



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

Thursday, July 30, 2020
WELL WORK PERMIT
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
380 SOUTHPOINTE BLVD

CANONSBURG, PA 15317

Re: Permit approval for GOUDY 1S-4HM
47-051-02330-00-00

This well work permit is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to any additional specific conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas Inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin
Chief

Operator's Well Number: GOUDY 1S-4HM
Farm Name: TH EXPLORATION III, LLC
U.S. WELL NUMBER: 47-051-02330-00-00
Horizontal 6A New Drill
Date Issued: 7/30/2020

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-4HM 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 6382 - 6440' thickness of 58' and anticipated pressure of approx. 3800 psi

8) Proposed Total Vertical Depth: 6,540'

9) Formation at Total Vertical Depth: Onondaga

10) Proposed Total Measured Depth: 17,232'

11) Proposed Horizontal Leg Length: 10,042.19'

12) Approximate Fresh Water Strata Depths: 70', 862'

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

14) Approximate Saltwater Depths: 2,167'

15) Approximate Coal Seam Depths: Sewickly Coal - 761' and Pittsburgh Coal - 856'

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

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

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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#	2,653'	2,653'	879ft^3(CTS)
Production	5 1/2"	NEW	P110	20#	17,232'	17,232'	4401ft^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#		7,067'	
Liners							

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6/6/2020

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	1,730	1,384	SEE #24	1.2
Coal	13 3/8"	17 1/2"	.33	1,730	1,384	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	9,000	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				JUN 24 2020
Depths Set:	N/A				WV Department of Environmental Protection

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6/6/2020

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.

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

Well to be completed with approximately 25,100,000 lb. proppant and 388,064 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:

*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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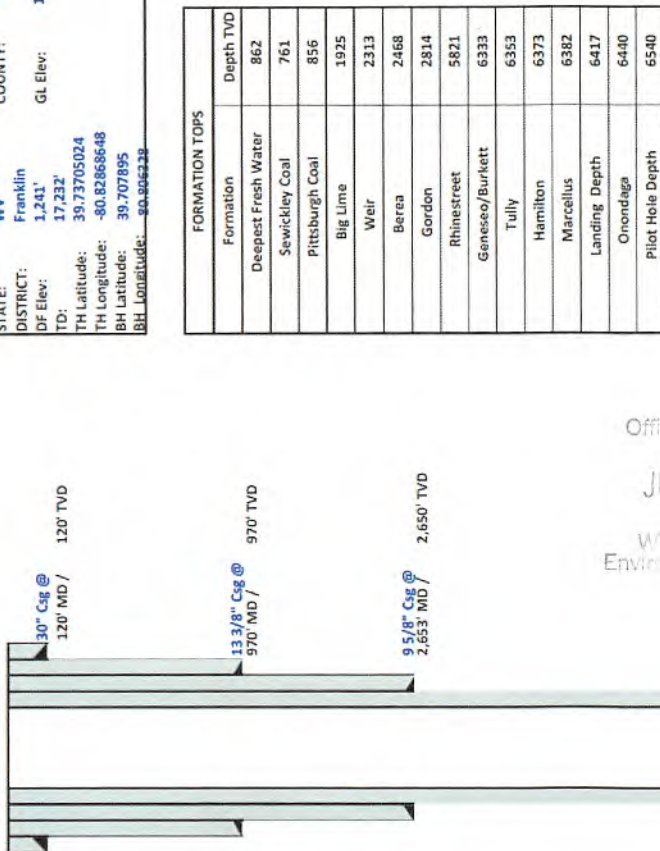
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*Note: Attach additional sheets as needed.



WELL NAME: Goudy 15-4HM
STATE: WV COUNTY: Marshall
DISTRICT: Franklin
DF Elev: 1,241' **GL Elev:** 1,241'
TD: 17,232'
TH Latitude: 39.73705024
TH Longitude: -80.82868648
BH Latitude: 39.707895
BH Longitude: -80.808228



FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	862
Sewickley Coal	761
Pittsburgh Coal	856
Big Lime	1925
Weir	2313
Berea	2468
Gordon	2814
Rhinestreet	5821
Genesee/Burkett	6333
Tully	6353
Hamilton	6373
Marcellus	6382
Landing Depth	6417
Onondaga	6440
Pilot Hole Depth	6540

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	2,653'	2,650'	36	J55	Surface
Production	8 7/8 x 8 3/4	5 1/2	17,232'	6,592'	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	885	A	15	Air	1 Centralizer every other jt
Production	4,042	A	14.5	Air / SOBIM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to stc

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1102330

Pilot Hole
PH TD @
6,540' TVD

Landing Point @ 7,191' MD / 6,417' TVD
PH TVD = 100' below Onondaga Top

Lateral TD @ 17,232' ft MD
6,592'



Tug Hill Operating, LLC Casing and Cement Program

Goudy 1S-4HM

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"	2,653'	CTS
Production	5 1/2"	CYHP110	8 7/8 x 8 3/4	17,232'	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-04HM (K)
Site: Goudy
Project: Marshall County, West Virginia.
Design: rev3

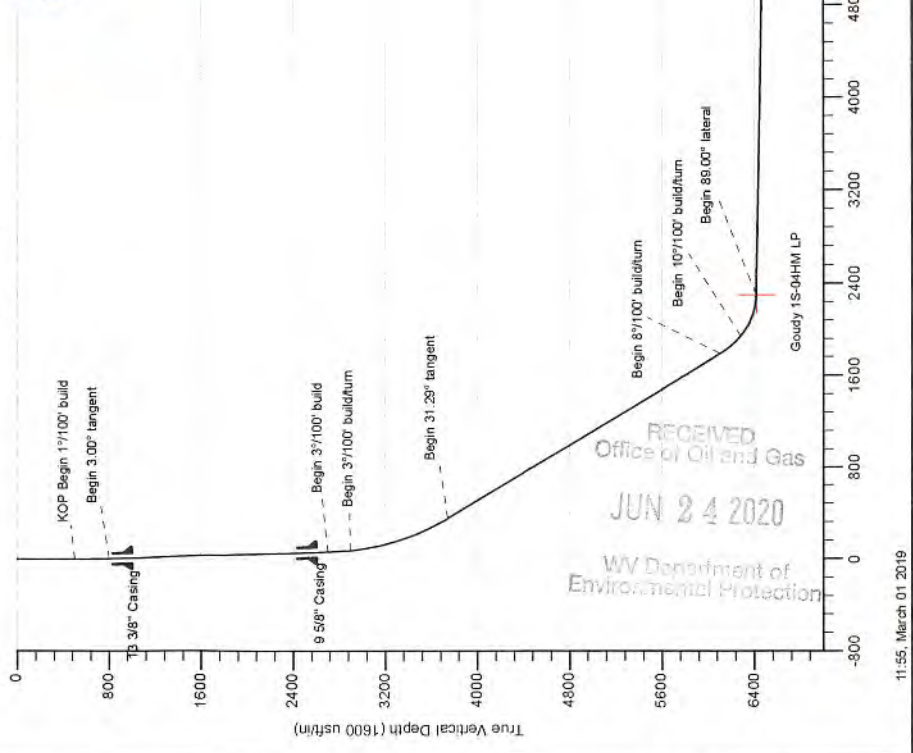


SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/S	+E/W	Dlbg	TFace	VSEct	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 1°/100' build
3	800.00	3.00	95.00	799.86	-0.68	7.82	1.00	95.00	4.59	Begin 3.00° tangent
4	2702.74	9.00	95.00	2700.00	-9.36	107.03	0.00	0.00	62.77	Begin 3°/100' build
5	2902.74	9.00	95.00	2898.81	-11.18	127.84	3.00	0.00	74.98	Begin 3°/100' buildturn
6	3805.06	31.29	150.16	3745.77	-224.57	318.27	3.00	69.51	355.73	Begin 31.29° tangent
7	8567.35	50.00	150.16	6106.35	-1468.98	1031.99	0.00	0.00	1790.10	Begin 8°/100' buildturn
8	8801.26	89.00	149.98	6283.04	-1600.49	1107.57	8.00	-0.20	1941.77	Begin 10°/100' buildturn
9	7191.27	89.00	149.98	6417.00	-1910.87	1286.58	10.00	-0.15	2300.04	Begin 89.00° lateral
10	17231.58	89.00	149.98	6592.00	-10603.30	6308.40	0.00	0.00	0.00	PBHLTD 17231.58 MD/6592.00 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: CL @ 1241.00usft
Corr (M->G): 1688576.71
Latitude: 39.73705024
Longitude: -80.82886648

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



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Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Goudy 1S-04HM (K)
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-04HM (K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

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:	39.73680688
From:	Lat/Long	Easting:	1,688,559.77 usft	Longitude:	-80.82874732
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.11 °

Well	Goudy 1S-04HM (K)					
Well Position	+N/-S	0.00 usft	Northing:	14,431,031.05 usft	Latitude:	39.73705024
	+E/-W	0.00 usft	Easting:	1,688,576.71 usft	Longitude:	-80.82868648
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	1,241.00 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/11/2018	-8.62	66.86	52,058.42689591

Design	rev3				
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	149.25

Plan Survey Tool Program	Date	3/1/2019			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	17,231.58 rev3 (Original Hole)	MWD	MWD - Standard	

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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-04HM (K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

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	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
800.00	3.00	95.00	799.86	-0.68	7.82	1.00	1.00	0.00	95.00	
2,702.74	3.00	95.00	2,700.00	-9.36	107.03	0.00	0.00	0.00	0.00	
2,902.74	9.00	95.00	2,898.81	-11.18	127.84	3.00	3.00	0.00	0.00	
3,805.06	31.29	150.16	3,745.77	-224.57	318.27	3.00	2.47	6.11	69.51	
6,567.35	31.29	150.16	6,106.35	-1,468.98	1,031.99	0.00	0.00	0.00	0.00	
6,801.26	50.00	150.08	6,283.04	-1,600.49	1,107.57	8.00	8.00	-0.04	-0.20	
7,191.27	89.00	149.98	6,417.00	-1,910.87	1,286.58	10.00	10.00	-0.02	-0.15	
17,231.58	89.00	149.98	6,592.00	-10,603.30	6,308.40	0.00	0.00	0.00	0.00	Goudy 1S-04HM BHL

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Planning Report - Geographic

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Database: DB_Jul2216dt_v14
Company: Tug Hill Operating LLC
Project: Marshall County, West Virginia.
Site: Goudy
Well: Goudy 1S-04HM (K)
Wellbore: Original Hole
Design: rev3

Local Co-ordinate Reference: Well Goudy 1S-04HM (K)
TVD Reference: GL @ 1241.00usft
MD Reference: GL @ 1241.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

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	14,431,031.05	1,688,576.71	39.73705024	-80.82868648
100.00	0.00	0.00	100.00	0.00	0.00	14,431,031.05	1,688,576.71	39.73705024	-80.82868648
200.00	0.00	0.00	200.00	0.00	0.00	14,431,031.05	1,688,576.71	39.73705024	-80.82868648
300.00	0.00	0.00	300.00	0.00	0.00	14,431,031.05	1,688,576.71	39.73705024	-80.82868648
400.00	0.00	0.00	400.00	0.00	0.00	14,431,031.05	1,688,576.71	39.73705024	-80.82868648
500.00	0.00	0.00	500.00	0.00	0.00	14,431,031.05	1,688,576.71	39.73705024	-80.82868648
KOP Begin 1°/100' build									
600.00	1.00	95.00	599.99	-0.08	0.87	14,431,030.97	1,688,577.58	39.73705003	-80.82868339
700.00	2.00	95.00	699.96	-0.30	3.48	14,431,030.74	1,688,580.19	39.73704939	-80.82867411
800.00	3.00	95.00	799.86	-0.68	7.82	14,431,030.36	1,688,584.53	39.73704832	-80.82865866
Begin 3.00° tangent									
900.00	3.00	95.00	899.73	-1.14	13.04	14,431,029.91	1,688,589.74	39.73704704	-80.82864012
1,000.00	3.00	95.00	999.59	-1.60	18.25	14,431,029.45	1,688,594.96	39.73704576	-80.82862158
1,100.00	3.00	95.00	1,099.45	-2.05	23.46	14,431,029.00	1,688,600.17	39.73704448	-80.82860303
1,200.00	3.00	95.00	1,199.31	-2.51	28.68	14,431,028.54	1,688,605.39	39.73704320	-80.82858449
1,300.00	3.00	95.00	1,299.18	-2.97	33.89	14,431,028.08	1,688,610.60	39.73704192	-80.82856595
1,400.00	3.00	95.00	1,399.04	-3.42	39.10	14,431,027.63	1,688,615.81	39.73704064	-80.82854740
1,500.00	3.00	95.00	1,498.90	-3.88	44.32	14,431,027.17	1,688,621.03	39.73703936	-80.82852886
1,600.00	3.00	95.00	1,598.77	-4.33	49.53	14,431,026.71	1,688,626.24	39.73703808	-80.82851032
1,700.00	3.00	95.00	1,698.63	-4.79	54.75	14,431,026.26	1,688,631.45	39.73703680	-80.82849178
1,800.00	3.00	95.00	1,798.49	-5.25	59.96	14,431,025.80	1,688,636.67	39.73703552	-80.82847323
1,900.00	3.00	95.00	1,898.36	-5.70	65.17	14,431,025.35	1,688,641.88	39.73703424	-80.82845469
2,000.00	3.00	95.00	1,998.22	-6.16	70.39	14,431,024.89	1,688,647.10	39.73703296	-80.82843615
2,100.00	3.00	95.00	2,098.08	-6.61	75.60	14,431,024.43	1,688,652.31	39.73703168	-80.82841760
2,200.00	3.00	95.00	2,197.94	-7.07	80.81	14,431,023.98	1,688,657.52	39.73703040	-80.82839906
2,300.00	3.00	95.00	2,297.81	-7.53	86.03	14,431,023.52	1,688,662.74	39.73702912	-80.82838052
2,400.00	3.00	95.00	2,397.67	-7.98	91.24	14,431,023.07	1,688,667.95	39.73702784	-80.82836198
2,500.00	3.00	95.00	2,497.53	-8.44	96.45	14,431,022.61	1,688,673.16	39.73702656	-80.82834343
2,600.00	3.00	95.00	2,597.40	-8.89	101.67	14,431,022.15	1,688,678.38	39.73702528	-80.82832489
2,700.00	3.00	95.00	2,697.26	-9.35	106.88	14,431,021.70	1,688,683.59	39.73702400	-80.82830635
2,702.74	3.00	95.00	2,700.00	-9.36	107.03	14,431,021.68	1,688,683.73	39.73702396	-80.82830584
Begin 3°/100' build									
2,800.00	5.92	95.00	2,796.95	-10.02	114.56	14,431,021.03	1,688,691.27	39.73702211	-80.82827905
2,900.00	8.92	95.00	2,896.10	-11.15	127.42	14,431,019.90	1,688,704.12	39.73701896	-80.82823332
2,902.74	9.00	95.00	2,898.81	-11.18	127.84	14,431,019.86	1,688,704.55	39.73701885	-80.82823180
Begin 3°/100' build/turn									
3,000.00	10.38	110.34	2,994.69	-14.89	143.64	14,431,016.15	1,688,720.35	39.73700858	-80.82817562
3,100.00	12.37	121.79	3,092.74	-23.67	161.20	14,431,007.37	1,688,737.91	39.73698438	-80.82811322
3,200.00	14.70	129.90	3,189.96	-37.46	180.05	14,430,993.59	1,688,756.76	39.73694642	-80.82804628
3,300.00	17.24	135.75	3,286.10	-56.22	200.12	14,430,974.83	1,688,776.83	39.73689480	-80.82797499
3,400.00	19.90	140.11	3,380.89	-79.89	221.38	14,430,951.16	1,688,798.09	39.73682967	-80.82789954
3,500.00	22.64	143.47	3,474.07	-108.42	243.75	14,430,922.62	1,688,820.46	39.73675119	-80.82782015
3,600.00	25.44	146.13	3,565.39	-141.73	267.19	14,430,889.32	1,688,843.90	39.73665960	-80.82773702
3,700.00	28.28	148.29	3,654.60	-179.72	291.61	14,430,851.33	1,688,868.32	39.73655514	-80.82765039
3,800.00	31.14	150.08	3,741.45	-222.29	316.97	14,430,808.75	1,688,893.68	39.73643809	-80.82756050
3,805.06	31.29	150.16	3,745.78	-224.57	318.28	14,430,806.48	1,688,894.98	39.73643183	-80.82755586
Begin 31.29° tangent									
3,900.00	31.29	150.16	3,826.91	-267.34	342.81	14,430,763.71	1,688,919.51	39.73631424	-80.82746890
4,000.00	31.29	150.16	3,912.37	-312.39	368.64	14,430,718.66	1,688,945.35	39.73619039	-80.82737730
4,100.00	31.29	150.16	3,997.82	-357.44	394.48	14,430,673.61	1,688,971.19	39.73606653	-80.82728570
4,200.00	31.29	150.16	4,083.28	-402.49	420.32	14,430,628.56	1,688,997.03	39.73594267	-80.82719410
4,300.00	31.29	150.16	4,168.74	-447.54	446.16	14,430,583.51	1,689,022.87	39.73581881	-80.82710250
4,400.00	31.29	150.16	4,254.19	-492.59	471.99	14,430,538.46	1,689,048.70	39.73569495	-80.82701090
4,500.00	31.29	150.16	4,339.65	-537.64	497.83	14,430,493.41	1,689,074.54	39.73557110	-80.82691931



Planning Report - Geographic

Database: DB_Jul2216dt_v14
Company: Tug Hill Operating LLC
Project: Marshall County, West Virginia.
Site: Goudy
Well: Goudy 1S-04HM (K)
Wellbore: Original Hole
Design: rev3

Local Co-ordinate Reference: Well Goudy 1S-04HM (K)
TVD Reference: GL @ 1241.00usft
MD Reference: GL @ 1241.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Checked by Gsa
JUN 24 2023
West Virginia Department of Environmental Protection

Planned Survey

Table with 10 columns: Measured Depth (usft), Inclination (°), Azimuth (°), Vertical Depth (usft), +N/-S (usft), +E/-W (usft), Map Northing (usft), Map Easting (usft), Latitude, Longitude. Contains 41 rows of survey data.



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Goudy 1S-04HM (K)
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-04HM (K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
14,900.00	89.00	149.98	6,551.36	-8,584.73	5,142.23	14,422,446.31	1,693,718.94	39.71344548	-80.81045935
15,000.00	89.00	149.98	6,553.10	-8,671.31	5,192.25	14,422,359.74	1,693,768.95	39.71320742	-80.81028214
15,100.00	89.00	149.98	6,554.85	-8,757.88	5,242.26	14,422,273.16	1,693,818.97	39.71296937	-80.81010494
15,200.00	89.00	149.98	6,556.59	-8,844.46	5,292.28	14,422,186.59	1,693,868.99	39.71273131	-80.80992774
15,300.00	89.00	149.98	6,558.33	-8,931.04	5,342.30	14,422,100.01	1,693,919.00	39.71249326	-80.80975054
15,400.00	89.00	149.98	6,560.08	-9,017.61	5,392.31	14,422,013.44	1,693,969.02	39.71225520	-80.80957334
15,500.00	89.00	149.98	6,561.82	-9,104.19	5,442.33	14,421,926.86	1,694,019.04	39.71201715	-80.80939614
15,600.00	89.00	149.98	6,563.56	-9,190.76	5,492.34	14,421,840.29	1,694,069.05	39.71177909	-80.80921894
15,700.00	89.00	149.98	6,565.31	-9,277.34	5,542.36	14,421,753.71	1,694,119.07	39.71154104	-80.80904174
15,800.00	89.00	149.98	6,567.05	-9,363.91	5,592.38	14,421,667.14	1,694,169.09	39.71130298	-80.80886455
15,900.00	89.00	149.98	6,568.79	-9,450.49	5,642.39	14,421,580.56	1,694,219.10	39.71106493	-80.80868735
16,000.00	89.00	149.98	6,570.53	-9,537.06	5,692.41	14,421,493.98	1,694,269.12	39.71082687	-80.80851016
16,100.00	89.00	149.98	6,572.28	-9,623.64	5,742.43	14,421,407.41	1,694,319.14	39.71058881	-80.80833297
16,200.00	89.00	149.98	6,574.02	-9,710.21	5,792.44	14,421,320.83	1,694,369.15	39.71035076	-80.80815578
16,300.00	89.00	149.98	6,575.76	-9,796.79	5,842.46	14,421,234.26	1,694,419.17	39.71011270	-80.80797859
16,400.00	89.00	149.98	6,577.51	-9,883.37	5,892.48	14,421,147.68	1,694,469.19	39.70987464	-80.80780140
16,500.00	89.00	149.98	6,579.25	-9,969.94	5,942.49	14,421,061.11	1,694,519.20	39.70963658	-80.80762422
16,600.00	89.00	149.98	6,580.99	-10,056.52	5,992.51	14,420,974.53	1,694,569.22	39.70939852	-80.80744703
16,700.00	89.00	149.98	6,582.73	-10,143.09	6,042.53	14,420,887.96	1,694,619.24	39.70916047	-80.80726985
16,800.00	89.00	149.98	6,584.48	-10,229.67	6,092.54	14,420,801.38	1,694,669.25	39.70892241	-80.80709266
16,900.00	89.00	149.98	6,586.22	-10,316.24	6,142.56	14,420,714.81	1,694,719.27	39.70868435	-80.80691548
17,000.00	89.00	149.98	6,587.96	-10,402.82	6,192.58	14,420,628.23	1,694,769.29	39.70844629	-80.80673830
17,100.00	89.00	149.98	6,589.71	-10,489.39	6,242.59	14,420,541.66	1,694,819.30	39.70820823	-80.80656112
17,200.00	89.00	149.98	6,591.45	-10,575.97	6,292.61	14,420,455.08	1,694,869.32	39.70797017	-80.80638395
17,231.58	89.00	149.98	6,592.00	-10,603.30	6,308.40	14,420,427.74	1,694,885.11	39.70789500	-80.80632800

PBHL/TD 17231.58 MD/6592.00 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-04HM LP - hit/miss target - Shape - Point	0.00	0.00	6,417.00	-1,910.87	1,286.58	14,429,120.18	1,689,863.29	39.73179556	-80.82412325
Goudy 1S-04HM BHL r3 - plan hits target center - Point	0.00	0.00	6,592.00	-10,603.30	6,308.40	14,420,427.74	1,694,885.11	39.70789500	-80.80632800

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,000.41	1,000.00	13 3/8" Casing	13-3/8	17
2,602.61	2,600.00	9 5/8" Casing	9-5/8	12-1/4

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Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Goudy 1S-04HM (K)
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-04HM (K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
500.00	500.00	0.00	0.00	KOP Begin 1"/100' build
800.00	799.86	-0.68	7.82	Begin 3.00° tangent
2,702.74	2,700.00	-9.36	107.03	Begin 3"/100' build
2,902.74	2,898.81	-11.18	127.84	Begin 3"/100' build/turn
3,805.06	3,745.78	-224.57	318.28	Begin 31.29° tangent
6,567.35	6,106.35	-1,468.98	1,031.99	Begin 8"/100' build/turn
6,801.26	6,283.04	-1,600.49	1,107.57	Begin 10"/100' build/turn
7,191.27	6,417.00	-1,910.87	1,286.58	Begin 89.00° lateral
17,231.58	6,592.00	-10,603.30	6,308.40	PBHL/TD 17231.58 MD/6592.00 TVD

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WW-9
(4/16)

API Number 47 - 051 - _____
Operator's Well No. Goudy 1S-4HM

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Tug Hill Operating, LLC OP Code 494510851

Watershed (HUC 10) French Creek - Ohio River Quadrangle New Martinsville 7.5'

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes No

Will a pit be used? Yes No

If so, please describe anticipated pit waste: AST Tanks with proper containment will be used for slaging fresh water for frac and flow back water

Will a synthetic liner be used in the pit? Yes No If so, what ml.? AST Tanks will be used with proper contain

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number UIC 2459, UIC 965, UIC 359, UIC 2D0732540, UIC 2D0732523)
- Reuse (at API Number _____)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain _____)

Will closed loop system be used? If so, describe: Yes - For Vertical and Horizontal Drilling

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Air for vertical / Oil for Horizontal

-If oil based, what type? Synthetic, petroleum, etc. Synthetic Oil Base

Additives to be used in drilling medium? Barite for weight

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. All drill cuttings to be disposed of in a Landfill

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) N/A

-Landfill or offsite name/permit number? Watzel County Sanitary Landfill (SWF-1021 / WV0105185) and Westmoreland Sanitary Landfill, LLC (SAN1405 / PA DEP EC#1386426)

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature Jim Pancake

Company Official (Typed Name) Jim Pancake

Company Official Title Vice President Geoscience

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Subscribed and sworn before me this 25 day of May, 2018

[Signature]

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Sean Cotter, Notary Public
City of Pittsburgh, Allegheny County
My Commission Expires Oct. 12, 2019

My commission expires 10/12/2019

Form WW-9

Operator's Well No. Goudy 1S-4HM

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 11.56 Prevegetation pH 6.0

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch 2.5 Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Annual Ryegrass	40	Orchard Grass	12
Spring Oats	96	Ladino	3
		White Clover	2

Attach:

Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, include dimensions (L x W x D) of the pit, and dimensions (L x W), and area in acreage, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: Jim Anderson

Comments: _____

Title: Oil and Gas Inspector

Date: 5/25/18

Field Reviewed? () Yes () No

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WV Department of
Environmental Protection

WW-9

**PROPOSED GOUDY
1S-4HM**

SUPPLEMENT PG 1

REFERENCE IS HEREBY MADE TO THE W.V. D.E.P. OFFICE OF OIL & GAS, "EROSION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BMPs FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES AND THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION TO THE INSPECTOR AND THE OPERATOR SHOULD THESE CONDITIONS OCCUR.

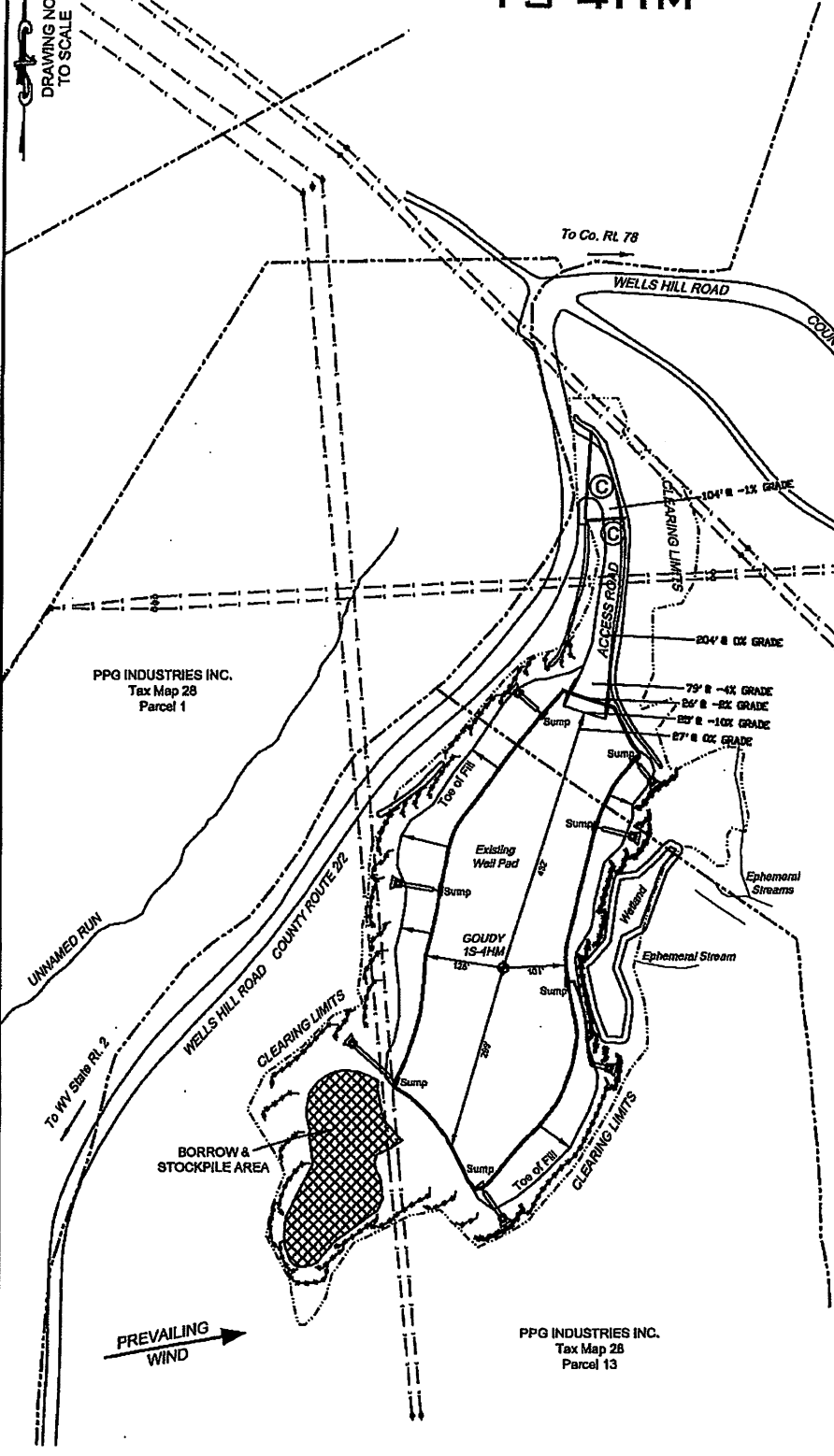
INSTALL CULVERTS AS SHOWN ON RECLAMATION PLAN OR AS FIELD CONDITIONS REQUIRE.

ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH W.V. D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED. TEMPORARILY SEED AND MULCH ALL SLOPES UPON CONSTRUCTION OF LOCATION.

ALL CUT AND FILL SLOPES ARE 2H : 1V SLOPE.

ALL TREES 6-INCHES AND ABOVE ARE TO BE CUT AND STACKED. BRUSH SLASHINGS ARE TO UTILIZED DOWN SLOPE OF SITE AND STRUCTURES TO ACT AS A CONTROL BARRIER IF AVAILABLE.

DRAWING NOT TO SCALE



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LEGEND

Note:
 (C) — Denotes existing culvert with appropriate sediment outlet control (Rip Rap splash pad).
 - - - - - Silt Fence and or Sediment and Erosion Control Measure.
 - - - - - Surface Boundary
 — e — Overhead Utility



Well Site Safety Plan

Tug Hill Operating, LLC

Ju
6/6/2020

Well Name: Goudy 1S-4HM

Pad Location: Goudy Pad

Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

Northing: 4,398,587.06

Easting: 514,679.21

Updated: May 2020

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WW-9

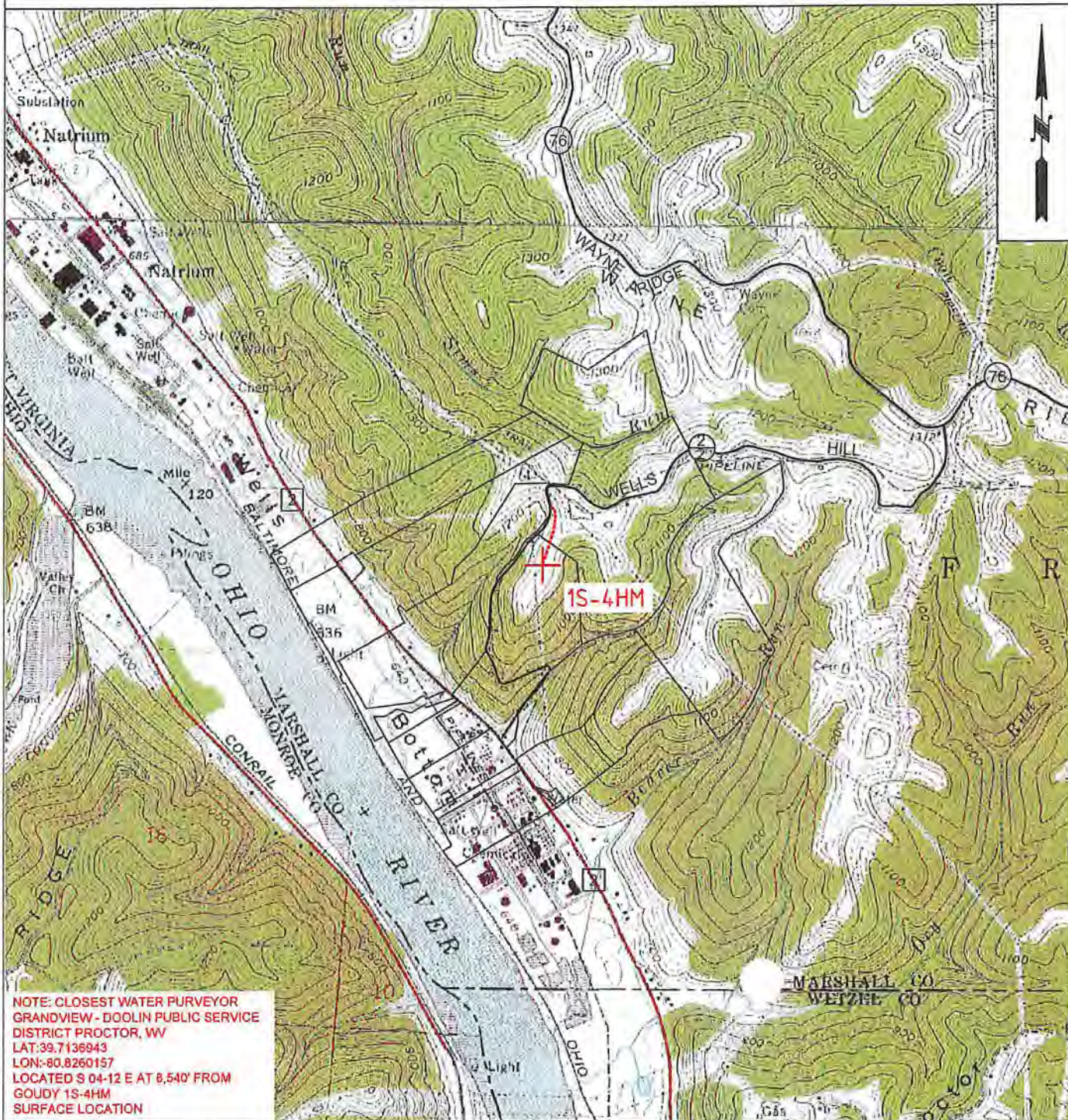
PROPOSED GOUDY 1S-4HM

SUPPLEMENT PG 2

Office of Oil and Gas

JUN 24 2018

WV Department of
Environmental Protection



NOTE: CLOSEST WATER PURVEYOR
 GRANDVIEW - DOOLIN PUBLIC SERVICE
 DISTRICT PROCTOR, WV
 LAT: 39.7136943
 LON: -80.8260157
 LOCATED S 04-12 E AT 8,540' FROM
 GOUDY 1S-4HM
 SURFACE LOCATION

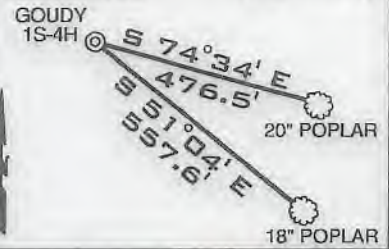
 TUG HILL OPERATING	OPERATOR	494510851	TOPO SECTION	LEASE NAME
	TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317		NEW MARTINSVILLE 7.5'	GOUDY
	SCALE:		1" = 2000'	DATE:
				DATE: 05/21/2018

GOUDY LEASE WELL 1S-4HM 730.5983± ACRES

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

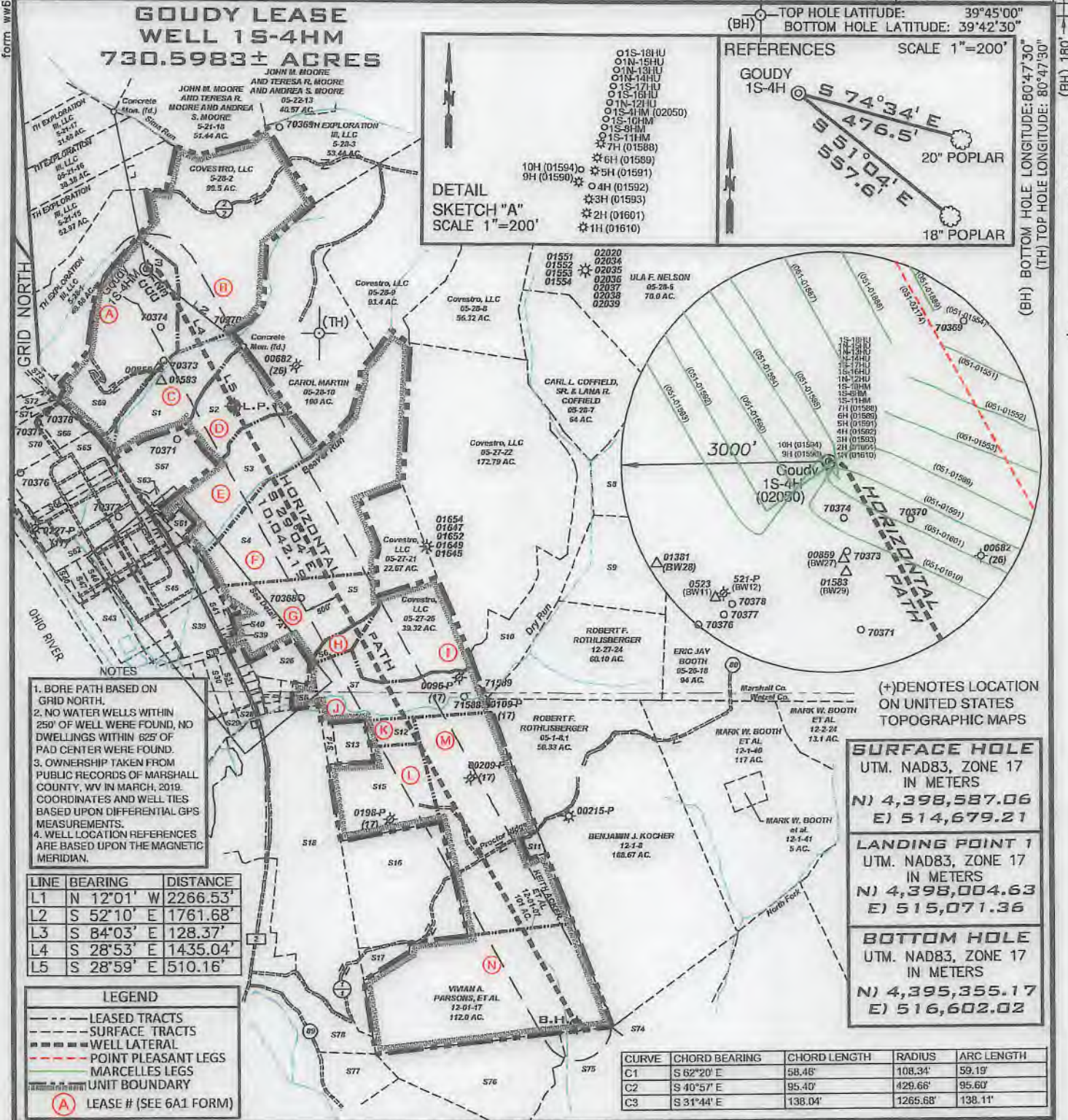
SCALE 1"=200'

REFERENCES



DETAIL SKETCH "A" SCALE 1"=200'

- 01S-18HU
- 01N-15HU
- 01N-13HU
- 01N-14HU
- 01S-17HU
- 01S-16HU
- 01N-12HU
- 01S-4HM (02050)
- 01S-10HM
- 01S-9HM
- 01S-11HM
- *7H (01588)
- *6H (01589)
- *5H (01591)
- *4H (01592)
- *3H (01593)
- *2H (01601)
- *1H (01610)
- 10H (01594)
- 9H (01590)



- 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 MARCH, 2019. COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
 - WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.

LINE	BEARING	DISTANCE
L1	N 12°01' W	2266.53'
L2	S 52°10' E	1761.68'
L3	S 84°03' E	128.37'
L4	S 28°53' E	1435.04'
L5	S 28°59' E	510.16'

LEGEND

- LEASED TRACTS
- SURFACE TRACTS
- WELL LATERAL
- POINT PLEASANT LEGS
- MARCELLES LEGS
- UNIT BOUNDARY

(A) LEASE # (SEE 6A1 FORM)

(+) DENOTES LOCATION ON UNITED STATES TOPOGRAPHIC MAPS

SURFACE HOLE
UTM. NAD83, ZONE 17
IN METERS
N) 4,398,587.06
E) 514,679.21

LANDING POINT 1
UTM. NAD83, ZONE 17
IN METERS
N) 4,398,004.63
E) 515,071.36

BOTTOM HOLE
UTM. NAD83, ZONE 17
IN METERS
N) 4,395,355.17
E) 516,602.02

CURVE	CHORD BEARING	CHORD LENGTH	RADIUS	ARC LENGTH
C1	S 62°20' E	58.46'	108.34'	59.19'
C2	S 40°57' E	95.40'	429.66'	95.60'
C3	S 31°44' E	138.04'	1265.68'	138.11'

FILE NUMBER _____

DRAWING NUMBER GOUDY 1S-4HM REV 3

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

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

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

DATE: MARCH 25, 2019

OPERATORS WELL NO. GOUDY 1S-4HM

API WELL NO. 47-051-02330

STATE COUNTY PERMIT

LOCATION ELEVATION 1239.4' 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 TH EXPLORATION III, LLC. LEASE ACREAGE 70.0

PROPOSED WORK: DRILL CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE PLUG OFF OLD FORMATION ___

PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE (SPECIFY) _____

TARGET FORMATION MARCELLUS

PLUG & ABANDON ___ CLEAN OUT & REPLUG ___

ESTIMATED DEPTH TVD 6,540' TMD: 17,232'

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

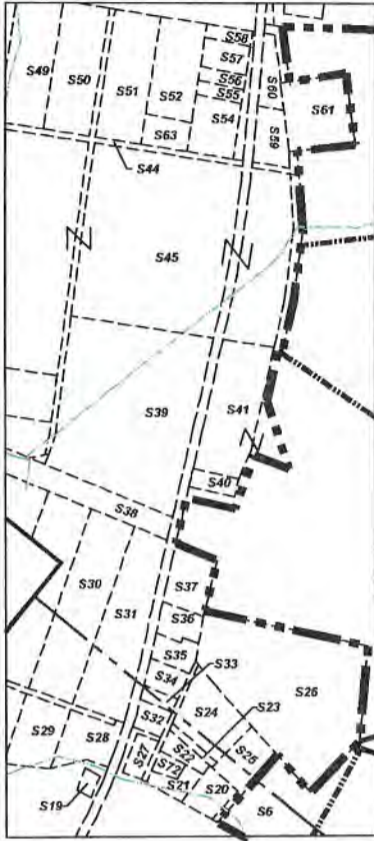
DESIGNATED AGENT DIANNA STAMPER CT CORPORATION SYSTEM ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313

COUNTY NAME PERMIT

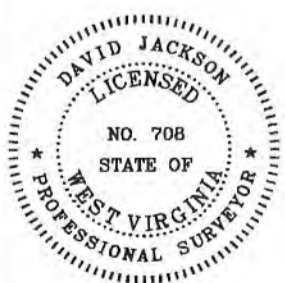
**GOUDY LEASE
WELL 1S-4HM
730.5983± ACRES**



**Detail "A"
SCALE 1"=1000'**



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P.S. 708 *David L Jackson*

Number	TAX MAP -PARCEL	SURFACE OWNER	ACRES
S1	C 05-28-12	TH Exploration III, LLC	20.226
S2	D 05-28-11	Carol A. Martin	24.681
S3	E 05-27-19	Covestro, LLC	33.786
S4	F 05-27-20	Covestro LLC	93.027
S5	G 05-27-20.1	Appalachian Power Co.	43.973
S6	H 05-27-27	James Andrew & Karen Lynne Richmond	8.9353
S7	J 05-27-25	James Andrew & Karen Lynne Richmond	41.35
S8	05-26-4.5	Eric Jay Booth	74.388
S9	05-26-19	Eric Jay Booth & Karrel S. Booth	50.0
S10	05-27-23	Robert F. Rothlisberger	35.77
S11	12-01-7.1	Harry Wayman Estate	2.0
S12	K 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 Lynne Richmond	2.7
S15	L 12-01-05	Irvin L. Hoyt, Jr. & David L. Hoyt	36.8
S16	12-01-06	Mona Parsons, et al	52.75
S17	12-01-16	Vivian A. Parsons, et al	5.125
S18	12-01-01	Covestro, LLC	135.0
S19	12-01-1.7	Colombia Gas Transmission, Corp.	0.15
S20	12-23-15	Paul E. & Donna Jo Cain	0.70
S21	12-23-15.1	Robert F. Rothlisberger	0.47
S22	12-23-13	Paul E. & Donna Jo Cain	0.38
S23	05-27-27.2	Paul E. Cain, et ux	0.1767
S24	05-27-27.1	Donald P. Cain	1.645
S25	05-27-27.3	Paul E. Cain, et ux	1.018
S26	05-27-28	Covestro, LLC	8.0
S27	12-23-12	Paul E. & 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	05-27-31.1	Covestro, LLC	3.0
S42	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	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	05-27-19.3	Cemetery	2.0
S62	05-27-02	Covestro, LLC	28.099
S63	05-27-19.2	Wheeling Electric Co.	0.922
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	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	05-28-1.4	Eagle Natrium, LLC	11.69
S73	05-31-3.1	Eagle Natrium, LLC	98.613
S74	12-01-19	Steven J. & Susan L. Hafer	36.5
S75	12-01-28	Steven J. & Susan L. Hafer	88.39
S76	12-01-18	Travis Darrell Blake & Angela Dawn Mitchell	48.4
S77	12-01-15.3	Daniel L. & Vickie L. Williams	7.0
S78	12-01-1.1	W.V.D.O.H.	10.59



**TUG HILL
OPERATING**

OPERATOR'S
WELL #: Goudy 1S-4HM
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV

WELL PLAT
PAGE 2 OF 2
DATE: 3/25/2018

WW-6A1
(5/13)

Operator's Well No. Goudy 1S-4HM

**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

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

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Environmental Protection

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. Miller *Amy Miller*
Its: Permitting Specialist - Appalachia Region

Lease ID	Parcel	Tags	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	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	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 24/332	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14498	5-28-2	B	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
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	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 24/332	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14658	5-28-12	C	THOMAS WILLIAM ABERSOLD	GASTAR EXPLORATION USA, INC.	1/8+	775	314	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 28/499	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14659	5-28-12	C	JUDITH LEE ABERSOLD	GASTAR EXPLORATION USA INC	1/8+	781	609	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 28/499	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14565	5-28-11	D	HARRY LEE GOUDY	CENTRAL MICHIGAN EXPLORATION LLC	1/8+	670	59	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Central Michigan Exploration LLC to Stone Energy Corporation: 21/288 & 21/356	Merger of Gastar Exploration USA Inc merged into Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14493	5-27-19	E	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	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

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Case ID	Parcel	Tags	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment		
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	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Athum 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
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	N/A	N/A	N/A	Gastar Exploration USA Inc to Athum 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
10*14496	5-27-19	E	STEPHANIE L HALL	GASTAR EXPLORATION USA	1/8+	752 215	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Athum 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
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	N/A	N/A	N/A	Gastar Exploration USA Inc to Athum 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
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	N/A	N/A	N/A	Gastar Exploration USA Inc to Athum 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
10*22926	5-27-19	E	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*14493	5-27-20	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	N/A	N/A	N/A	Gastar Exploration USA Inc to Athum 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
10*14494	5-27-20	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	N/A	N/A	N/A	Gastar Exploration USA Inc to Athum 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

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Lease ID	Parcel	Tags	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment			
10*14495	5-27-20	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	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Athlum 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
10*14496	5-27-20	F	STEPHANIE L HALL	GASTAR EXPLORATION USA	1/8+	752 215	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Athlum 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
10*14497	5-27-20	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	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Athlum 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
10*14498	5-27-20	F	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	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Athlum 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
10*22926	5-27-20	F	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	N/A
10*14493	5-27-20.1	G	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	N/A	N/A	Gastar Exploration USA Inc to Athlum 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
10*14494	5-27-20.1	G	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	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Athlum 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
10*14495	5-27-20.1	G	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	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Athlum 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

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10*14496	5-27-20.1	G	STEPHANIE L HALL	GASTAR EXPLORATION USA	1/8+	752 215	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/539	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14497	5-27-20.1	G	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	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/539	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14499	5-27-20.1	G	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	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/539	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14505	5-27-27	H	JAMES ANDREW RICHMOND	GASTAR EXPLORATION USA INC	1/8+	752 447	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/539	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14498	5-27-26	I	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	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/539	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*22926	5-27-26	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	N/A	N/A
10*14505	5-27-25	J	JAMES ANDREW RICHMOND	GASTAR EXPLORATION USA INC	1/8+	752 447	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/539	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*23502	12-1-4	K	ROBERT F ROTHILSBERGER	TH EXPLORATION LLC	1/8+	210A 801	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*15075	12-1-5	L	BARBARA P MAZER	GASTAR EXPLORATION USA INC	1/8+	129A 693	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 135A/284	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 13/270	Gastar Exploration Inc to TH Exploration II LLC: 173A/431

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Phase ID	Parcel	Tags	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment		
10*15076	12-1-5	L	EDWARD PENNINGTON	GASTAR EXPLORATION USA INC	1/8+	130A	979	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 135A/284	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 13/270	Gastar Exploration Inc to TH Exploration II LLC: 173A/431
10*15079	12-1-5	L	JAMES K. HALL	GASTAR EXPLORATION USA INC	1/8+	132A	704	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 135A/284	Merger of Gastar Exploration Inc and Gastar Exploration USA Inc: 13/270	Gastar Exploration Inc to TH Exploration II LLC: 173A/431
10*18122	12-1-5	L	ANNE 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
10*18175	12-1-5	L	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
10*18177	12-1-5	L	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	188A	793	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18233	12-1-5	L	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
10*18286	12-1-5	L	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
10*19511	12-1-7	M	CORT D ACKER	TH EXPLORATION LLC	1/8+	195A	168	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*24538	12-1-7	M	BRC MINERALS, LP	BRC WORKING INTEREST COMPANY LLC	1/8+	103A	320	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 Titleholder LLC: 158A/801	SWN Exchange Titleholder LLC merged with and into SWN Production Company LLC: 13/296	SWN Production Company LLC to Antero Exchange Properties LLC: 177A/533	Statoil USA Onshore Properties Inc to Antero Exchange Properties LLC: 177A/738	Antero Exchange Properties LLC merged with and into Antero Resources Corporation: 13/311	Antero Resources Corporation to TH Exploration LLC: 218A/755
10*22580	12-1-17	N	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
10*23524	12-1-17	N	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
10*23525	12-1-17	N	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
10*23906	12-1-17	N	JOHN M PARSONS & ANTOINETTE L COSTAN	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
10*24090	12-1-17	N	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
10*24317	12-1-17	N	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
10*25450	12-1-17	N	MURIEL 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
10*25644	12-1-17	N	JOHN P SNYDER	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
10*26612	12-1-17	N	DOROTHY JOANNE SNYDER 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

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JUN 2 2020
WV Department of Environment and Natural Resources

DPS LAND SERVICES-CORP-TIM SCHULTZ
5000 TOWN CENTER BLVD STE 145
CANONSBURG, PA 15317-5841

WHEN RECORDED RETURN TO:
TH Exploration II, LLC
1320 South University Drive, Suite 500
Fort Worth, Texas 76107
Attn: David Kalish

Execution Version

ASSIGNMENT AND BILL OF SALE

STATE OF WV §
 § KNOW ALL MEN BY THESE PRESENTS:
COUNTY OF WETZEL §

THIS ASSIGNMENT AND BILL OF SALE (this "Assignment"), dated April 7, 2016, but effective as of 7:00 A.M. Houston time on January 1, 2016 (the "Effective Time"), is between Gastar Exploration Inc., a Delaware corporation, whose address is 1331 Lamar Street, Suite 650 Houston, Texas 77010 ("Assignor"), and TH Exploration II, LLC, a Texas limited liability company, whose address is 1320 South University Drive, Suite 500, Fort Worth, Texas 76107 ("Assignee"). Assignor and Assignee are each, individually, referred to herein as a "Party" and, collectively, as the "Parties".

Capitalized terms used but not defined herein shall have the respective meanings set forth in that certain Purchase and Sale Agreement (the "Purchase Agreement"), dated as of February 19, 2016, by and between Assignor and Assignee (as successor-in-interest).

Section 1. Assignment. The conveyance and assignment herein shall be deemed effective as of the Effective Time.

For Ten Dollars (\$10.00) and other good and valuable consideration (the receipt and sufficiency of which are hereby acknowledged), Assignor does hereby forever GRANT, BARGAIN, SELL, CONVEY, ASSIGN, TRANSFER, SET OVER AND DELIVER unto Assignee, all of Assignor's right, title and interest in and to the following interests and properties (such right, title and interest described in subsections (a) through (k) of this Section 1, less and except the Excluded Assets, collectively, the "Conveyed Interests"):

(a) all oil, gas and/or mineral leases of Assignor, together with any and all other right, title and interest of Assignor in and to the leasehold estates created thereby, including subleases, royalties, overriding royalties, net profits interest, carried interests or similar rights or interests in such leases, and together with all rights, privileges, benefits and powers conferred upon Assignor with respect to the use and occupation of the lands covered thereby that may be necessary, convenient or incidental to the possession and enjoyment of such leases, located in Marshall, Wetzell, Doddridge, Harrison, Lewis, Marion, and Monongalia Counties, West Virginia and Greene, Butler, Fayette, Somerset, and Clearfield Counties, Pennsylvania, including those described on Exhibit A—Part 1 attached hereto (subject to any reservations, limitations or depth restrictions described on Exhibit A—Part 1), (Assignor's interest in such leases and other right, title and interest as so limited, the "Leases");

US 4080695

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Carol S Havent
WETZEL County 02:43:00 PM
Instrument No 200730
Date Recorded 06/27/2016
Document Type O&G
Pages Recorded 40
Book-Page 1734-431
Recording Fee \$40.00
Additional \$10.00

DPS
6000 TOWN CENTER BLVD STE 145
CANDONSBURG PA 15317-5870

4705102330
Carol S Haught, Clerk
Instrument 260482
12/11/2018 @ 01:23:35 PM
OIL AND GAS
Book 218A @ Page 755
Pages Recorded 6
Recording Cost \$ 12.00

PARTIAL ASSIGNMENT AND CONVEYANCE OF OIL AND GAS LEASE

STATE OF WEST VIRGINIA)
) §
COUNTY OF WETZEL)

This Partial Assignment and Conveyance of Oil and Gas Leases (this "Assignment"), dated effective as of December 7, 2018 at 7:00 a.m. Central Time (the "Effective Time"), is made by Antero Resources Corporation, a Delaware corporation, whose address is 1615 Wynkoop Street, Denver, CO 80202 ("Assignor"), to TH Exploration, LLC, a Texas limited liability company, whose address is 1320 S. University Drive, Suite 500, Fort Worth, TX 76107 ("Assignee"). Assignor and Assignee are sometimes referred to herein together as the "Parties" and individually as a "Party."

WHEREAS, Assignor owns an undivided working interest in the Leases (as defined below).

WHEREAS, Assignor desires to assign to Assignee, and Assignee desires to accept such assignment of, the Leasehold Rights (as defined below), as more particularly described in this Assignment.

NOW, THEREFORE, for and in consideration of Ten Dollars (\$10.00) and other valuable consideration, the receipt and sufficiency of which is hereby acknowledged:

Assignor does hereby GRANT, BARGAIN, TRANSFER, ASSIGN and CONVEY to Assignee 100% of Assignor's right, title and interest in and to the oil and gas leases described in more detail on Exhibit A, less and except those certain portions, if any, retained by Assignor as described on Exhibit A, (such oil and gas leases, the "Leases", and 100% of Assignor's collective right, title and interest in and to the Leases less an except those portions, if any, retained by Assignor, the "Leasehold Rights").

This Assignment is further made subject to the following:

1. **Assignment Subject to Trade Agreement.** This Assignment is made in accordance with and is subject to the terms, covenants and conditions contained in that certain Trade Agreement, dated October 12, 2018 by and between Assignor and Assignee (as the same may be amended from time to time, the "Trade Agreement"). In the event of a conflict between the provisions of the Trade Agreement and this Assignment, the provisions of the Trade Agreement shall control. The execution and delivery of this Assignment by Assignor, and the execution and acceptance of this Assignment by Assignee, shall not operate to release or impair any surviving rights or obligations of Assignor or Assignee under the Trade Agreement. Capitalized terms used but not otherwise defined in this Assignment shall have the respective meanings given to such terms in the Trade Agreement.
2. **Assumption of Liabilities.** Subject to the terms of the Trade Agreement, effective as of the Effective Time, Assignee hereby acknowledges, assumes, and agrees to assume, pay, perform, fulfill and discharge the Tug Hill Assumed Liabilities.
3. **Special Warranty of Title.** Assignor (a) hereby warrants, and shall defend, title to the Leasehold Rights unto Assignee and its successors in interest against every person whomsoever lawfully claiming, or to claim the same or any part thereof by, through or under Assignor or its Affiliates, but not otherwise, subject to the Permitted Encumbrances and (b) hereby subrogates Assignee to all covenants and warranties of title by third persons (other than Assignor and its Affiliates) heretofore given or made to Assignor or its predecessors in title or Affiliates in respect of any of the Leasehold Rights.

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WV Department of Environmental Protection

4705102330



June 18, 2020

WV Department of Environmental Protection
Office of Oil & Gas
601 57th Street, SE
Charleston, WV 25304
Attention: Laura Adkins

RE: Goudy 1S-4HM

Subject: Road Crossing Letter

Dear Laura:

Tug Hill Operating, LLC will not be drilling, extracting or producing any minerals under any WV County or State Routes in the area reflected on the Goudy 1S-4HM well plat.

If your office has any questions or concerns regarding the contents of this letter, please do not hesitate to contact me directly at 304-376-0111, or by email at amiller@tug-hillop.com.

Sincerely,

A handwritten signature in blue ink that reads "Amy L. Miller".

Amy L. Miller
Permitting Specialist – Appalachia Region

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STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE CERTIFICATION

Date of Notice Certification: 08/19/2020

API No. 47- 051

Operator's Well No. Goudy 1S-4HM

Well Pad Name: Goudy

Notice has been given:

Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83 Easting: <u>514,679.21</u>
County: <u>Marshall</u>	UTM NAD 83 Northing: <u>4,398,587.06</u>
District: <u>Franklin</u>	Public Road Access: <u>Wells Hill Road (County Route 2/2)</u>
Quadrangle: <u>New Martinsville 7.5'</u>	Generally used farm name: <u>PPG Industries, Inc.</u>
Watershed: <u>French Creek - Ohio River (HUC 10)</u>	

Pursuant to West Virginia Code § 22-6A-7(b), every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information: (14) A certification from the operator that (i) it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section ten of this article, the information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was deemed satisfied as a result of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article six-a; or (iii) the notice requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner; and Pursuant to West Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice requirements of section ten of this article have been completed by the applicant.

<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 100px;"><input type="checkbox"/> WRITTEN WAJVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p style="text-align: center;">OOG OFFICE USE ONLY</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p>
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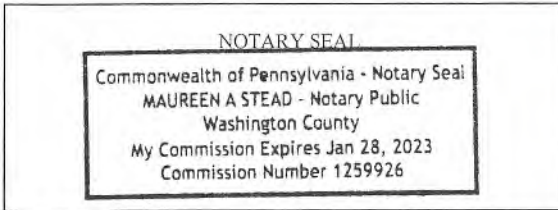
Required Attachments:

The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication date verification or the associated Affidavit of Publication. The attached Notice Forms and Certifications of Notice shall serve as proof that the required parties have been noticed as required under West Virginia Code § 22-6A. Pursuant to West Virginia Code § 22-6A-11(b), the Certification of Notice to the person may be made by affidavit of personal service, the return receipt card or other postal receipt for certified mailing.

Certification of Notice is hereby given:

THEREFORE, I Amy L Miller, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator:	<u>Tug Hill Operating, LLC</u>	Address:	<u>380 Southpointe Boulevard, Plaza II, Suite 200</u>
By:	<u>Amy L. Miller <i>Amy L Miller</i></u>		<u>Canonsburg, PA 15317</u>
Its:	<u>Permitting Specialist</u>	Facsimile:	<u>724-338-2030</u>
Telephone:	<u>724-749-8388</u>	Email:	<u>amiller@tug-hillop.com</u>



Subscribed and sworn before me this 19 day of JUNE, 2020.
Maureen A Stead Notary Public
 My Commission Expires 1/28/23

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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WV Department of
Environmental Protection

WW-6A
(9-13)

API NO. 47-094 **4705102330**
OPERATOR WELL NO. Goudy 1S-4HM
Well Pad Name: Goudy

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION

Notice Time Requirement: notice shall be provided no later than the **filing date of permit application.**

Date of Notice: 6/19/2020 **Date Permit Application Filed:** 6/22/2020

Notice of:

- PERMIT FOR ANY WELL WORK CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

- PERSONAL SERVICE REGISTERED MAIL METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice WSSP Notice E&S Plan Notice Well Plat Notice is hereby provided to:

SURFACE OWNER(s)

Name: Bayer Material Sciences, LLC (Access Road and Well Pad)
Address: 100 Bayer Road
Pittsburgh, PA 15205

Name: PPG Industries, Inc. Attn: Supervisor Financial Accounting Chemicals)
Address: 1 PPG Place, 9th Floor West
Pittsburgh, PA 15272 (Access Road and Well Pad)

SURFACE OWNER(s) (Road and/or Other Disturbance)

Name: _____
Address: _____

Name: _____
Address: _____

SURFACE OWNER(s) (Impoundments or Pits)

Name: _____
Address: _____

COAL OWNER OR LESSEE

Name: Appalachian Power Company
Address: 1068 US-60
Milton, WV 25541

COAL OPERATOR

Name: _____
Address: _____

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)

Name: (None within 2000')
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: _____
Address: _____

*Please attach additional forms if necessary

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WV Department of
Environmental Protection

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

This Notice Shall Include:

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and or water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Location Restrictions

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

WW-6A
(8-13)

API NO. 47-051
OPERATOR WELL NO. Goudy 1S-4HM
Well Pad Name: Goudy

examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

Water Well Testing:

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

Water Testing Laboratories:

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggrieved under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

Written Comment:

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas
Department of Environmental Protection
601 57th St. SE
Charleston, WV 25304
(304) 926-0450

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WV Department of
Environmental Protection

Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

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(8-13)

API NO. 47- 051 -
OPERATOR WELL NO. Goudy 1S-4HM
Well Pad Name: Goudy

Time Limits and Methods for Filing Comments.

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

Comment Requirements

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Disclaimer: All comments received will be placed on our web site <http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx> and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

Permit Denial or Condition

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

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Office of the Director

JUN 24 2011

WV Department
Environmental

WW-6A
(8-13)

4705102330

API NO. 47-051
OPERATOR WELL NO. Goudy 1S-4HM
Well Pad Name: Goudy

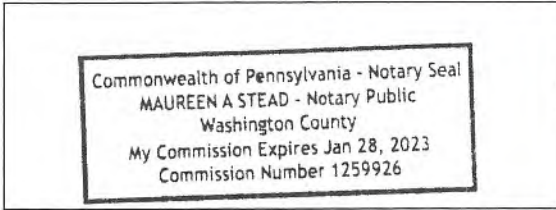
Notice is hereby given by:

Well Operator: Tug Hill Operating, LLC
Telephone: 724-749-8388
Email: amiller@tug-hilltop.com *amy miller*

Address: 380 Southpointe Boulevard, Plaza II, Suite 200
Canonsburg, PA 15317
Facsimile: 724-838-2030

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at deprivacyofficer@wv.gov.



Subscribed and sworn before me this 10 day of JUNE 2020.
Maureen A Stead Notary Public
My Commission Expires 1/28/23

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Office of Oil and Gas
JUN 24 2020
WV Department of Environmental Protection

Operator Well No.: GOUDY 1S-4HM

**WW-6A Notice of Application
Supplement Page**

COAL OWNER(S):

NAME: APPALACHIAN POWER CO.
ADDRESS: 1 RIVERSIDE PLACE
COLUMBUS, OH 43215

NAME: COVESTRO, LLC (FORMERLY BAYER MATERIAL SCIENCE, LLC)
ADDRESS: 1 CONVESTRO CIRCLE
PITTSBURGH, PA 15205

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Office of Oil and Gas

JUN 24 2020

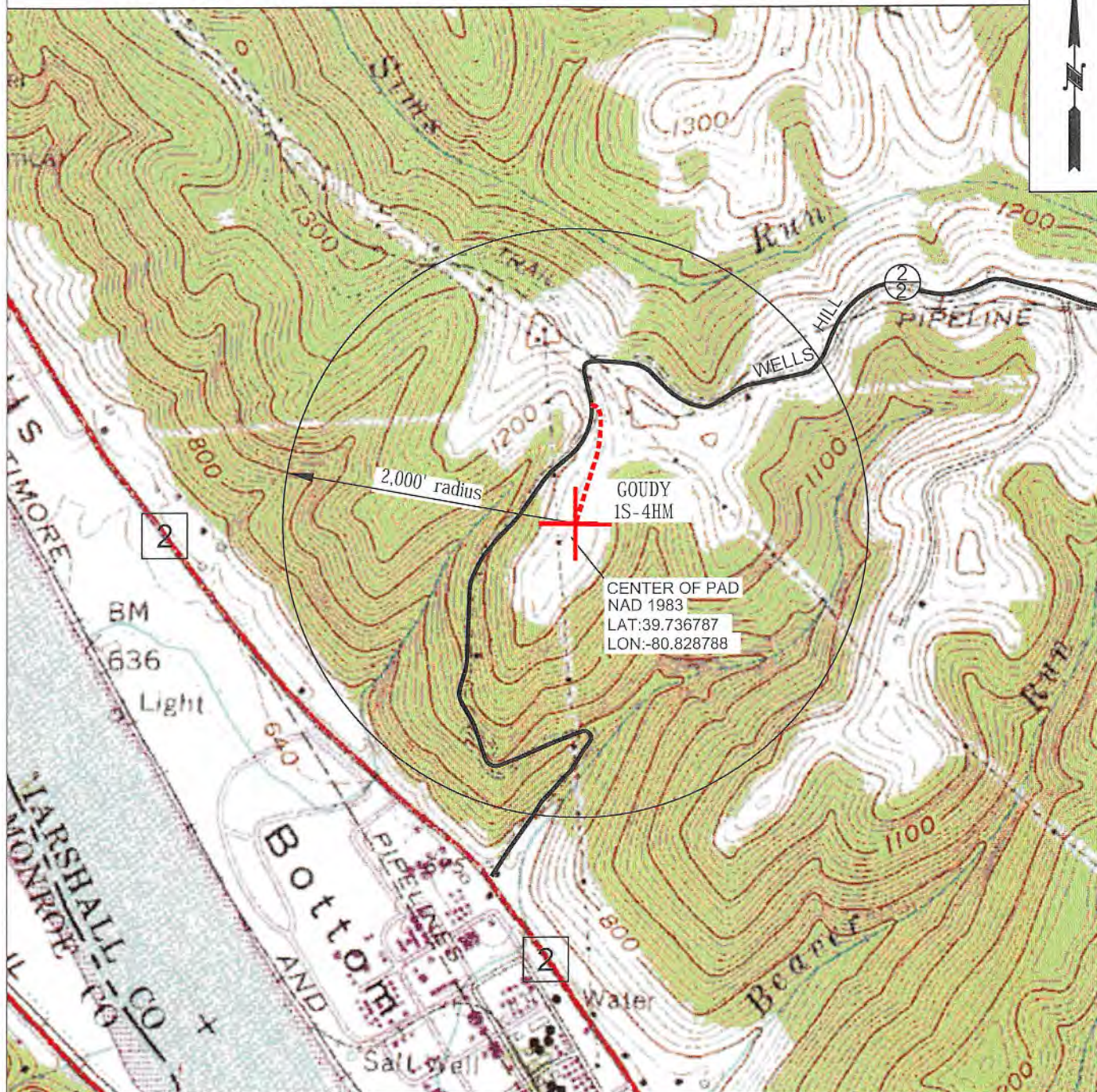
WV Dept. of Environmental Protection

WW-6A

PROPOSED GOUDY 1S-4HM

SUPPLEMENT PG 1

There appears to be no (0) possible water source within 2,000'.



JUN 24 2020

OPERATOR	494510851	TOPO SECTION	LEASE NAME
TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317		NEW MARTINSVILLE 7.5'	GOUDY
SCALE:		DATE:	
1" = 1000'		DATE: 05/21/2018	

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF INTENT TO DRILL

Pursuant to W. Va. Code § 22-6A-16(b), the Notice of Intent to Drill is only required if the notice requirements of W. Va. Code § 22-6A-10(a) have NOT been met or if the Notice of Intent to Drill requirement has NOT been waived in writing by the surface owner.

Notice Time Requirement: Notice shall be provided at least TEN (10) days prior to filing a permit application.
Date of Notice: 06/12/2020 **Date Permit Application Filed:** 06/22/2020

Delivery method pursuant to West Virginia Code § 22-6A-16(b)

HAND DELIVERY CERTIFIED MAIL RETURN RECEIPT REQUESTED

Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: *Provided*, That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner: *Provided, however*, That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

Notice is hereby provided to the SURFACE OWNER(s):

Name: TH Exploration III, LLC
Address: 1320 S. University Drive, Suite 500
Fort Worth, TX 76107

Name: COVESTRO, LLC (formerly Bayer Material Science, LLC)
Address: 1 Covestro Circle
Pittsburgh, PA 15272

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(b), notice is hereby given that the undersigned well operator has an intent to enter upon the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: West Virginia UTM NAD 83 Easting: 514,679.21
County: Marshall Northing: 4,398,587.06
District: Franklin Public Road Access: Wells Hill Road (CR 2/2)
Quadrangle: New Martinsville 7.5' Generally used farm name: TH Exploration III, LLC
Watershed: French Creek - Ohio River

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(b), this notice shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

Well Operator: Tug Hill Operating, LLC
Address: 380 Southpointe Boulevard, Plaza II, Suite 200
Canonsburg, PA 15317
Telephone: 724-749-8388
Email: amiller@tug-hilltop.com
Facsimile: 724-338-2030

Authorized Representative: Amy L. Miller
Address: 380 Southpointe Boulevard, Plaza II, Suite 200
Canonsburg, PA 15317
Telephone: 724-749-8388
Email: amiller@tug-hilltop.com
Facsimile: 724-338-2030

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

Office of Oil and Gas
JUN 24 2020
WV Department of Environmental Protection

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF PLANNED OPERATION

Notice Time Requirement: notice shall be provided no later than the **filing date of permit application.**

Date of Notice: 06/19/2020 **Date Permit Application Filed:** 06/22/2020

Delivery method pursuant to West Virginia Code § 22-6A-16(c)

- CERTIFIED MAIL HAND
 RETURN RECEIPT REQUESTED DELIVERY

Pursuant to W. Va. Code § 22-6A-16(c), no later than the date for filing the permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner whose land will be used for the drilling of a horizontal well notice of the planned operation. The notice required by this subsection shall include: (1) A copy of this code section; (2) The information required to be provided by subsection (b), section ten of this article to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. (d) The notices required by this section shall be given to the surface owner at the address listed in the records of the sheriff at the time of notice.

Notice is hereby provided to the SURFACE OWNER(s)

(at the address listed in the records of the sheriff at the time of notice):

Name: TH Exploration III, LLC
Address: 1320 S. University Drive, Suite 500
Fort Worth, TX 76107

Name: Covestro, LLC
Address: 1 Covestro Circle
Pittsburgh, PA 15272

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>514,679.21</u>
County:	<u>Marshall</u>		Northing:	<u>4,398,587.06</u>
District:	<u>Franklin</u>	Public Road Access:	<u>Wells Hill Road (County Route 2/2)</u>	
Quadrangle:	<u>New Martinsville 7.5'</u>	Generally used farm name:	<u>PPG Industries, Inc.</u>	
Watershed:	<u>French Creek - Ohio River (HUC 10)</u>			

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by **W. Va. Code § 22-6A-10(b)** to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Operator: Tug Hill Operating, LLC
Telephone: 724-749-8388
Email: amiller@tug-hillop.com

Address: 380 Southpointe Boulevard, Plaza II, Suite 200
Canonsburg, PA 15317
Facsimile: 724-338-2030

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Office of Oil and Gas

JUN 24 2020

West Virginia Department of
Environmental Protection



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

Byrd E. White, III
Secretary of Transportation/
Commissioner of Highways

June 22, 2020

Jimmy Wriston, P. E.
Deputy Secretary/
Deputy Commissioner

James A. Martin, Chief
Office of Oil and Gas
Department of Environmental Protection
601 57th Street, SE
Charleston, WV 25304

Subject: DOH Permit for the Goudy Pad, Marshall County
Goudy 1S-4HM Well Site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2012-0518 which has been issued to Tug Hill Operating for access to the State Road for a well site located off Marshall County Route 2/2 S.I.S.

This operator is in compliance with §22-6A-20 of the WV Code. Operator has signed a STATEWIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated October 1, 2018.

Very Truly Yours,

A handwritten signature in blue ink that reads "Gary K. Clayton".

Gary K. Clayton, P.E.
Regional Maintenance Engineer
Central Office O&G Coordinator

Cc: Amy Miller
Tug Hill Operating
CH, OM, D-6
File



PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Goudy 1S-4HM

PRODUCT NAME:	CHEMICAL DESCRIPTION:	PRODUCT USE:	HAZARDOUS COMPONENT:
GBW-20C	Hemicellulase Breaker	Breaker - Water	None
ALPHA 1427		Biocide	Glutaraldehyde – CAS#000111-30-8 Quaternary ammonium chloride CAS# 007173-51-5 Alky dimethyl benzyl ammonium Chloride (C12-16) – CAS#068424-85-1 Ethanol – CAS# 000064-17-5 Water – CAS# 007732-18-5
FRAC SAND	Silica Sand (various Mesh sizes)	Proppant	Crystalline silica (quartz) CAS# 14808-60-7
S-8C, Sand	Silica Sand (100 mesh)	Sand	Silica – CAS# 14808-60-7
GW-3LDF		Gellant - Water	Petroleum Distillate Blend – Proprietary, (Not Associated with Diesel Fuel) Guar gum – CAS# 009000-30-0
FRW-18		Friction Reducer	Hydrotreated light distillate CAS# 064742-47-8
Scaletrol		Scale Inhibitor	Ethylene glycol – CAS# 000107-21-1 Diethylene glycol – CAS# 000111-46-6

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Office of Oil and Gas
JUN 24 2020
WV Department of
Environmental Protection

Well Site

Construction Plan, &
 Permit Control Plans
 Marshall County
 in District
 39.73678670°
 -80.82878798°
 Ohio River Watershed

Pertinent Site Information

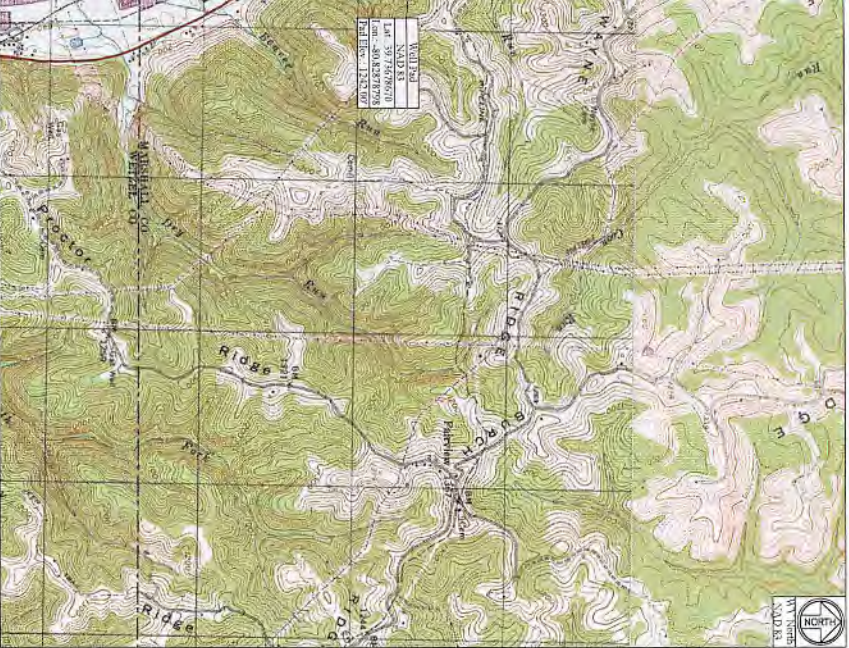
Goudy Well Site
 Emergency Number: 304-845-1920
 Franklin District, Marshall County, WV
 Watershed: French Creek - Ohio River Watershed
 Tug Hill Contact Number: 1-817-652-3400

Permitting Issue for Permitting

Property Owner Information - Goudy Well Site

Owner	Tax Parcel	Well Pad	Access Road	Driveway	Access	Well Exposure	Well Diameter
French Hill Farms LLC	25-15	5.87	0.00	1.64	1.66	8.17	
WV Permitting Inc							
Site Roads (Ac)	3.81	1.01	1.64	3.10	11.55		

WV State Plane Coordinate System
 North Zone, NAD 83
 Elevations based on NAVD83
 Published by Survey Grade GPS
 and GPS Post-Processing



Goudy Well Site Quantities

Description	Dist. (CY)	Imp. (CY)	Spill (CY)	Barren (CY)	Bank Slope	Length of Slope
Well Pad Construction	1.81	84.07	2,500.00	N/A	N/A	N/A
Access Road Construction	2,500.00	47.00	2,500.00	N/A	N/A	N/A
Excavation	2,527.25	728.58	2,500.00	N/A	N/A	N/A
Total	7,355.06	1,259.65	7,500.00			

Access Road

Dist. (Feet)	Imp. (CY)	Spill (CY)	Barren (CY)
25-2	453.07		
Existing Access Road			

Disturbed Area

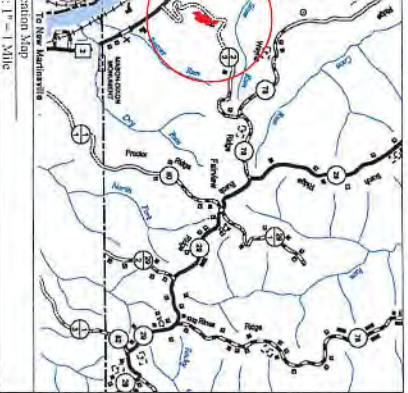
Well Pad Construction	3.81 Ac
Access Road Construction	1.01 Ac
Excavation	3.10 Ac
Driveway	1.66 Ac
Total Disturbed Area	11.58 Ac

Additional Information

Total Wooded Area Disturbed	17.07 Ac
Total Linear Feet of Access Road	465.07'

Site Locations (NAD 83)

Structure	Easting (DD)	Northing (DD)
Site Entrance	4977926755	4619258828
Center of Well Pad	5073583876	4612231799



Well Location Restrictions

All Pad construction complies with the following restrictions

- *250' from an existing well or developed spring used for human or domestic animals
- *425' from an existing building or barn greater than 2,500 SF used for public or dairy purposes from the center of the pad
- *500' from the edge of adjacent to a naturally reproducing wood stream
- *1,000' of a surface or ground water table to a public water supply.

Well Location Restrictions of WV Code 22-6-4-12)



Zachary C. Shivers
 PROFESSIONAL ENGINEER
 STATE OF WEST VIRGINIA
 License No. 22214

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Zachary C. Shivers
 Kevin Shivers, P.E.
 Kevin Shivers, P.E.
 Kevin Shivers, P.E.
 Kevin Shivers, P.E.

Sheet	Description
1	Cover Sheet
VI	Schedule of Quantities
NI-N4	Site Notes
2	Pre-Construction Site Conditions
3	Site SMI Map
4	Overall Site Exhibit
5	Overall Plan View
6-7	Tree Key Exhibit
8	Plan View
9-10	Cross Sections - Well Pad
11	Cross Sections - Access Road
12	Geotechnical Exhibit
G1-G2	Landowner Disturbed Area Exhibit
L1	Site Reclamation
SI	Production Exhibit
MI-M3	Erosion and Sediment Control Details
DI-D2	Access Road Details
K1	Pad Details

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 OFFICE OF THE STATE CLERK
 JUN 24 2020
 WV Department of Environmental Protection

Kelly Sullivan PROJECT MANAGER

TUG HILL OPERATING

THIS DOCUMENT PREPARED FOR TUG HILL OPERATING

Date: 05-16-2018

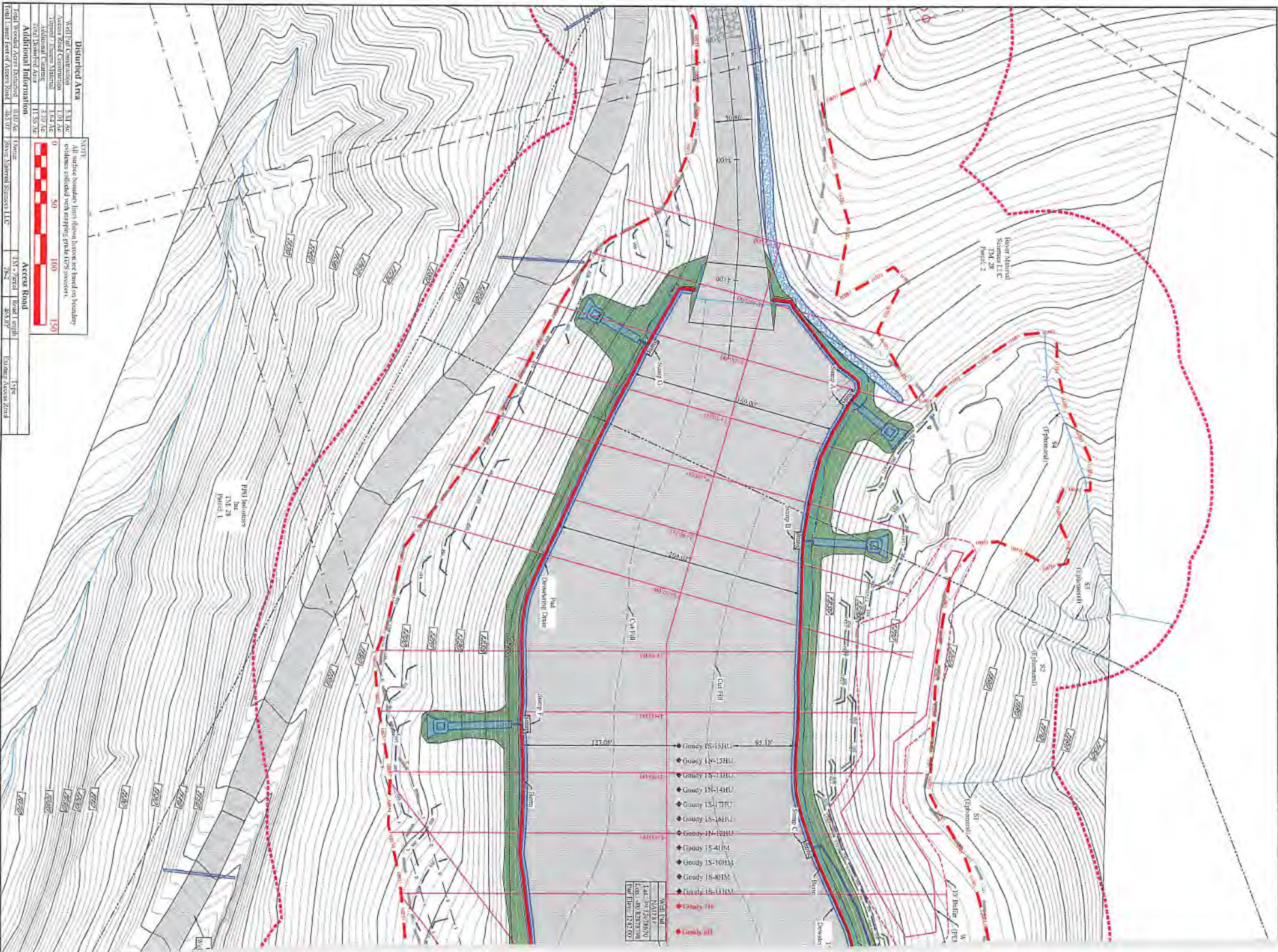
Revision: Design

Cover Sheet

Goudy Well Site

Franklin District
 Marshall County, WV

Date: 05/16/2018
 Scale: As Shown
 Drawn By: ZS
 File No:
 Sheet 1 of 12



Goudy Well Site
Tug Hill Operating
Exhibit A: Final Design: Issue for Permitting



WVDEP 00G
ACCEPTED AS-BUILT
6 / 19 / 2018

Parcel 13



Date	Revision
05-16-2018	Design

TUG HILL
OPERATING



THIS DOCUMENT
PREPARED FOR
TUG HILL
OPERATING

Kelly Sweeney
REGISTERED PROFESSIONAL ENGINEER
NO. 10428

Site Plan
Goudy Well Site
Franklin District
Marshall County, WV

Date: 05/16/2018
Scale: As Shown
Designed By: ZS
File No.
Sheet 10 of 12