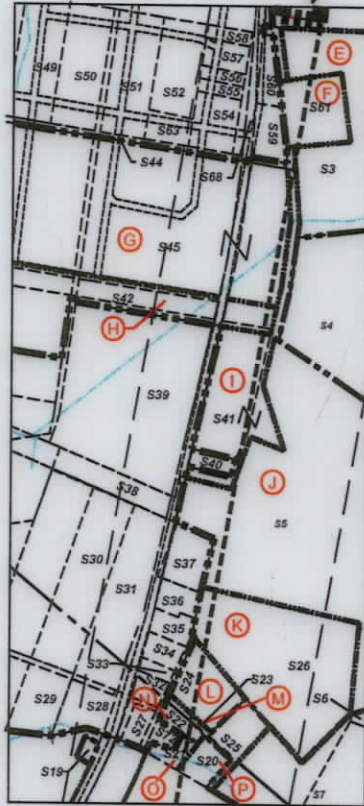
03/12/2021

**GOUDY LEASE
WELL 1S-8HM
766.5487± ACRES**

TOP HOLE LATITUDE: 39°45'00"
BOTTOM HOLE LATITUDE: 39°42'30"



Detail "A" SCALE 1"=1000'



(+) DENOTES LOCATION ON UNITED STATES TOPOGRAPHIC MAPS

SURFACE HOLE UTM. NAD83, ZONE 17 IN METERS N) 4,398,579.87 E) 514,677.85
LANDING POINT 1 UTM. NAD83, ZONE 17 IN METERS N) 4,398,189.98 E) 514,436.21
BOTTOM HOLE UTM. NAD83, ZONE 17 IN METERS N) 4,394,612.13 E) 516,503.74

- NOTES**
- BORE PATH BASED ON GRID NORTH.
 - NO WATER WELLS WITHIN 250' OF WELL WERE FOUND, NO DWELLINGS WITHIN 625' OF PAD CENTER WERE FOUND.
 - OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN AUGUST, 2020. COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
 - WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.
 - BOUNDARIES ALONG ROADWAYS ARE BASED UPON MEMORANDUM BY DICKIE, MCCAMEY & CHILCOTE, P.C. FILE 0058304, 0401147

LEGEND

- LEASED TRACTS
- SURFACE TRACTS
- WELL LATERAL
- POINT PLEASANT LEGS
- MARCELLUS LEGS
- UNIT BOUNDARY
- LEASE # (SEE 6A1 FORM)

LINE	BEARING	DISTANCE
L1	N 11°47' W	2288.53'
L2	S 52°53' E	1751.23'
L3	S 75°58' W	117.71'
L4	S 53°17' W	984.75'

CURVE	CHORD BEARING	CHORD LENGTH	RADIUS	ARC LENGTH
C1	S 55°28' W	21.04'	65.60'	21.13'
C2	S 29°11' W	89.35'	131.13'	91.17'
C3	S 02°31' E	201.18'	532.88'	202.39'
C4	S 21°33' E	384.91'	1,301.48'	386.33'

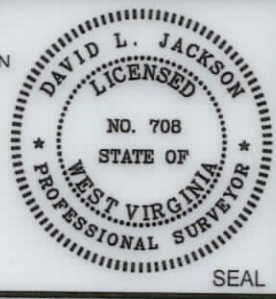
FILE NUMBER _____
DRAWING NUMBER GOUDY_1S-8HM_REV5
SCALE 1" = 2000'
MINIMUM DEGREE OF ACCURACY 1/200
PROVEN SOURCE OF ELEVATION SUBMETER MAPPING
GRADE GPS

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 RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION

P.S. 708

David L Jackson

JACKSON SURVEYING INC.
P.O. Box 1460
Clarksburg, WV 26302
304-623-5851



WVDEP
OFFICE OF OIL & GAS
601 57TH STREET, SE
CHARLESTON, WV 25304

DATE: AUGUST 24, 2020
REVISED: FEBRUARY 02, 2021
OPERATORS WELL NO. GOUDY 1S-8HM
API WELL NO. 47-051-02228
STATE COUNTY PERMIT

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
LOCATION ELEVATION 1242.0' WATERSHED (HUC 10) FRENCH CREEK - OHIO RIVER
DISTRICT FRANKLIN COUNTY MARSHALL
QUADRANGLE NEW MARTINSVILLE 7.5' LEASE NUMBER _____ SEE WW-6A1 FORM

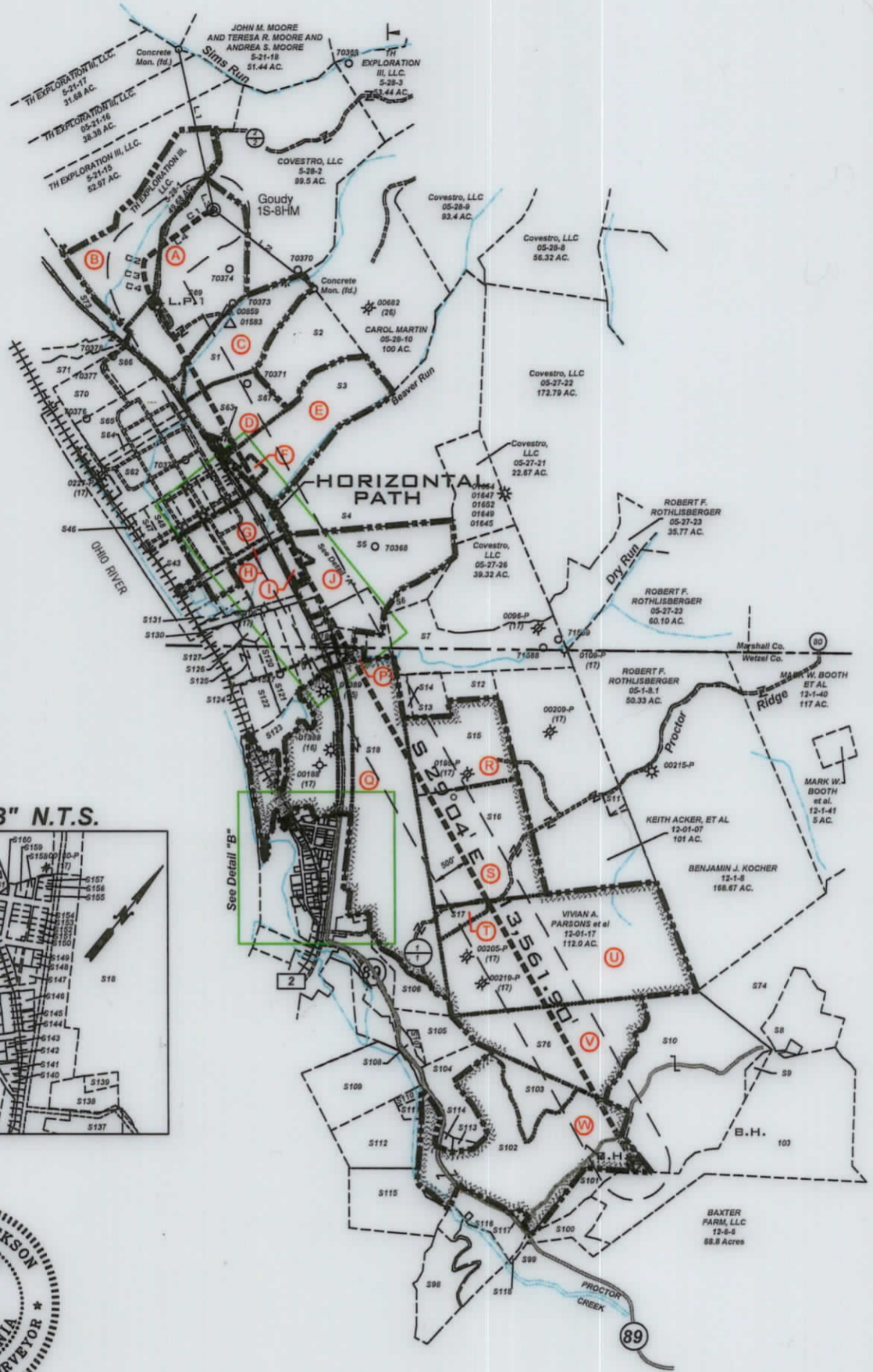
SURFACE OWNER TH EXPLORATION III, LLC. ACREAGE 70.0
OIL & GAS ROYALTY OWNER PPG INDUSTRIES, INC., ET AL. THEIR SUCCESSORS OR ASSIGNS LEASE ACREAGE 70.0
PROPOSED WORK: DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___
PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE (SPECIFY) _____
TARGET FORMATION MARCELLUS ESTIMATED DEPTH TVD 6,524' TMD: 20,504'
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

COUNTY NAME PERMIT

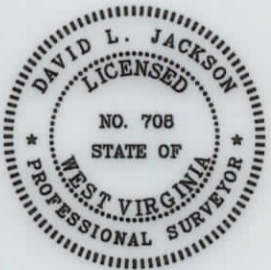
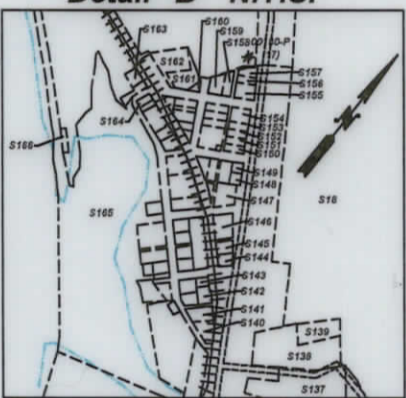
03/12/2021

form. wws

PG 2 OF 4 **GOUDY LEASE**
WELL 1S-8HM
766.5487± ACRES



Detail "B" N.T.S.



P.S. 708 *David L Jackson*

Scale
1" = 2000'

03/12/2021



TUG HILL
OPERATING

OPERATOR'S
WELL #: Goudy 1S-8HM
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV
API # 47-051-02228

WELL PLAT
PAGE 2 OF 4
DATE: 08/24/2020
REVISED: 02/02/2021

PG 3 OF 4 **GOUDY LEASE**
WELL 1S-8HM
766.5487± ACRES

Number	TAX MAP -PARCEL	SURFACE OWNER	ACRES
S1	C 05-28-12	TH Exploration III, LLC	20.226
S2	05-28-11	Carol A. Martin	24.681
S3	E 05-27-19	Covestro, LLC	33.786
S4	05-27-20	Covestro LLC	93.027
S5	J 05-27-20.1	Appalachian Power Co.	43.973
S6	05-27-27	James Andrew & Karen Lynne Richmond	8.9353
S7	05-27-25	James Andrew & Karen Lynne Richmond	41.35
S8	12-01-31	Steven Jack & Susan Louise Hafer	20.0
S9	12-01-29	Baxter Farm, LLC	2.0
S10	12-01-28	Steven J. & Susan L. Hafer	88.39
S11	12-01-7.1	Harry Wayman Estate	2.0
S12	12-01-04	Robert F. Rothlisberger	6.0
S13	12-01-03	Charles D. & Edith Feenerty Harrison	7.8
S14	12-01-02	James Andrew & Karen L. Richmond	2.7
S15	R 12-01-05	Irvin L. Hoyt, Jr. & David L. Hoyt	36.8
S16	S 12-01-06	Mona Parsons, et al	52.75
S17	T 12-01-16	Vivian A. Parsons, et al	5.125
S18	Q 12-01-01	Covestro, LLC	135.0
S19	12-01-1.7	Colombia Gas Transmission, Corp.	0.15
S20	P 12-23-15	Donna Jo Cain	0.70
S21	O 12-23-15.1	Robert F. Rothlisberger	0.47
S22	N 12-23-13	Donna Jo Cain	0.38
S23	M 05-27-27.2	Donna Jo Cain	0.1767
S24	L 05-27-27.1	Donald P. Cain	1.645
S25	05-27-27.3	Donna Jo. Cain	1.018
S26	K 05-27-28	Covestro, LLC	8.0
S27	12-23-12	Donna Jo Cain	0.37
S28	12-23-11	Covestro, LLC	1.25
S29	12-23-10	Covestro, LLC	1.28
S30	12-23-05	Covestro, LLC	3.69
S31	05-27-40	Covestro, LLC	3.36
S32	12-23-06	Covestro, LLC	0.34
S33	12-27-44	Covestro, LLC	0.21
S34	05-27-43	Covestro, LLC	0.63
S35	05-27-42	Covestro, LLC	0.52
S36	05-27-42.1	Covestro, LLC	0.52
S37	05-27-41	Martha Jean Arrick	0.99
S38	05-27-31.2	Appalachian Power Co.	3.33
S39	05-27-31	Covestro, LLC	16.1
S40	05-27-30	Covestro, LLC	0.371
S41	I 05-27-31.1	Covestro, LLC	3.0
S42	H 05-27-32.2	Covestro, LLC	3.95
S43	05-27-29	Covestro, LLC	9.0
S44	05-27-45	Covestro, LLC	0.3627
S45	G 05-27-32	Covestro, LLC	33.53
S46	05-27-03	Covestro, LLC	1.27
S47	05-27-04	Covestro, LLC	2.52
S48	05-27-05	Covestro, LLC	2.52
S49	05-27-06	Covestro, LLC	2.52
S50	05-27-07	Covestro, LLC	2.52
S51	05-27-08	Covestro, LLC	2.52
S52	05-27-09	Covestro, LLC	1.87
S53	05-27-10	Covestro, LLC	0.52
S54	05-27-12	Covestro, LLC	1.0
S55	05-27-13	Covestro, LLC	0.34
S56	05-27-14	Covestro, LLC	0.25
S57	05-27-15	Covestro, LLC	0.47
S58	05-27-16	Covestro, LLC	0.23
S59	05-27-18	Covestro, LLC	0.97
S60	05-27-17	Covestro, LLC	0.88
S61	F 05-27-19.3	Cemetery	2.0
S62	05-27-02	Covestro, LLC	28.099
S63	05-27-19.2	Wheeling Electric Co.	0.75
S64	05-28-12.2	Covestro, LLC	3.1
S65	05-28-12.3	Covestro, LLC	18.784
S66	05-28-13.1	Air Products & Chemicals, Inc	5.522
S67	D 05-27-19.1	Covestro, LLC	21.267
S68	05-27-11	Covestro, LLC	0.03
S69	A 05-28-13	TH Exploration III, LLC	70.0
S70	05-28-13.2	Covestro, LLC	11.02
S71	05-28-1.1	Covestro, LLC	5.2217
S72	12-23-14	Robert E. Rothlisberger	0.27
S73	05-21-3.1	Eagle Natrium, LLC	98.613
S74	12-01-19	Steven J. & Susan L. Hafer	36.5
S75	12-01-27	Steven J. & Susan L. Hafer	83.69
S76	V 12-01-18	Travis Darrell Blake & Angela Dawn Mitchell	48.4



P.S. 708

David L Jackson

03/12/2021



TUG HILL
OPERATING

OPERATOR'S
 WELL #: Goudy 1S-8HM
 DISTRICT: Franklin
 COUNTY: Marshall
 STATE: WV
 API # 47-051-02228

WELL PLAT
PAGE 3 OF 4
 DATE: 08/24/2020
 REVISED: 02/02/2021

**GOUDY LEASE
WELL 1S-8HM
766.5487± ACRES**

Number	TAX MAP -PARCEL	SURFACE OWNER	ACRES
S98	12-6A-02	Ronald E. McCoy	3.49
S99	12-6A-01	Ronald E. McCoy	6.51
S100	12-06-05	Steven & Susan Louis Hafer	9.0
S101	12-06-04	Steven & Susan Hafer	6.5
S102 ^W	12-01-27	Steven J. & Susan Hafer	83.69
S103	12-01-26	William Joseph Blake	13.83
S104	12-01-25	Jack R. & Linda S. Blake	17.42
S105	12-01-15.3	Daniel L. & Vickie L. Williams	7.0
S106	12-01-1.1	W.V. D.O.H	10.59
S107	12-01-15.2	Michael Goddard	1.09
S108	12-01-15.1	Marshall & Tara Cecil (L/C), Roy Yoho	1.46
S109	12-01-22	William D. Glover	18.84
S110	12-01-23.2	Raymond L. Pribble	0.782
S111	12-01-23	Raymond L. Pribble	1.55
S112	12-01-23.1	RHL Properties, LLC	34.17
S113	12-01-25.1	Timothy Q. & Ronda K. Bohrer	1.2
S114	12-01-24	Mitzilou Cecil, Trustee of the Tiger Cecil Irrevocable	0.85
S115	12-06-02	Brock T. Conner	23.83
S116	12-06-49	Kirkland Enterprises, LLC.	10.32
S117	12-06-51	Steven & Susan Hafer	0.599
S118	12-06-48	Ronald E. & Susan L. McCoy	0.36
S119	05-27-39	Covestro, LLC	3.74
S120	12-23-04	Pittsburgh Plate Glass Corp.	2.41
S121	12-23-09	Covestro, LLC	3.95
S122	12-23-08	Dora N. Moore Hrs., Et al	6.95
S123	12-01-1.5	United States of America	7.14
S124	12-23-02	Covestro, LLC	1.27
S125	12-23-03	Covestro, LLC	4.67
S126	12-27-38	Covestro, LLC	2.72
S127	12-27-37	Covestro, LLC	3.20
S128	12-27-35	Covestro, LLC	1.79
S129	12-27-34	Covestro, LLC	1.91
S130	12-27-36	Covestro, LLC	1.58
S131	12-27-33	Covestro, LLC	1.95
S137	12-01-1.2	West Virginia Dept. of Transportation	0.27
S138	12-22-59	Kenneth R. Morris	2.00
S139	12-22-60	Franklin W. & Barabara J. Cogar	0.5
S140	12-22-09	M.B. Investment	0.20
S141	12-22-10	M.B. Investment	0.24
S142	12-22-12	Jack Ray & Linda S. Blake	0.16
S143	12-22-13	Dewayne E. & Patricia A. Yost	0.07
S144	12-22-28	Kenneth R. Morris	0.12
S145	12-22-29	Jack R. & Linda S. Blake	0.50
S146	12-22-30	Jack R. & Linda S. Blake	0.24
S147	12-22-32	Ren Realty, LLC.	0.27
S148	12-22-33	Ren Realty, LLC.	0.08
S149	12-22-34	Ren Realty, LLC.	0.08
S150	12-22-51	Eric R. & Debra S. Sims	0.10
S151	12-22-52	Eric R. & Debra S. Sims	0.10
S152	12-22-53	Eric R. & Debra S. Sims	0.10
S153	12-22-54	Eric R. & Debra S. Sims	0.10
S154	12-22-55	Eric R. & Debra S. Sims	0.19
S155	12-22-56	Michael L. & Joyce D. Durig	0.22
S156	12-22-57	Michael L. & Joyce D. Durig	0.11
S157	12-22-58	Michael L. & Joyce D. Durig	0.15
S158	12-22-50	Michael L. & Joyce D. Durig	0.17
S159	12-22-49	Daniel J. Stillwagoner	0.13
S160	12-22-62	Virginia Bohrer, et al	0.05
S161	12-22-62.1	John R. & Toni Wright	0.314
S162	12-22-44	John R. & Toni Wright	0.52
S163	12-01-1.9	Grandview Doolin Public Service District	0.13
S164	12-22-27	Grandview Doolin Public Service District	0.27
S165	12-01-1.12	United States of America	22.55
S166	12-01-1.8	Grandview Doolin Public Service District	0.0895



P.S. 708 *David L Jackson*

03/12/2021

 <p>TUG HILL OPERATING</p>	OPERATOR'S	<u>WELL PLAT</u>
	WELL #: <u>Goudy 1S-8HM</u>	<u>PAGE 4 OF 4</u>
	DISTRICT: <u>Franklin</u>	<u>DATE: 08/24/2020</u>
	COUNTY: <u>Marshall</u>	<u>REVISED: 02/02/2021</u>
	STATE: <u>WV</u>	
API # <u>47-051-02228</u>		

**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
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*See attached pages

***Co-tenancy utilization – At least 7 mineral owners in tract. At least 75% of the royalty owners have executed a lease on the tract. The interests of the remaining co-tenants were acquired pursuant to the Co-tenancy Modernization and Majority Protection Act.**

**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 *amyllorris*
 Its: Permitting Specialist - Appalachia Region

Lease ID	TMP	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Dead Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	
10*14300	5-28-13	A	PPG INDUSTRIES INC	GASTAR EXPLORATION USA INC	1/8+	725 123	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC. 34/277	Atinum Marcellus I LLC To TH Exploration II, LLC. 43/563
10*14300	5-28-1	B	PPG INDUSTRIES INC	GASTAR EXPLORATION USA INC	1/8+	725 323	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC. 34/277	Atinum Marcellus I LLC To TH Exploration II, LLC. 43/563
10*14300	5-28-12	C	PPG INDUSTRIES INC	GASTAR EXPLORATION USA INC	1/8+	725 123	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC. 34/277	Atinum Marcellus I LLC To TH Exploration II, LLC. 43/563
10*14658	5-28-12	C	THOMAS WILLIAM ABERGOLD	GASTAR EXPLORATION USA INC	1/8+	775 314	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC. 34/277	Atinum Marcellus I LLC To TH Exploration II, LLC. 43/563
10*14659	5-28-12	C	RUDITH LEE ABERGOLD	GASTAR EXPLORATION USA INC	1/8+	781 609	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC. 34/277	Atinum Marcellus I LLC To TH Exploration II, LLC. 43/563
10*14493	5-27-19.1	D	BETTY JEAN NEELY	GASTAR EXPLORATION USA INC	1/8+	748 468	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC. 34/277	Atinum Marcellus I LLC To TH Exploration II, LLC. 43/563

Lease ID	TMP	Tags	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Dead Book/Pgns	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment		
10*14494	5-27-19.1	D	MARY LOU WILSON	GASTAR EXPLORATION USA INC	1/8*	748	471	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC: 34/277	Atinum Marcellus I LLC To TH Exploration II LLC: 43/563
10*14495	5-27-19.1	D	PATRICIA HARTMAN	GASTAR EXPLORATION USA INC	1/8*	752	287	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC: 34/277	Atinum Marcellus I LLC To TH Exploration II LLC: 43/563
10*14496	5-27-19.1	D	STEPHANIE L BATES	GASTAR EXPLORATION USA INC	1/8*	752	215	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC: 34/277	Atinum Marcellus I LLC To TH Exploration II LLC: 43/563
10*14497	5-27-19.1	D	GAROL DEEN GARDNER	GASTAR EXPLORATION USA INC	1/8*	752	212	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC: 34/277	Atinum Marcellus I LLC To TH Exploration II LLC: 43/563
10*14498	5-27-19.1	D	BAYER MATERIALSCIENCE LLC	GASTAR EXPLORATION USA INC	1/8*	757	340	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC: 34/277	Atinum Marcellus I LLC To TH Exploration II LLC: 43/563
10*14493	5-27-19	E	BETTY JEAN WELLY	GASTAR EXPLORATION USA INC	1/8*	748	468	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC: 34/277	Atinum Marcellus I LLC To TH Exploration II LLC: 43/563
10*14494	5-27-19	E	MARY LOU WILSON	GASTAR EXPLORATION USA INC	1/8*	748	471	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC: 34/277	Atinum Marcellus I LLC To TH Exploration II LLC: 43/563

Lease ID	TMP	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Dead Rent/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment		
10*14495	5-27-19	E	PATRICIA HARTMAN	GASTAR EXPLORATION USA INC	1/8+	752 197	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Abium Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Abium Marcellus I LLC & TH Exploration II LLC: 34/277	Abium Marcellus I LLC To TH Exploration II LLC: 43/563
10*14496	5-27-19	E	STEPHANIE L BATES	GASTAR EXPLORATION USA INC	1/8+	752 215	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Abium Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Abium Marcellus I LLC & TH Exploration II LLC: 34/277	Abium Marcellus I LLC To TH Exploration II LLC: 43/563
10*14497	5-27-19	E	CAROL DEEN GARDNER	GASTAR EXPLORATION USA INC	1/8+	752 212	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Abium Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Abium Marcellus I LLC & TH Exploration II LLC: 34/277	Abium Marcellus I LLC To TH Exploration II LLC: 43/563
10*14498	5-27-19	E	BAYER MATERIALSCIENCE LLC	GASTAR EXPLORATION USA INC	1/8+	757 340	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Abium Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Abium Marcellus I LLC & TH Exploration II LLC: 34/277	Abium Marcellus I LLC To TH Exploration II LLC: 43/563
10*22926	5-27-19	E	COEXISTING LLC	TH EXPLORATION LLC	1/8+	976 27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*14493	5-27-19.3	F	BETTY JEAN NEELY	GASTAR EXPLORATION USA INC	1/8+	748 468	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Abium Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Abium Marcellus I LLC & TH Exploration II LLC: 34/277	Abium Marcellus I LLC To TH Exploration II LLC: 43/563
10*14494	5-27-19.3	F	MARY LOU WILSON	GASTAR EXPLORATION USA INC	1/8+	748 471	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Abium Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Abium Marcellus I LLC & TH Exploration II LLC: 34/277	Abium Marcellus I LLC To TH Exploration II LLC: 43/563

Lease ID	TMP	Tags	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment		
10*14495	5-27-19.3	F	PATRICIA HARTMAN	GASTAR EXPLORATION USA INC	1/8+	752 197	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atrium Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Exploration LLC and Atrium Marcellus I LLC & TH Exploration II LLC: 34/277	Atrium Marcellus I LLC To TH Exploration II LLC: 43/563
10*14496	5-27-19.3	F	STEPHANIE L BATES	GASTAR EXPLORATION USA INC	1/8+	752 215	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atrium Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atrium Marcellus I LLC & TH Exploration II LLC: 34/277	Atrium Marcellus I LLC To TH Exploration II LLC: 43/563
10*14497	5-27-19.3	F	CAROL DEEN GARDNER	GASTAR EXPLORATION USA INC	1/8+	752 212	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atrium Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atrium Marcellus I LLC & TH Exploration II LLC: 34/277	Atrium Marcellus I LLC To TH Exploration II LLC: 43/563
10*25473	5-27-19.3	F	ETHEL J EVANS	TH EXPLORATION LLC	1/8+	1033 115	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*25494	5-27-19.3	F	MARIE ERLEWINE	TH EXPLORATION LLC	1/8+	1033 113	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*25558	5-27-19.3	F	MARLENE RECTOR AND EUGENE RECTOR	TH EXPLORATION LLC	1/8+	1033 304	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*25655	5-27-19.3	F	HILLARY MONTGOMERY AND VIRGIE MONTGOMERY	TH EXPLORATION LLC	1/8+	1033 306	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*25715	5-27-19.3	F	ANNA JONES AND ALAN JONES	TH EXPLORATION LLC	1/8+	1035 163	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*26457	5-27-19.3	F	SHARON COLVIN AND JIMMY LEE COLVIN	TH EXPLORATION LLC	1/8+	1035 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*26508	5-27-19.3	F	CECELIA EDWARDS	TH EXPLORATION LLC	1/8+	1057 335	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*26582	5-27-19.3	F	LINDA E HILL AND JOHN S HILL	TH EXPLORATION LLC	1/8+	1038 532	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*26583	5-27-19.3	F	CRAIG DOUGLAS ERLEWINE AND DOREEN E ERLEWINE	TH EXPLORATION LLC	1/8+	1038 538	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*26584	5-27-19.3	F	RICHARD LEE ERLEWINE AND DONNA L ERLEWINE	TH EXPLORATION LLC	1/8+	1038 524	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*26585	5-27-19.3	F	KELLY R ROOT	TH EXPLORATION LLC	1/8+	1038 528	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*26825	5-27-19.3	F	ROBERT C EVANS *	TH EXPLORATION LLC	1/8+	1040 579	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*26826	5-27-19.3	F	WILLIAM R MOORE *	TH EXPLORATION LLC	1/8+	1040 535	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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10*26827	5-27-19.3	F	ALBERT L MOORE *	TH EXPLORATION LLC	1/8+	1040 553	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*26828	5-27-19.3	F	MICHAEL J MOORE *	TH EXPLORATION LLC	1/8+	1040 547	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*26829	5-27-19.3	F	REBECCA M COWARD AND EDWARD S COWARD *	TH EXPLORATION LLC	1/8+	1040 529	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*26911	5-27-19.3	F	RACHAEL I MOORE *	TH EXPLORATION LLC	1/8+	1040 541	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*22926	5-27-32	G	COVESTRO LLC	TH EXPLORATION LLC	1/8+	976 27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*22926	5-27-32.2	H	COVESTRO LLC	TH EXPLORATION LLC	1/8+	976 27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*22926	5-27-31.1	I	COVESTRO LLC	TH EXPLORATION LLC	1/8+	976 27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*14493	5-27-20.1	J	BETTY JEAN NEELY	GASTAR EXPLORATION USA INC	1/8+	748 468	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atrium Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atrium Marcellus I LLC & TH Exploration II LLC: 34/277	Atrium Marcellus I LLC To TH Exploration II, LLC: 43/563
10*14494	5-27-20.1	J	MARY LOU WILSON	GASTAR EXPLORATION USA INC	1/8+	748 471	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atrium Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atrium Marcellus I LLC & TH Exploration II LLC: 34/277	Atrium Marcellus I LLC To TH Exploration II, LLC: 43/563
10*14495	5-27-20.1	J	PATRICIA HARTMAN	GASTAR EXPLORATION USA INC	1/8+	752 197	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atrium Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atrium Marcellus I LLC & TH Exploration II LLC: 34/277	Atrium Marcellus I LLC To TH Exploration II, LLC: 43/563
10*14496	5-27-20.1	J	STEPHANIE L BATES	GASTAR EXPLORATION USA INC	1/8+	752 215	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atrium Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atrium Marcellus I LLC & TH Exploration II LLC: 34/277	Atrium Marcellus I LLC To TH Exploration II, LLC: 43/563

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10*14497	5-27-20.1	J	CAROL DEEN GARDNER	GASTAR EXPLORATION USA INC	1/8+	752 232	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Athrum Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Athrum Marcellus I LLC & TH Exploration II LLC: 34/277	Athrum Marcellus I LLC To TH Exploration II, LLC: 43/563
10*14498	5-27-20.1	J	UNION CARBIDE CORPORATION	GASTAR EXPLORATION USA INC	1/8+	815 221	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Athrum Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Athrum Marcellus I LLC & TH Exploration II LLC: 34/277	Athrum Marcellus I LLC To TH Exploration II, LLC: 43/563
10*14499	5-27-28	K	BETTY JEAN NEELY	GASTAR EXPLORATION USA INC	1/8+	748 468	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Athrum Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Athrum Marcellus I LLC & TH Exploration II LLC: 34/277	Athrum Marcellus I LLC To TH Exploration II, LLC: 43/563
10*14494	5-27-28	K	MARY LOU WILSON	GASTAR EXPLORATION USA INC	1/8+	748 471	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Athrum Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Athrum Marcellus I LLC & TH Exploration II LLC: 34/277	Athrum Marcellus I LLC To TH Exploration II, LLC: 43/563
10*14495	5-27-28	K	PATRICIA HARTMAN	GASTAR EXPLORATION USA INC	1/8+	752 197	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Athrum Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Athrum Marcellus I LLC & TH Exploration II LLC: 34/277	Athrum Marcellus I LLC To TH Exploration II, LLC: 43/563
10*14496	5-27-28	K	STEPHANIE L BATES	GASTAR EXPLORATION USA INC	1/8+	752 235	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Athrum Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Athrum Marcellus I LLC & TH Exploration II LLC: 34/277	Athrum Marcellus I LLC To TH Exploration II, LLC: 43/563

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10*14497	5-27-28	K	CAROL DEEN GARDNER	GASTAR EXPLORATION USA INC	1/8+	752 212	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and Abnium Marcellus I LLC & TH Exploration II LLC: 34/277	Abnium Marcellus I LLC To TH Exploration II LLC: 43/563
10*22926	5-27-28	K	COVESTRO LLC	TH EXPLORATION LLC	1/8+	976 27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18446	5-27-27.1	L	DONALD P CAIN	TH EXPLORATION LLC	1/8+	933 96	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18445	5-27-27.2	M	PAUL E CAIN AND DONNA JO CAIN	TH EXPLORATION LLC	1/8+	933 93	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18438	12-23-13	N	PAUL E CAIN AND DONNA JO CAIN	TH EXPLORATION LLC	1/8+	190A 151	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*23506	12-23-15.1	O	ROBERT F ROTHSBERGER	TH EXPLORATION LLC	1/8+	210A 805	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18438	12-23-15	P	PAUL E CAIN AND DONNA JO CAIN	TH EXPLORATION LLC	1/8+	190A 151	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*31402	12-1-1	Q	VIRGINIA R BOHRER	CLAY RESOURCES INC	1/8+	68A 328	Clay Resources Inc to Murvin Oil Company: 71A/404	Murvin Oil Co, Concord O&G Corp. & American Ridge O&G Inc to Applied Mechanics Corp: 74A/426	Applied Mechanics Corp to Cobham Gas Industries: 74A/676	Cobham Gas Industries & Belmont Energy Inc to Tri-County O&G Inc: 80/639	Tri-County O&G Inc to B&R Construction: 83A/483	B&R Construction Inc to Stone Energy Corp: 110A/41	B&R Construction Inc to B&R Holdings Inc: 118A/685	Participation Agreement - B&R Holdings and ICO Marcellus I LLC: 127A/670	ICO Marcellus I LLC to Stone Energy Corp: 179A/844	B&R Holdings Inc and Blue Group Operating Inc to Stone Energy Corp: 179A/848	Stone Energy Corp to EQT Production Company: 183A/305	EQT Production Company to TH Exploration LLC: 250A/651		
10*31403	12-1-1	Q	JACK L MASON AND JEAN M MASON	CLAY RESOURCES INC	1/8+	68A 330	Clay Resources Inc to Murvin Oil Company: 71A/404	Murvin Oil Co, Concord O&G Corp. & American Ridge O&G Inc to Applied Mechanics Corp: 74A/426	Applied Mechanics Corp to Cobham Gas Industries: 74A/676	Cobham Gas Industries & Belmont Energy Inc to Tri-County O&G Inc: 80/639	Tri-County O&G Inc to B&R Construction: 83A/483	B&R Construction Inc to Stone Energy Corp: 110A/41	B&R Construction Inc to B&R Holdings Inc: 118A/685	Participation Agreement - B&R Holdings and ICO Marcellus I LLC: 127A/670	ICO Marcellus I LLC to Stone Energy Corp: 179A/844	B&R Holdings Inc and Blue Group Operating Inc to Stone Energy Corp: 179A/848	Stone Energy Corp to EQT Production Company: 183A/305	EQT Production Company to TH Exploration LLC: 250A/651		
10*31404	12-1-1	Q	HELEN MASON BAGGS AND ROBERT B BAGGS	CLAY RESOURCES INC	1/8+	68A 326	Clay Resources Inc to Murvin Oil Company: 71A/404	Murvin Oil Co, Concord O&G Corp. & American Ridge O&G Inc to Applied Mechanics Corp: 74A/426	Applied Mechanics Corp to Cobham Gas Industries: 74A/676	Cobham Gas Industries & Belmont Energy Inc to Tri-County O&G Inc: 80/639	Tri-County O&G Inc to B&R Construction: 83A/483	B&R Construction Inc to Stone Energy Corp: 110A/41	B&R Construction Inc to B&R Holdings Inc: 118A/685	Participation Agreement - B&R Holdings and ICO Marcellus I LLC: 127A/670	ICO Marcellus I LLC to Stone Energy Corp: 179A/844	B&R Holdings Inc and Blue Group Operating Inc to Stone Energy Corp: 179A/848	Stone Energy Corp to EQT Production Company: 183A/305	EQT Production Company to TH Exploration LLC: 250A/651		
10*15075	12-1-5	R	BARBARA P MAZER AS TRUSTEE OF THE BARBARA MAZER TRST UNDER AGMT DTD APR 17 2013	GASTAR EXPLORATION USA INC	1/8+	129A 683	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and Abnium Marcellus I LLC & TH Exploration II LLC: 34/277	Abnium Marcellus I LLC To TH Exploration II LLC: 43/563

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10*15076	12-1-5	R	EDWARD PENNINGTON	GASTAR EXPLORATION USA INC	1/8+	130A 979	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Altrium Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 22/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Altrium Marcellus I LLC & TH Exploration II LLC: 34/277	Altrium Marcellus I LLC to TH Exploration II LLC: 43/563
10*15079	12-1-5	R	JAMES K. HALL	GASTAR EXPLORATION USA INC	1/8+	132A 704	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Altrium Marcellus I LLC: 26/639	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 22/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Altrium Marcellus I LLC & TH Exploration II LLC: 34/277	Altrium Marcellus I LLC to TH Exploration II LLC: 43/563
10*18122	12-1-5	R	AHNE L HALL AND RICHARD S WURST	TH EXPLORATION LLC	1/8+	187A 626	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18175	12-1-5	R	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	188A 791	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18177	12-1-5	R	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	188A 789	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18231	12-1-5	R	SUSAN G HALL	TH EXPLORATION LLC	1/8+	188A 429	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18286	12-1-5	R	ELIZABETH H HALL	TH EXPLORATION LLC	1/8+	188A 431	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18376	12-1-6	S	VICTORIA K MCCLINTOCK	TH EXPLORATION LLC	1/8+	189A 492	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18377	12-1-6	S	TERRY W GILBERT	TH EXPLORATION LLC	1/8+	189A 494	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18378	12-1-6	S	CARL J GILBERT SR AND LAURA A GILBERT	TH EXPLORATION LLC	1/8+	189A 496	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18817	12-1-6	S	JUDITH R WHITE AND FRANKIE D WHITE	TH EXPLORATION LLC	1/8+	192A 518	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19602	12-1-6	S	NEIL O PATTERSON JR & THERESA PATTERSON	TH EXPLORATION LLC	1/8+	195A 279	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19998	12-1-6	S	MALISSA D PATTERSON AS AIF FOR CLARK ELWOOD PATTERSON	TH EXPLORATION LLC	1/8+	196A 577	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*24538	12-1-6	S	BRC MINERALS, LP	BRC WORKING INTEREST COMPANY LLC	1/8+	103A 320	N/A	N/A	N/A	BRC Working Interest Company LLC to Chesapeake Appalachia LLC: 103A/470	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 12DA/109	Chesapeake Appalachia LLC to SWN Production Company: 157A/540	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 158A/901	SWN Exchange Titleholder LLC merged with and into SWN Production Company LLC: 13/796	SWN Production Company LLC to Antero Exchange Properties LLC: 177A/533	Statoil USA Onshore Properties Inc to Antero Exchange Properties LLC: 177A/736	Antero Exchange Properties LLC merged with and into Antero Resources Corporation: 15/311	Antero Resources Corporation to TH Exploration II LLC: 218A/755	
10*23818	12-1-16	T	JOHN M PARSONS & ANTOINETTE L COSTANTINO	TH EXPLORATION LLC	1/8+	214A 345	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*23819	12-1-16	T	JAMES H PARSONS JR	TH EXPLORATION LLC	1/8+	214A 348	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*24089	12-1-16	T	VIVIAN A PARSONS	TH EXPLORATION LLC	1/8+	216A 365	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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10*24306	12-1-16	T	ROY C PARSONS	TH EXPLORATION LLC	1/8*	216A 368	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22580	12-1-17	U	JAMES H PARSONS JR.	TH EXPLORATION LLC	1/8*	209A 265	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*23524	12-1-17	U	HAMMETT LAND & MINERALS LLC	TH EXPLORATION LLC	1/8*	210A 807	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*23525	12-1-17	U	HAMMETT LAND & MINERALS LLC	TH EXPLORATION LLC	1/8*	210A 809	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*23906	12-1-17	U	JOHN M PARSONS & ANTOINETTE L COSTANTINO	TH EXPLORATION LLC	1/8*	214A 675	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*24090	12-1-17	U	VIVIAN A PARSONS	TH EXPLORATION LLC	1/8*	216A 371	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*24317	12-1-17	U	ROY C PARSONS	TH EXPLORATION LLC	1/8*	218A 480	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*25490	12-1-17	U	MURIEL A MILLER	TH EXPLORATION LLC	1/8*	222A 465	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*25644	12-1-17	U	JOHN P SWYDER	TH EXPLORATION LLC	1/8*	222A 434	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*26612	12-1-17	U	DOROTHY J HAAS	TH EXPLORATION LLC	1/8*	224A 549	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22141	12-1-18	V	SHARON S ANDREWS AND GERARD S ANDREWS	TH EXPLORATION LLC	1/8*	200A 443	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21366	12-1-18	V	BONNIE BOLDEN	TH EXPLORATION LLC	1/8*	201A 434	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21572	12-1-18	V	VICKIE L BOLDEN	TH EXPLORATION LLC	1/8*	201A 436	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21676	12-1-18	V	CLAUDIA R SCHEHLE	TH EXPLORATION LLC	1/8*	212A 86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21677	12-1-18	V	SHARON E YOHO	TH EXPLORATION LLC	1/8*	208A 257	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21682	12-1-18	V	CHARLES ROBERT MYERS	TH EXPLORATION LLC	1/8*	219A 268	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21683	12-1-18	V	RICHARD S WHITE II	TH EXPLORATION LLC	1/8*	210B 173	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21684	12-1-18	V	SHIRLEY DORSEY	TH EXPLORATION LLC	1/8*	201A 430	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21692	12-1-18	V	GREGG D MINOR	TH EXPLORATION LLC	1/8*	201A 421	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21697	12-1-18	V	DONNE SIMS	TH EXPLORATION LLC	1/8*	214A 364	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21699	12-1-18	V	PATRICIA M LEHR	TH EXPLORATION LLC	1/8*	212A 35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21700	12-1-18	V	NANCY SELLERS	TH EXPLORATION LLC	1/8*	213A 408	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22087	12-1-18	V	SHIRLEY K WHITE	TH EXPLORATION LLC	1/8*	212A 38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22089	12-1-18	V	RUTH ANN SHINGLETON	TH EXPLORATION LLC	1/8*	210A 170	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22071	12-1-18	V	SALLY BROOKEN AND TOM BROOKEN	TH EXPLORATION LLC	1/8*	202A 820	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Lease ID	THP	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Dead Book/Pages	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	
10*22072	12-1-18	V	HAROLD E SELLERS	TH EXPLORATION LLC	1/8+	212A	662	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*22081	12-1-18	V	ROBERT J WHITMAN FIVE STAR RESOURCES	TH EXPLORATION LLC	1/8+	202A	816	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*22204	12-1-18	V	JAMES A MAIBACH & MELISSA F MAIBACH	TH EXPLORATION LLC	1/8+	216A	169	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*22211	12-1-18	V	DENVER J MINOR GREGG D MINOR TRUSTEE	TH EXPLORATION LLC	1/8+	202A	798	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*22231	12-1-18	V	MARILYN SLATER	TH EXPLORATION LLC	1/8+	204A	144	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*23038	12-1-18	V	SHIRLEY JANE MILLIKEN	TH EXPLORATION LLC	1/8+	220A	280	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*23044	12-1-18	V	DONNA R WOLFE AND DWIGHT WOLFE	TH EXPLORATION LLC	1/8+	206A	180	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*23344	12-1-18	V	JEFFREY S MAIBACH	TH EXPLORATION LLC	1/8+	214A	678	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*23346	12-1-18	V	EMILY B MORRIS	TH EXPLORATION LLC	1/8+	214A	882	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*23671	12-1-18	V	BETTY JEAN FLANAGAN	TH EXPLORATION LLC	1/8+	213A	846	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*24021	12-1-18	V	KELLI PAGE MARTI	TH EXPLORATION LLC	1/8+	215A	884	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*24081	12-1-18	V	DON MATTHEW PAGE	TH EXPLORATION LLC	1/8+	216A	401	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*24318	12-1-18	V	LORI PAGE ESORN AND MICHAEL ESORN	TH EXPLORATION LLC	1/8+	217A	164	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*24356	12-1-18	V	BEATRICE TORRES	TH EXPLORATION LLC	1/8+	218A	179	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*24538	12-1-18	V	BRC MINERALS, LP	BRC WORKING INTEREST COMPANY LLC	1/8+	103A	220	N/A	N/A	N/A	BRC Working Interest Company LLC to Chesapeake Appalachia LLC: 103A/470	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 120A/109	Chesapeake Appalachia LLC to SWN Production Company: 157A/540	Statoil USA Onshore Properties Inc to SWN Exchange Trustholder LLC: 158A/801	SWN Exchange Trustholder LLC merged with and into SWN Production Company LLC: 13/296	SWN Production Company LLC to Anverso Exchange Properties LLC: 177A/593	Statoil USA Onshore Properties Inc to Anverso Exchange Properties LLC: 177A/736	Anverso Exchange Properties LLC merged with and into Anverso Resources Corporation: 13/311	Anverso Resources Corporation to TH Exploration LLC: 256A/812
10*25518	12-1-18	V	GOLDEN EAGLE RESOURCES II LLC	AMERICAN PETROLEUM PARTNERS LLC	1/8+	215A	250	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Petroleum Partners LLC to TH Exploration LLC: 224A/458	
10*26681	12-1-18	V	DENVER J MINOR GREGG D MINOR TRUSTEE	TH EXPLORATION LLC	1/8+	225A	495	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
PENDING	12-1-18	V	ANGELA SHADD	STONE ENERGY CORPORATION	1/8+	161A	551	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Stone Energy Corporation to EQT Production Company: 183A/305**	

WW-6A1 Supplement

Operator's Well No. Goudy 1S - 8HM

Lease ID	TMP	Tags	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	
PENDING	12-1-18	V	TRAVIS DARRRELL BLAKE	STONE ENERGY CORPORATION	1/8-	161A 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Stone Energy Corporation to EQT Production Company 183A/305**
10*23006	12-1-27	W	COVESTRO LLC	TH EXPLORATION LLC	1/8-	208A 67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PENDING	12-1-27	W	ROBERT W WOODS ET AL	CLAY RESOURCES INC	1/8-	69A 681	N/A	Clay Resources ince to Murvin Oil Company: 71A/404	Murvin Oil Co, Conord O&G Corp, & American Ridge O&G Inc to Applied Mechanics Corp: 74A/426	Applied Mechanics Corp to Cobham Gas Industries: 74A/676	Cobham Gas Industries & Belmont Energy Inc to Tri-County O&G Inc: 80/639	Tri-County O&G Inc to B&R Construction: 83A/483	B&R Construction Inc to Stone Energy Corp: 110A/41	B&R Construction Inc to B&R Holdings Inc: 118A/685	Participation Agreement - B&R Holdings and ICD Marcellus I LLC: 127A/670	ICD Marcellus I LLC to Stone Energy Corp: 179A/844	B&R Holdings Inc and Blue Group Operating Inc to Stone Energy Corp: 179A/848	Stone Energy Corporation to EQT Production Company 183A/305**	
PENDING	12-1-27	W	MOBAY CHEMICAL CORPORATION	CLAY RESOURCES INC	1/8-	69A 677	N/A	Clay Resources ince to Murvin Oil Company: 71A/404	Murvin Oil Co, Conord O&G Corp, & American Ridge O&G Inc to Applied Mechanics Corp: 74A/426	Applied Mechanics Corp to Cobham Gas Industries: 74A/676	Cobham Gas Industries & Belmont Energy Inc to Tri-County O&G Inc: 80/639	Tri-County O&G Inc to B&R Construction: 83A/483	B&R Construction Inc to Stone Energy Corp: 110A/41	B&R Construction Inc to B&R Holdings Inc: 118A/685	Participation Agreement - B&R Holdings and ICD Marcellus I LLC: 127A/670	ICD Marcellus I LLC to Stone Energy Corp: 179A/844	B&R Holdings Inc and Blue Group Operating Inc to Stone Energy Corp: 179A/848	Stone Energy Corporation to EQT Production Company 183A/305**	
PENDING	12-1-27	W	LYNN VAN CAMP ET AL	CLAY RESOURCES INC	1/8-	69A 683	N/A	Clay Resources ince to Murvin Oil Company: 71A/404	Murvin Oil Co, Conord O&G Corp, & American Ridge O&G Inc to Applied Mechanics Corp: 74A/426	Applied Mechanics Corp to Cobham Gas Industries: 74A/676	Cobham Gas Industries & Belmont Energy Inc to Tri-County O&G Inc: 80/639	Tri-County O&G Inc to B&R Construction: 83A/483	B&R Construction Inc to Stone Energy Corp: 110A/41	B&R Construction Inc to B&R Holdings Inc: 118A/685	Participation Agreement - B&R Holdings and ICD Marcellus I LLC: 127A/670	ICD Marcellus I LLC to Stone Energy Corp: 179A/844	B&R Holdings Inc and Blue Group Operating Inc to Stone Energy Corp: 179A/848	Stone Energy Corporation to EQT Production Company 183A/305**	
PENDING	12-1-27	W	MICHELE A POWELL	CLAY RESOURCES INC	1/8-	69A 679	N/A	Clay Resources ince to Murvin Oil Company: 71A/404	Murvin Oil Co, Conord O&G Corp, & American Ridge O&G Inc to Applied Mechanics Corp: 74A/426	Applied Mechanics Corp to Cobham Gas Industries: 74A/676	Cobham Gas Industries & Belmont Energy Inc to Tri-County O&G Inc: 80/639	Tri-County O&G Inc to B&R Construction: 83A/483	B&R Construction Inc to Stone Energy Corp: 110A/41	B&R Construction Inc to B&R Holdings Inc: 118A/685	Participation Agreement - B&R Holdings and ICD Marcellus I LLC: 127A/670	ICD Marcellus I LLC to Stone Energy Corp: 179A/844	B&R Holdings Inc and Blue Group Operating Inc to Stone Energy Corp: 179A/848	Stone Energy Corporation to EQT Production Company 183A/305**	
* Co-tenancy utilization - At least 7 mineral owners in tract. At least 75% of the royalty owners have executed a lease on the tract. The interests of the remaining co-tenants were acquired pursuant to the Co-tenancy Modernization and Majority Protection Act.																			
**Permitting Agreement with EQT Production Company																			



Well Site Safety Plan

Tug Hill Operating, LLC

1-14-21
Bruce Stiller

Well Name: Goudy 1S-8HM

Pad Location: Goudy Pad

Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

Northing: 4,398,579.87

Easting: 514,677.85

January 2021

03/12/2021