



west virginia department of environmental protection

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

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

Wednesday, November 17, 2021
WELL WORK PERMIT
Horizontal 6A / New Drill

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

Re: Permit approval for BRECKENRIDGE S-18HU
47-051-02397-00-00

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: BRECKENRIDGE S-18HU
Farm Name: CNX LAND LLC
U.S. WELL NUMBER: 47-051-02397-00-00
Horizontal 6A New Drill
Date Issued: 11/17/2021

Promoting a healthy environment.

11/19/2021



west virginia department of environmental protection

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

Randall M. Albert, Chairman
dep.wv.gov

November 5, 2021

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

RE: Application for Deep Well Permit – API #47-051-02397

COMPANY: Tug Hill Operating, LLC

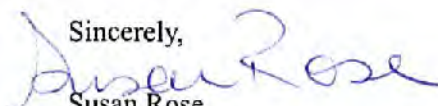
FARM: CNX Land, LLC Breckenridge S-18HU

COUNTY: Marshall DISTRICT: Cameron QUAD: Glen Easton

The deep well review of the application for the above company is Approved to drill to Trenton for Point Pleasant completion. Pooling Docket No. 302-306.

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

1. Comments to Notice of Deviation filed? Yes. Docket No. 302-306.
2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners? Yes
3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells: **yes
4. Provided a plat showing that the productive interval of the well meets the requirements of the Rules of the Commission W. Va. C.S.R. § 39-1-4.2.

Sincerely,

Susan Rose
Administrator

**Hudson S-15HU 47-051-02328; Hudson S-16HU 47-051-02329; Breckenridge S-17HU 47-051-02396; Breckenridge S-19HU 47-051-02398; Breckenridge S-20HU 47-051-02399; Breckenridge S-21HU 47-051-02400; Breckenridge S-22HU 47-051-02401; Breckenridge S-23HU 47-051-02402

11/19/2021

PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

CONDITIONS

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than one hundred (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.
8. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.
9. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
10. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

API Number: _____

PERMIT CONDITIONS

11. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, completion of any other permitted well work, and completion of the well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov.

11/19/2021

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 Cameron Glen Easton 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Breckenridge S-18HU Well Pad Name: Breckenridge

3) Farm Name/Surface Owner: CNX Land, LLC Public Road Access: CR 62

4) Elevation, current ground: 1380' Elevation, proposed post-construction: 1370.10'

5) Well Type (a) Gas Oil Underground Storage

Other

(b) If Gas Shallow Deep

Horizontal

6) Existing Pad: Yes or No No *B.S. 8-12-21*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Point Pleasant is the target formation at a depth of 11,794' - 11,916', thickness of 122' and anticipated pressure of approx. 7,500 psi.

8) Proposed Total Vertical Depth: 12,066'

9) Formation at Total Vertical Depth: Trenton, plug back to Reedsville

10) Proposed Total Measured Depth: 22,594' ✓

11) Proposed Horizontal Leg Length: 9,906.76' ✓

12) Approximate Fresh Water Strata Depths: 70; 1,048' ✓

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

14) Approximate Saltwater Depths: 1,515' ✓

15) Approximate Coal Seam Depths: Sewickley Coal - 952' and Pittsburgh Coal - 1042' ✓

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: Marshall County Mine
Depth: Pittsburgh coal - 1042' and subsea level - 328'
Seam: Pittsburgh
Owner: Murray Energy Corporation

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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/Coal	20"	NEW	J55	106.5#	1,150'	1,150' ✓	1839ft^3(CTS)
Intermediate 1	13 3/8"	NEW	J55	54.5#	3,000'	3,000' ✓	2113ft^3(CTS)
Intermediate 2	9 5/8"	NEW	HPP110	47#	11,023'	11,023' ✓	3601ft^3(CTS)
Production	5 1/2"	NEW	P110	23#	22,594'	22,594' ✓	5363ft^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#	11,846'		
Liners							

B.S. 8-12-21 ✓

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/Coal	20"	26#	.5	2,410	1,928	SEE #24	1.2
Intermediate 1	13 3/8"	17 1/2"	.38	2,740	2,192	SEE #24	1.2
Intermediate 2	9 5/8"	12 1/4"	.472	10,730	6,968	SEE #24	1.33
Production	5 1/2"	8 1/2"	.415	16,510	13,208	SEE #24	1.17/1.19
Tubing	2 7/8"			14,530	11,624		
Liners							

PACKERS

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

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

Drill through the Point Pleasant and TD Pilot Hole 150' into the Trenton. Log vertical section and run a solid cement plug back to proposed KOP (11,346'). 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 24,800,000 lb. proppant and 450,000 bbls of water. Max rate = 80bpm; max psi = 9,000#.

B.S. 8-12-21

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 45.40

22) Area to be disturbed for well pad only, less access road (acres): 8.21

23) Describe centralizer placement for each casing string:

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

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

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

25) Proposed borehole conditioning procedures:

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

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*Note: Attach additional sheets as needed.

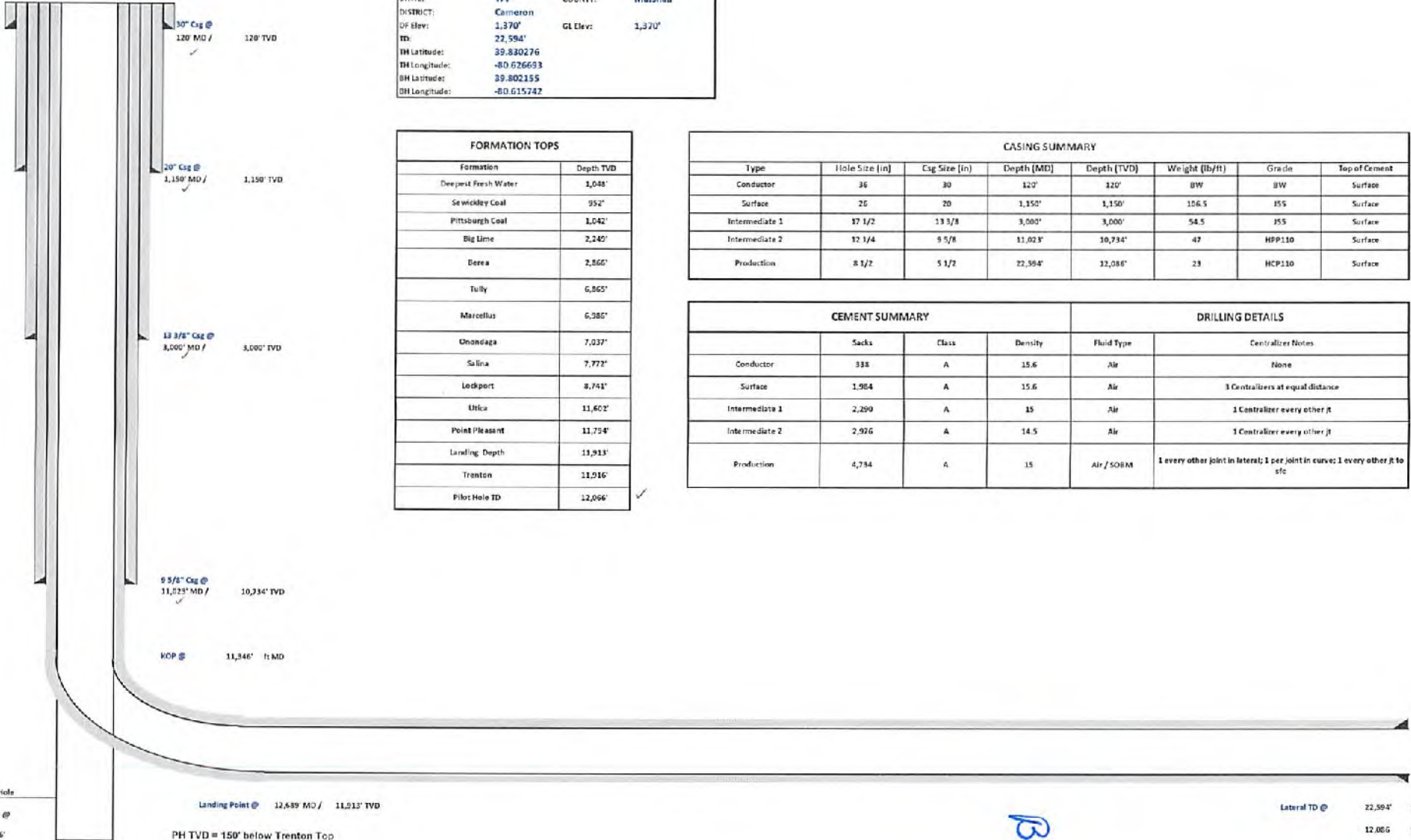


WELL NAME:	Breckenridge S-18HU		
STATE:	WV	COUNTY:	Marshall
DISTRICT:	Cameron		
DF Elev:	1,370'	GL Elev:	1,370'
th:	22,594'		
TH Latitude:	39.830276		
TH Longitude:	-80.626693		
BH Latitude:	39.802155		
BH Longitude:	-80.615742		

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	1,048'
Sewickley Coal	952'
Pittsburgh Coal	1,042'
Big Lime	2,240'
Berea	2,566'
Tully	6,865'
Marcellus	6,985'
Onondaga	7,037'
Salina	7,772'
Lodport	8,741'
Utica	11,602'
Point Pleasant	11,754'
Landing Depth	13,913'
Trenton	11,916'
Pilot Hole TD	12,066'

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	26	20	1,150'	1,150'	106.5	J55	Surface
Intermediate 1	17 1/2	13 3/8	3,000'	3,000'	54.5	J55	Surface
Intermediate 2	12 1/4	9 5/8	11,023'	10,734'	47	HPP110	Surface
Production	8 1/2	5 1/2	22,594'	12,086'	23	HCP110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	333	A	15.6	Air	None
Surface	1,984	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	2,299	A	15	Air	1 Centralizer every other ft
Intermediate 2	2,976	A	14.5	Air	1 Centralizer every other ft
Production	4,734	A	15	Air / SOBIM	1 every other joint in lateral; 1 per joint in curve; 1 every other ft to etc



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**Tug Hill Operating, LLC Casing and Cement Program
Breckenridge S-18HU**

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	35"	120'	CTS
Surface	20"	J55	25"	1,150'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	3,000'	CTS
Intermediate 2	9 5/8"	HPP110	12 1/4"	11,023'	CTS
Production	5 1/2"	HCP110	8 1/2"	22,594'	CTS

Cement

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

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

Intermediate 2: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.99

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

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Planning Report - Geographic

Database:	DB_Dec2220_v16	Local Co-ordinate Reference:	Well Breckenridge S-18 HU (slot Q)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1370.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1370.00ft
Site:	Breckenridge (1 row)	North Reference:	Grid
Well:	Breckenridge S-18 HU (slot Q)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev5		

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

Site	Breckenridge (1 row)				
Site Position:		Northing:	14,465,184.76 usft	Latitude:	39.83037401
From:	Lat/Long	Easting:	1,745,068.18 usft	Longitude:	-80.62723379
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "		

Well	Breckenridge S-18 HU (slot Q)					
Well Position	+N/-S	0.00 ft	Northing:	14,465,149.77 usft	Latitude:	39.83027617
	+E/-W	0.00 ft	Easting:	1,745,220.16 usft	Longitude:	-80.62669299
Position Uncertainty	0.00 ft	Wellhead Elevation:	ft	Ground Level:	1,370.00 ft	
Grid Convergence:						

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	7/27/2021	-8.721	66.550	51,748.38352786

Design	rev5			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	163.80

Plan Survey Tool Program	Date			
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	22,594.44	rev5 (Original Hole)	

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Project:	Marshall County, West Virginia	MD Reference:	GL @ 1370.00ft
Site:	Breckenridge (1 row)	North Reference:	Grid
Well:	Breckenridge S-18 HU (slot Q)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev5		

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.000	
3,600.00	10.00	253.00	3,597.47	-12.72	-41.62	2.00	2.00	0.00	253.000	
4,400.00	10.00	253.00	4,365.31	-53.34	-174.47	0.00	0.00	0.00	0.000	
4,511.70	12.00	247.76	4,494.96	-60.57	-194.49	2.00	1.79	-4.69	-29.151	
7,072.71	12.00	247.76	7,000.00	-262.10	-687.35	0.00	0.00	0.00	0.000	
7,441.33	19.36	246.18	7,354.66	-301.34	-778.84	2.00	2.00	-0.43	-4.065	
11,345.50	19.36	246.18	11,039.05	-624.06	-1,962.68	0.00	0.00	0.00	0.000	
12,166.28	50.00	166.70	11,732.30	-1,208.94	-2,018.48	6.00	3.73	-9.68	-66.149	
12,689.46	89.00	150.00	11,913.13	-1,650.27	-1,833.29	8.00	7.45	-3.19	-25.506	
22,594.44	89.00	150.00	12,066.00	-10,226.90	3,118.49	0.00	0.00	0.00	0.000	Breckenridge S-18HU

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Planning Report - Geographic

Database: DB_Dec2220_v16
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Breckenridge (1 row)
 Well: Breckenridge S-18 HU (slot Q)
 Wellbore: Original Hole
 Design: rev5

Local Co-ordinate Reference: Well Breckenridge S-18 HU (slot Q)
 TVD Reference: GL @ 1370.00ft
 MD Reference: GL @ 1370.00ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
100.00	0.00	0.00	100.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
200.00	0.00	0.00	200.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
300.00	0.00	0.00	300.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
400.00	0.00	0.00	400.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
500.00	0.00	0.00	500.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
600.00	0.00	0.00	600.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
700.00	0.00	0.00	700.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
800.00	0.00	0.00	800.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
900.00	0.00	0.00	900.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
1,600.00	0.00	0.00	1,600.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
1,700.00	0.00	0.00	1,700.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
1,800.00	0.00	0.00	1,800.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
1,900.00	0.00	0.00	1,900.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
2,000.00	0.00	0.00	2,000.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
2,100.00	0.00	0.00	2,100.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
2,200.00	0.00	0.00	2,200.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
2,300.00	0.00	0.00	2,300.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
2,400.00	0.00	0.00	2,400.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
2,500.00	0.00	0.00	2,500.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
2,600.00	0.00	0.00	2,600.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
2,700.00	0.00	0.00	2,700.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
2,800.00	0.00	0.00	2,800.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
2,900.00	0.00	0.00	2,900.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
3,000.00	0.00	0.00	3,000.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
3,100.00	0.00	0.00	3,100.00	0.00	0.00	14,465,149.77	1,745,220.16	39.83027617	-80.62669299
KOP Begin 2°/100' build									
3,200.00	2.00	253.00	3,199.98	-0.51	-1.67	14,465,149.26	1,745,218.49	39.83027479	-80.62669094
3,300.00	4.00	253.00	3,299.84	-2.04	-6.67	14,465,147.73	1,745,213.48	39.83027065	-80.62671679
3,400.00	6.00	253.00	3,399.45	-4.59	-15.01	14,465,145.18	1,745,205.15	39.83026374	-80.62674651
3,500.00	8.00	253.00	3,498.70	-8.15	-26.66	14,465,141.62	1,745,193.49	39.83025409	-80.62678808
3,600.00	10.00	253.00	3,597.47	-12.72	-41.62	14,465,137.04	1,745,178.54	39.83024170	-80.62684143
Begin 10.00° tangent									
3,700.00	10.00	253.00	3,695.95	-17.80	-58.23	14,465,131.97	1,745,161.93	39.83022795	-80.62690055
3,800.00	10.00	253.00	3,794.43	-22.88	-74.03	14,465,126.88	1,745,145.32	39.83021420	-80.62695988
3,900.00	10.00	253.00	3,892.91	-27.96	-91.44	14,465,121.81	1,745,128.72	39.83020045	-80.62701910
4,000.00	10.00	253.00	3,991.39	-33.03	-108.05	14,465,116.73	1,745,112.11	39.83018669	-80.62707833
4,100.00	10.00	253.00	4,089.87	-38.11	-124.65	14,465,111.65	1,745,095.51	39.83017294	-80.62713755
4,200.00	10.00	253.00	4,188.35	-43.19	-141.26	14,465,106.58	1,745,078.90	39.83015919	-80.62719677
4,300.00	10.00	253.00	4,286.83	-48.26	-157.86	14,465,101.50	1,745,062.29	39.83014544	-80.62725600
4,400.00	10.00	253.00	4,385.31	-53.34	-174.47	14,465,096.43	1,745,045.69	39.83013169	-80.62731522
Begin 2°/100' build/turn									
4,500.00	11.79	248.23	4,483.51	-59.67	-192.28	14,465,090.10	1,745,027.90	39.83011451	-80.62737868
4,511.70	12.00	247.78	4,494.96	-60.57	-194.49	14,465,089.20	1,745,025.66	39.83011206	-80.62738666
Begin 12.00° tangent									
4,600.00	12.00	247.76	4,581.33	-67.52	-211.49	14,465,082.25	1,745,008.67	39.83009317	-80.62744729
4,700.00	12.00	247.76	4,679.14	-75.38	-230.73	14,465,074.38	1,744,989.42	39.83007178	-80.62751595
4,800.00	12.00	247.76	4,776.96	-83.25	-249.98	14,465,066.51	1,744,970.18	39.83005039	-80.62758461



Planning Report - Geographic

Database: DB_Dec2220_v16
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Breckenridge (1 row)
 Well: Breckenridge S-18 HU (slot Q)
 Wellbore: Original Hole
 Design: rev5

Local Co-ordinate Reference: Well Breckenridge S-18 HU (slot Q)
 TVD Reference: GL @ 1370.00ft
 MD Reference: GL @ 1370.00ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,800.00	12.00	247.76	4,874.77	-91.13	-269.22	14,465,058.64	1,744,950.84	39.83002900	-80.62765328
5,000.00	12.00	247.76	4,972.59	-99.00	-288.46	14,465,050.77	1,744,931.69	39.83000761	-80.62772194
5,100.00	12.00	247.76	5,070.40	-106.87	-307.71	14,465,042.90	1,744,912.45	39.82998622	-80.62779060
5,200.00	12.00	247.76	5,168.22	-114.74	-326.95	14,465,035.03	1,744,893.20	39.82996483	-80.62785926
5,300.00	12.00	247.76	5,266.03	-122.60	-346.20	14,465,027.16	1,744,873.96	39.82994343	-80.62792793
5,400.00	12.00	247.76	5,363.85	-130.47	-365.44	14,465,019.29	1,744,854.71	39.82992204	-80.62799659
5,500.00	12.00	247.76	5,461.66	-138.34	-384.69	14,465,011.42	1,744,835.47	39.82990065	-80.62806525
5,600.00	12.00	247.76	5,559.47	-146.21	-403.93	14,465,003.56	1,744,816.23	39.82987926	-80.62813392
5,700.00	12.00	247.76	5,657.29	-154.08	-423.18	14,464,995.69	1,744,796.98	39.82985787	-80.62820258
5,800.00	12.00	247.76	5,755.10	-161.95	-442.42	14,464,987.82	1,744,777.74	39.82983648	-80.62827124
5,900.00	12.00	247.76	5,852.92	-169.82	-461.66	14,464,979.95	1,744,758.49	39.82981509	-80.62833990
6,000.00	12.00	247.76	5,950.73	-177.69	-480.91	14,464,972.08	1,744,739.25	39.82979370	-80.62840857
6,100.00	12.00	247.76	6,048.55	-185.56	-500.15	14,464,964.21	1,744,720.00	39.82977231	-80.62847723
6,200.00	12.00	247.76	6,146.36	-193.43	-519.40	14,464,956.34	1,744,700.76	39.82975092	-80.62854589
6,300.00	12.00	247.76	6,244.18	-201.30	-538.64	14,464,948.47	1,744,681.51	39.82972953	-80.62861455
6,400.00	12.00	247.76	6,341.99	-209.17	-557.89	14,464,940.60	1,744,662.27	39.82970814	-80.62868322
6,500.00	12.00	247.76	6,439.81	-217.04	-577.13	14,464,932.73	1,744,643.03	39.82968674	-80.62875188
6,600.00	12.00	247.76	6,537.62	-224.90	-596.38	14,464,924.86	1,744,623.78	39.82966535	-80.62882054
6,700.00	12.00	247.76	6,635.44	-232.77	-615.62	14,464,916.99	1,744,604.54	39.82964396	-80.62888920
6,800.00	12.00	247.76	6,733.25	-240.64	-634.86	14,464,909.13	1,744,585.29	39.82962257	-80.62895787
6,900.00	12.00	247.76	6,831.07	-248.51	-654.11	14,464,901.26	1,744,566.05	39.82960118	-80.62892653
7,000.00	12.00	247.76	6,928.88	-256.38	-673.35	14,464,893.39	1,744,546.80	39.82957979	-80.62899519
7,072.71	12.00	247.76	7,000.00	-262.10	-687.35	14,464,887.67	1,744,532.81	39.82956423	-80.62914511
Begin 2°/100' build/turn									
7,100.00	12.54	247.58	7,028.67	-264.31	-692.71	14,464,885.46	1,744,527.45	39.82955824	-80.62916426
7,200.00	14.54	247.04	7,123.88	-273.35	-714.31	14,464,876.42	1,744,505.85	39.82953356	-80.62924133
7,300.00	16.54	246.62	7,220.22	-283.89	-738.94	14,464,865.88	1,744,481.22	39.82950498	-80.62932919
7,400.00	18.53	246.30	7,315.57	-295.93	-766.56	14,464,853.84	1,744,453.60	39.82947224	-80.62942775
7,441.33	19.36	246.18	7,354.66	-301.34	-778.84	14,464,848.43	1,744,441.32	39.82945753	-80.62947158
Begin 19.36° tangent									
7,500.00	19.36	246.18	7,410.01	-309.19	-796.63	14,464,840.58	1,744,423.53	39.82943616	-80.62953507
7,600.00	19.36	246.18	7,504.36	-322.58	-826.96	14,464,827.19	1,744,393.20	39.82939974	-80.62964329
7,700.00	19.36	246.18	7,598.70	-335.97	-857.29	14,464,813.80	1,744,362.87	39.82936331	-80.62975151
7,800.00	19.36	246.18	7,693.05	-349.36	-887.61	14,464,800.41	1,744,332.54	39.82932689	-80.62985973
7,900.00	19.36	246.18	7,787.39	-362.75	-917.94	14,464,787.02	1,744,302.22	39.82929046	-80.62996795
8,000.00	19.36	246.18	7,881.74	-376.14	-948.27	14,464,773.63	1,744,271.89	39.82925404	-80.63007617
8,100.00	19.36	246.18	7,975.08	-389.53	-978.60	14,464,760.24	1,744,241.56	39.82921762	-80.63018438
8,200.00	19.36	246.18	8,070.43	-402.91	-1,008.92	14,464,746.85	1,744,211.23	39.82918119	-80.63029260
8,300.00	19.36	246.18	8,164.77	-416.30	-1,039.25	14,464,733.46	1,744,180.91	39.82914477	-80.63040082
8,400.00	19.36	246.18	8,259.12	-429.69	-1,069.58	14,464,720.08	1,744,150.58	39.82910834	-80.63050904
8,500.00	19.36	246.18	8,353.46	-443.06	-1,099.91	14,464,706.69	1,744,120.25	39.82907192	-80.63061726
8,600.00	19.36	246.18	8,447.81	-456.47	-1,130.23	14,464,693.30	1,744,089.92	39.82903549	-80.63072548
8,700.00	19.36	246.18	8,542.15	-469.86	-1,160.56	14,464,679.91	1,744,059.60	39.82899907	-80.63083370
8,800.00	19.36	246.18	8,636.50	-483.25	-1,190.89	14,464,666.52	1,744,029.27	39.82896264	-80.63094191
8,900.00	19.36	246.18	8,730.84	-496.64	-1,221.22	14,464,653.13	1,743,998.94	39.82892622	-80.63105013
9,000.00	19.36	246.18	8,825.19	-510.02	-1,251.54	14,464,639.74	1,743,968.61	39.82888979	-80.63115835
9,100.00	19.36	246.18	8,919.53	-523.41	-1,281.87	14,464,626.35	1,743,938.29	39.82885337	-80.63126657
9,200.00	19.36	246.18	9,013.88	-536.80	-1,312.20	14,464,612.97	1,743,907.96	39.82881694	-80.63137478
9,300.00	19.36	246.18	9,108.22	-550.19	-1,342.53	14,464,599.58	1,743,877.63	39.82878052	-80.63148300
9,400.00	19.36	246.18	9,202.57	-563.58	-1,372.85	14,464,586.19	1,743,847.30	39.82874409	-80.63159122
9,500.00	19.36	246.18	9,296.91	-576.97	-1,403.18	14,464,572.80	1,743,816.98	39.82870767	-80.63169944
9,600.00	19.36	246.18	9,391.26	-590.35	-1,433.51	14,464,559.41	1,743,786.65	39.82867124	-80.63180765
9,700.00	19.36	246.18	9,485.60	-603.75	-1,463.84	14,464,546.02	1,743,756.32	39.82863482	-80.63191587
9,800.00	19.36	246.18	9,579.95	-617.14	-1,494.16	14,464,532.63	1,743,725.99	39.82859839	-80.63202409



Planning Report - Geographic

Database: DB_Dec2220_v16
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Breckenridge (1 row)
 Well: Breckenridge S-18 HU (slot Q)
 Wellbore: Original Hole
 Design: rev5

Local Co-ordinate Reference: Well Breckenridge S-18 HU (slot Q)
 TVD Reference: GL @ 1370.00ft
 MD Reference: GL @ 1370.00ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,900.00	19.36	246.18	9,674.29	-630.52	-1,524.49	14,464,519.24	1,743,695.67	39.82856196	-80.63213230
10,000.00	19.36	246.18	9,768.64	-643.91	-1,554.82	14,464,505.86	1,743,665.34	39.82852554	-80.63224052
10,100.00	19.36	246.18	9,862.98	-657.30	-1,585.15	14,464,492.47	1,743,635.01	39.82848911	-80.63234874
10,200.00	19.36	246.18	9,957.33	-670.69	-1,615.47	14,464,479.08	1,743,604.68	39.82845269	-80.63245695
10,300.00	19.36	246.18	10,051.67	-684.08	-1,645.80	14,464,465.69	1,743,574.36	39.82841628	-80.63256517
10,400.00	19.36	246.18	10,146.02	-697.47	-1,676.13	14,464,452.30	1,743,544.03	39.82837983	-80.63267339
10,500.00	19.36	246.18	10,240.36	-710.86	-1,706.46	14,464,438.91	1,743,513.70	39.82834341	-80.63278160
10,600.00	19.36	246.18	10,334.71	-724.25	-1,736.78	14,464,425.52	1,743,483.38	39.82830698	-80.63288982
10,700.00	19.36	246.18	10,429.05	-737.63	-1,767.11	14,464,412.13	1,743,453.05	39.82827055	-80.63299804
10,800.00	19.36	246.18	10,523.40	-751.02	-1,797.44	14,464,398.75	1,743,422.72	39.82823413	-80.63310625
10,900.00	19.36	246.18	10,617.74	-764.41	-1,827.77	14,464,385.36	1,743,392.39	39.82819770	-80.63321447
11,000.00	19.36	246.18	10,712.09	-777.80	-1,858.09	14,464,371.97	1,743,362.07	39.82816127	-80.63332268
11,100.00	19.36	246.18	10,806.43	-791.19	-1,888.42	14,464,358.58	1,743,331.74	39.82812484	-80.63343090
11,200.00	19.36	246.18	10,900.78	-804.58	-1,918.75	14,464,345.19	1,743,301.41	39.82808842	-80.63353911
11,300.00	19.36	246.18	10,995.12	-817.97	-1,949.08	14,464,331.80	1,743,271.08	39.82805199	-80.63364733
11,345.50	19.36	246.18	11,038.05	-824.06	-1,962.88	14,464,325.71	1,743,257.28	39.82803542	-80.63366557
Begin 6°/100' build/turn									
11,350.00	19.33	245.37	11,042.30	-824.67	-1,964.24	14,464,325.10	1,743,255.92	39.82803375	-80.63370142
11,400.00	19.28	235.29	11,089.50	-832.70	-1,978.63	14,464,317.07	1,743,241.53	39.82801185	-80.63375280
11,450.00	19.66	227.35	11,136.65	-842.68	-1,991.58	14,464,308.76	1,743,226.48	39.82799377	-80.63379945
11,500.00	20.47	218.92	11,183.62	-855.49	-2,003.37	14,464,294.28	1,743,216.79	39.82794955	-80.63384124
11,550.00	21.85	211.24	11,230.29	-870.18	-2,013.55	14,464,279.59	1,743,206.51	39.82790933	-80.63387807
11,600.00	23.15	204.41	11,276.52	-887.02	-2,022.49	14,464,262.75	1,743,197.67	39.82786318	-80.63390983
11,650.00	24.90	198.43	11,322.20	-905.95	-2,029.89	14,464,243.81	1,743,190.27	39.82781125	-80.63393644
11,700.00	26.37	193.23	11,367.19	-926.85	-2,035.80	14,464,222.82	1,743,184.36	39.82775367	-80.63395781
11,750.00	29.00	188.71	11,411.36	-949.93	-2,040.22	14,464,199.34	1,743,179.94	39.82769061	-80.63397389
11,800.00	31.26	184.78	11,454.61	-974.84	-2,043.14	14,464,174.93	1,743,177.02	39.82762223	-80.63398465
11,850.00	33.52	181.34	11,496.81	-1,001.61	-2,044.54	14,464,148.16	1,743,175.62	39.82754873	-80.63399004
11,900.00	35.07	178.30	11,537.85	-1,030.17	-2,044.43	14,464,119.60	1,743,175.73	39.82747030	-80.63399005
11,950.00	38.59	175.61	11,577.60	-1,060.44	-2,042.80	14,464,089.33	1,743,177.36	39.82738716	-80.63398469
12,000.00	41.16	173.20	11,615.97	-1,092.33	-2,039.66	14,464,057.44	1,743,180.50	39.82729954	-80.63397397
12,050.00	43.78	171.03	11,652.66	-1,125.76	-2,035.02	14,464,024.01	1,743,185.14	39.82720768	-80.63395791
12,100.00	46.43	169.06	11,688.14	-1,160.64	-2,028.86	14,463,989.13	1,743,191.28	39.82711183	-80.63393657
12,150.00	49.12	167.26	11,721.74	-1,198.87	-2,021.27	14,463,952.90	1,743,198.89	39.82701225	-80.63390999
12,168.28	50.00	166.70	11,732.30	-1,208.94	-2,018.48	14,463,940.83	1,743,201.68	39.82697908	-80.63390023
Begin 8°/100' build/turn									
12,200.00	52.44	165.23	11,753.42	-1,234.44	-2,012.10	14,463,915.33	1,743,208.06	39.82690897	-80.63387788
12,250.00	56.10	163.23	11,782.62	-1,273.49	-2,001.06	14,463,876.28	1,743,219.10	39.82680161	-80.63383912
12,300.00	59.78	161.39	11,809.15	-1,313.85	-1,989.17	14,463,835.92	1,743,231.99	39.82669063	-80.63379381
12,350.00	63.49	159.69	11,832.90	-1,355.32	-1,973.51	14,463,794.45	1,743,246.65	39.82657658	-80.63374218
12,400.00	67.22	158.09	11,853.75	-1,397.70	-1,957.13	14,463,752.07	1,743,263.03	39.82646001	-80.63368448
12,450.00	70.96	156.58	11,871.59	-1,440.79	-1,939.13	14,463,708.98	1,743,281.03	39.82634146	-80.63362099
12,500.00	74.71	155.13	11,888.34	-1,484.37	-1,919.59	14,463,665.40	1,743,300.57	39.82622157	-80.63355201
12,550.00	78.48	153.74	11,897.93	-1,528.23	-1,898.59	14,463,621.54	1,743,321.57	39.82610088	-80.63347789
12,600.00	82.25	152.38	11,908.30	-1,572.17	-1,876.26	14,463,577.60	1,743,343.90	39.82597998	-80.63339696
12,650.00	86.02	151.04	11,911.41	-1,615.96	-1,852.69	14,463,533.82	1,743,367.47	39.82585946	-80.63331567
12,689.46	89.00	150.00	11,913.13	-1,650.27	-1,833.29	14,463,499.50	1,743,386.87	39.82576501	-80.63324709
Begin 89.00° lateral									
12,700.00	89.00	150.00	11,913.31	-1,659.40	-1,828.02	14,463,490.37	1,743,392.14	39.82573988	-80.63322845
12,800.00	89.00	150.00	11,915.06	-1,745.99	-1,778.03	14,463,403.79	1,743,442.13	39.82550153	-80.63305166
12,900.00	89.00	150.00	11,916.80	-1,832.57	-1,728.04	14,463,317.20	1,743,492.12	39.82526317	-80.63287487
13,000.00	89.00	150.00	11,918.55	-1,919.16	-1,678.05	14,463,230.61	1,743,542.11	39.82502462	-80.63269808
13,100.00	89.00	150.00	11,920.29	-2,005.75	-1,628.05	14,463,144.02	1,743,592.11	39.82478648	-80.63252129
13,200.00	89.00	150.00	11,922.04	-2,092.34	-1,578.06	14,463,057.43	1,743,642.10	39.82454811	-80.63234450



Planning Report - Geographic

Database: DB_Dec2220_v16
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Breckenridge (1 row)
 Well: Breckenridge S-18 HU (slot Q)
 Wellbore: Original Hole
 Design: rev5

Local Co-ordinate Reference: Well Breckenridge S-18 HU (slot Q)
 TVD Reference: GL @ 1370.00ft
 MD Reference: GL @ 1370.00ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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WV Department of
 Environmental Protection

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
13,300.00	89.00	150.00	11,923.78	-2,178.93	-1,528.07	14,462,970.84	1,743,692.09	39.82430975	-80.63216771
13,400.00	89.00	150.00	11,925.53	-2,265.52	-1,478.07	14,462,884.25	1,743,742.09	39.82407139	-80.63199083
13,500.00	89.00	150.00	11,927.27	-2,352.11	-1,428.08	14,462,797.66	1,743,792.08	39.82383304	-80.63181415
13,600.00	89.00	150.00	11,929.02	-2,438.70	-1,378.09	14,462,711.07	1,743,842.07	39.82359468	-80.63163736
13,700.00	89.00	150.00	11,930.76	-2,525.29	-1,328.10	14,462,624.49	1,743,892.06	39.82335632	-80.63146058
13,800.00	89.00	150.00	11,932.51	-2,611.88	-1,278.10	14,462,537.90	1,743,942.06	39.82311795	-80.63128380
13,900.00	89.00	150.00	11,934.25	-2,698.47	-1,228.11	14,462,451.31	1,743,992.05	39.82287960	-80.63110702
14,000.00	89.00	150.00	11,936.00	-2,785.05	-1,178.12	14,462,364.72	1,744,042.04	39.82264125	-80.63093024
14,100.00	89.00	150.00	11,937.75	-2,871.64	-1,128.12	14,462,278.13	1,744,092.03	39.82240289	-80.63075347
14,200.00	89.00	150.00	11,939.49	-2,958.23	-1,078.13	14,462,191.54	1,744,142.03	39.82216453	-80.63057669
14,300.00	89.00	150.00	11,941.24	-3,044.82	-1,028.14	14,462,104.95	1,744,192.02	39.82192617	-80.63039992
14,400.00	89.00	150.00	11,942.98	-3,131.41	-978.15	14,462,018.36	1,744,242.01	39.82168781	-80.63022314
14,500.00	89.00	150.00	11,944.73	-3,218.00	-928.15	14,461,931.77	1,744,292.01	39.82144945	-80.63004637
14,600.00	89.00	150.00	11,946.47	-3,304.59	-878.16	14,461,845.19	1,744,342.00	39.82121109	-80.62986960
14,700.00	89.00	150.00	11,948.22	-3,391.18	-828.17	14,461,758.60	1,744,391.99	39.82097273	-80.62969283
14,800.00	89.00	150.00	11,949.96	-3,477.77	-778.17	14,461,672.01	1,744,441.98	39.82073437	-80.62951606
14,900.00	89.00	150.00	11,951.71	-3,564.36	-728.18	14,461,585.42	1,744,491.98	39.82049601	-80.62933930
15,000.00	89.00	150.00	11,953.45	-3,650.95	-678.19	14,461,498.83	1,744,541.97	39.82025765	-80.62916253
15,100.00	89.00	150.00	11,955.20	-3,737.53	-628.20	14,461,412.24	1,744,591.96	39.82001928	-80.62898577
15,200.00	89.00	150.00	11,956.94	-3,824.12	-578.20	14,461,325.65	1,744,641.95	39.81978092	-80.62880900
15,300.00	89.00	150.00	11,958.69	-3,910.71	-528.21	14,461,239.06	1,744,691.95	39.81954255	-80.62863224
15,400.00	89.00	150.00	11,960.43	-3,997.30	-478.22	14,461,152.47	1,744,741.94	39.81930420	-80.62845548
15,500.00	89.00	150.00	11,962.18	-4,083.89	-428.22	14,461,065.88	1,744,791.93	39.81906584	-80.62827872
15,600.00	89.00	150.00	11,963.93	-4,170.48	-378.23	14,460,979.30	1,744,841.93	39.81882747	-80.62810196
15,700.00	89.00	150.00	11,965.67	-4,257.07	-328.24	14,460,892.71	1,744,891.92	39.81858911	-80.62792520
15,800.00	89.00	150.00	11,967.42	-4,343.66	-278.25	14,460,806.12	1,744,941.91	39.81835075	-80.62774845
15,900.00	89.00	150.00	11,969.16	-4,430.25	-228.25	14,460,719.53	1,744,991.90	39.81811238	-80.62757169
16,000.00	89.00	150.00	11,970.91	-4,516.84	-178.26	14,460,632.94	1,745,041.90	39.81787402	-80.62739494
16,100.00	89.00	150.00	11,972.65	-4,603.43	-128.27	14,460,546.35	1,745,091.89	39.81763565	-80.62721819
16,200.00	89.00	150.00	11,974.40	-4,690.01	-78.27	14,460,459.76	1,745,141.88	39.81739729	-80.62704144
16,300.00	89.00	150.00	11,976.14	-4,776.60	-28.28	14,460,373.17	1,745,191.87	39.81715892	-80.62686469
16,400.00	89.00	150.00	11,977.89	-4,863.19	21.71	14,460,286.58	1,745,241.87	39.81692056	-80.62668794
16,500.00	89.00	150.00	11,979.63	-4,949.78	71.70	14,460,200.00	1,745,291.86	39.81668219	-80.62651119
16,600.00	89.00	150.00	11,981.38	-5,036.37	121.70	14,460,113.41	1,745,341.85	39.81644383	-80.62633444
16,700.00	89.00	150.00	11,983.12	-5,122.96	171.69	14,460,026.82	1,745,391.85	39.81620546	-80.62615770
16,800.00	89.00	150.00	11,984.87	-5,209.55	221.68	14,459,940.23	1,745,441.84	39.81596710	-80.62598095
16,900.00	89.00	150.00	11,986.61	-5,296.14	271.68	14,459,853.64	1,745,491.83	39.81572873	-80.62580421
17,000.00	89.00	150.00	11,988.36	-5,382.73	321.67	14,459,767.05	1,745,541.82	39.81549036	-80.62562747
17,100.00	89.00	150.00	11,990.11	-5,469.32	371.66	14,459,680.46	1,745,591.82	39.81525200	-80.62545073
17,200.00	89.00	150.00	11,991.85	-5,555.91	421.65	14,459,593.87	1,745,641.81	39.81501363	-80.62527399
17,300.00	89.00	150.00	11,993.60	-5,642.49	471.65	14,459,507.28	1,745,691.80	39.81477526	-80.62509725
17,400.00	89.00	150.00	11,995.34	-5,729.08	521.64	14,459,420.70	1,745,741.79	39.81453689	-80.62492052
17,500.00	89.00	150.00	11,997.09	-5,815.67	571.63	14,459,334.11	1,745,791.79	39.81429853	-80.62474378
17,600.00	89.00	150.00	11,998.83	-5,902.26	621.63	14,459,247.52	1,745,841.78	39.81406016	-80.62456705
17,700.00	89.00	150.00	12,000.58	-5,988.85	671.62	14,459,160.93	1,745,891.77	39.81382179	-80.62439031
17,800.00	89.00	150.00	12,002.32	-6,075.44	721.61	14,459,074.34	1,745,941.77	39.81358342	-80.62421358
17,900.00	89.00	150.00	12,004.07	-6,162.03	771.60	14,458,987.75	1,745,991.76	39.81334505	-80.62403685
18,000.00	89.00	150.00	12,005.81	-6,248.62	821.60	14,458,901.16	1,746,041.75	39.81310668	-80.62386012
18,100.00	89.00	150.00	12,007.56	-6,335.21	871.59	14,458,814.57	1,746,091.74	39.81286831	-80.62368340
18,200.00	89.00	150.00	12,009.30	-6,421.80	921.58	14,458,727.98	1,746,141.74	39.81262994	-80.62350667
18,300.00	89.00	150.00	12,011.05	-6,508.39	971.58	14,458,641.40	1,746,191.73	39.81239157	-80.62332994
18,400.00	89.00	150.00	12,012.79	-6,594.97	1,021.57	14,458,554.81	1,746,241.72	39.81215320	-80.62315322
18,500.00	89.00	150.00	12,014.54	-6,681.56	1,071.56	14,458,468.22	1,746,291.71	39.81191483	-80.62297649
18,600.00	89.00	150.00	12,016.28	-6,768.15	1,121.55	14,458,381.63	1,746,341.71	39.81167646	-80.62279977
18,700.00	89.00	150.00	12,018.03	-6,854.74	1,171.55	14,458,295.04	1,746,391.70	39.81143809	-80.62262305



Planning Report - Geographic

Database: DB_Dec2220_v16
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Breckenridge (1 row)
 Well: Breckenridge S-18 HU (slot Q)
 Wellbore: Original Hole
 Design: rev5

Local Co-ordinate Reference: Well Breckenridge S-18 HU (slot Q)
 TVD Reference: GL @ 1370.00ft
 MD Reference: GL @ 1370.00ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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Office of Oil and Gas

AUG 13 2021

WV Department of
Environmental Protection

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
18,800.00	89.00	150.00	12,019.78	-5,941.33	1,221.54	14,458,208.45	1,746,441.89	39.81119972	-80.62244633
18,900.00	89.00	150.00	12,021.52	-7,027.92	1,271.53	14,458,121.86	1,746,491.89	39.81098135	-80.62225961
19,000.00	89.00	150.00	12,023.27	-7,114.51	1,321.53	14,458,035.27	1,746,541.88	39.81072297	-80.62209290
19,100.00	89.00	150.00	12,025.01	-7,201.10	1,371.52	14,457,948.68	1,746,591.87	39.81048480	-80.62191618
19,200.00	89.00	150.00	12,026.76	-7,287.69	1,421.51	14,457,862.10	1,746,641.86	39.81024623	-80.62173947
19,300.00	89.00	150.00	12,028.50	-7,374.28	1,471.50	14,457,775.51	1,746,691.86	39.81000785	-80.62156275
19,400.00	89.00	150.00	12,030.25	-7,460.86	1,521.50	14,457,688.92	1,746,741.85	39.80976948	-80.62138604
19,500.00	89.00	150.00	12,031.99	-7,547.45	1,571.49	14,457,602.33	1,746,791.84	39.80953111	-80.62120933
19,600.00	89.00	150.00	12,033.74	-7,634.04	1,621.48	14,457,515.74	1,746,841.84	39.80929273	-80.62103262
19,700.00	89.00	150.00	12,035.48	-7,720.63	1,671.48	14,457,429.15	1,746,891.83	39.80905436	-80.62085591
19,800.00	89.00	150.00	12,037.23	-7,807.22	1,721.47	14,457,342.56	1,746,941.82	39.80881599	-80.62067920
19,900.00	89.00	150.00	12,038.97	-7,893.81	1,771.46	14,457,255.97	1,746,991.81	39.80857761	-80.62050250
20,000.00	89.00	150.00	12,040.72	-7,980.40	1,821.45	14,457,169.38	1,747,041.81	39.80833924	-80.62032579
20,100.00	89.00	150.00	12,042.46	-8,066.99	1,871.45	14,457,082.79	1,747,091.80	39.80810086	-80.62014909
20,200.00	89.00	150.00	12,044.21	-8,153.58	1,921.44	14,456,996.21	1,747,141.79	39.80786249	-80.61997239
20,300.00	89.00	150.00	12,045.96	-8,240.17	1,971.43	14,456,909.62	1,747,191.78	39.80762411	-80.61979569
20,400.00	89.00	150.00	12,047.70	-8,326.76	2,021.43	14,456,823.03	1,747,241.78	39.80738573	-80.61961899
20,500.00	89.00	150.00	12,049.45	-8,413.34	2,071.42	14,456,736.44	1,747,291.77	39.80714736	-80.61944229
20,600.00	89.00	150.00	12,051.19	-8,499.93	2,121.41	14,456,649.85	1,747,341.76	39.80690898	-80.61926559
20,700.00	89.00	150.00	12,052.94	-8,586.52	2,171.40	14,456,563.26	1,747,391.76	39.80667060	-80.61908889
20,800.00	89.00	150.00	12,054.68	-8,673.11	2,221.40	14,456,476.67	1,747,441.75	39.80643223	-80.61891220
20,900.00	89.00	150.00	12,056.43	-8,759.70	2,271.39	14,456,390.08	1,747,491.74	39.80619385	-80.61873550
21,000.00	89.00	150.00	12,058.17	-8,846.29	2,321.38	14,456,303.49	1,747,541.73	39.80595547	-80.61855881
21,100.00	89.00	150.00	12,059.92	-8,932.88	2,371.38	14,456,216.91	1,747,591.73	39.80571709	-80.61838212
21,200.00	89.00	150.00	12,061.66	-9,019.47	2,421.37	14,456,130.32	1,747,641.72	39.80547872	-80.61820543
21,300.00	89.00	150.00	12,063.41	-9,106.06	2,471.36	14,456,043.73	1,747,691.71	39.80524034	-80.61802874
21,400.00	89.00	150.00	12,065.15	-9,192.65	2,521.35	14,455,957.14	1,747,741.70	39.80500196	-80.61785205
21,500.00	89.00	150.00	12,066.90	-9,279.24	2,571.35	14,455,870.55	1,747,791.69	39.80476358	-80.61767536
21,600.00	89.00	150.00	12,068.64	-9,365.82	2,621.34	14,455,783.96	1,747,841.69	39.80452520	-80.61749868
21,700.00	89.00	150.00	12,070.39	-9,452.41	2,671.33	14,455,697.37	1,747,891.68	39.80428682	-80.61732200
21,800.00	89.00	150.00	12,072.13	-9,539.00	2,721.33	14,455,610.78	1,747,941.68	39.80404844	-80.61714531
21,900.00	89.00	150.00	12,073.88	-9,625.59	2,771.32	14,455,524.19	1,747,991.67	39.80381006	-80.61696863
22,000.00	89.00	150.00	12,075.63	-9,712.18	2,821.31	14,455,437.61	1,748,041.66	39.80357168	-80.61679195
22,100.00	89.00	150.00	12,077.37	-9,798.77	2,871.30	14,455,351.02	1,748,091.65	39.80333330	-80.61661527
22,200.00	89.00	150.00	12,079.12	-9,885.36	2,921.30	14,455,264.43	1,748,141.65	39.80309492	-80.61643859
22,300.00	89.00	150.00	12,080.86	-9,971.95	2,971.29	14,455,177.84	1,748,191.64	39.80285654	-80.61626191
22,400.00	89.00	150.00	12,082.61	-10,058.54	3,021.28	14,455,091.25	1,748,241.63	39.80261816	-80.61608524
22,500.00	89.00	150.00	12,084.35	-10,145.13	3,071.27	14,455,004.66	1,748,291.62	39.80237978	-80.61590856
22,594.44	89.00	150.00	12,086.00	-10,226.90	3,118.49	14,454,922.88	1,748,338.64	39.80214140	-80.61574171

PBHL/TD 22594.44 MD 12086.00 TVD

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Breckenridge S-18HU Lf - hit/miss target - Shape - Point	0.00	0.01	11,892.00	-623.54	-2,428.04	14,484,526.23	1,742,792.12	39.82859131	-80.63535048
- plan misses target center by 861.04ft at 11922.96ft MD (11556.27 TVD, -1043.86 N, -2043.87 E)									
Breckenridge S-18HU B - plan hits target center - Point	0.00	0.00	12,086.00	-10,226.90	3,118.49	14,454,922.88	1,748,338.64	39.80215464	-80.61574171



Planning Report - Geographic

Database:	DB_Dec2220_v16	Local Co-ordinate Reference:	Well Breckenridge S-18 HU (slot Q)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1370.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1370.00ft
Site:	Breckenridge (1 row)	North Reference:	Grid
Well:	Breckenridge S-18 HU (slot Q)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev5		

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
22,835.95		20" Casing	20	24

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
3,100.00	3,100.00	0.00	0.00	KOP Begin 2"/100' build	
3,600.00	3,597.47	-12.72	-41.62	Begin 10.00" tangent	
4,400.00	4,385.31	-53.34	-174.47	Begin 2"/100' build/turn	
4,511.70	4,494.96	-60.57	-194.49	Begin 12.00" tangent	
7,072.71	7,000.00	-262.10	-687.35	Begin 2"/100' build/turn	
7,441.33	7,354.66	-301.34	-778.84	Begin 19.36" tangent	
11,345.50	11,038.05	-824.06	-1,962.88	Begin 6"/100' build/turn	
12,166.28	11,732.30	-1,208.94	-2,018.48	Begin 8"/100' build/turn	
12,689.46	11,913.13	-1,650.27	-1,833.29	Begin 69.00" lateral	
22,594.44	12,066.00	-10,226.90	3,118.49	PBHL/TD 22594.44 MD 12066.00 TVD	

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Area of Review**Sources of information to Support 35CSR8 - 5.11: 9.3 et seq.**

Description of process to identify potential pathways for well communication during hydraulic fracturing activities.

Data Sources Reviewed:

1. Enverus and RS Energy Group Well Data service: Public nationwide data service that pulls directly from State agency Oil and Gas databases
2. Farm Maps
3. Topo Maps: Recent and older (contact WVGES)
4. Check with DPS

Contacted Adam Picard 724-485-9331, apicard@dpslandservices.com, DPS GIS (04/7/2021) to have him make maps of the wellbores with his information. DPS utilizes WVGES maps for their mapping seems it is the best publicly available. See attached map he provided.

Request maps for:

1. Wellbore with IHS All Wells Layer
2. Map with Farm lines overlain and any well spots identified on Farm Maps
3. More recent (1970s vintage) topos and older topos

Discussion with Phil Dinterman WVGES GIS Department (7/15/2016)

- WVGES has plotted every well spot they have access to and are aware of with that contains a coordinate. 30000, 70000, and 90000 series wells are available via the WVGES online map. Some locations aren't great due to vintage and manipulation of maps through time
- 30000 series – any well drilled prior to 1929 – APIs were not assigned to original wells
- 70000 series – Well spots pulled from old Farm line maps that the WVGES has access to
- 90000 series – Any sources that the WVGES has access that shows a well spot but has no additional supporting information. DEP does not have 90000 series on their maps.
- There can be duplication between wells in the 3 series
- Phil indicated that other Operators are providing a screenshot of the WVGES map with their planned well and using that for permits

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Wells within 500' Buffer

Note: Well spots depicted on Area of Review map are derived from State held coordinates. The spots may differ from those depicted on the Well Plat because the Plat locations represent actual field surveyed locations. Please refer to the Plat for surveyed well spots.

API Number	Operator Name	Total Depth	Perforated Fms	Producing zones not perforated	Is this well "known or reasonably expected to penetrate a depth that could be within the range of Fracture propagation"? 1000' is max limit I would assign to wells that might be within in range of fracture propagation	Comments
4705101082	Consolidation Coal Co.	unknown	unknown	unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be affected by fracturing in the planned Point Pleasant well. Well is plugged.	Well was plugged 7/3/2008.
4705170164	Hope Natural Gas Company	2374' TVD	Big Injun	unknown	No, the well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	
4705102346	Tug Hill Operating, LLC	7115' TVD (proposed)	none	none	No, this is a proposed well in the Marcellus. Once completed the well will not be deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	A permitted well on the pad that is not drilled or perforated.
4705101077	Consolidation Coal Co.	unknown	unknown	unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be affected by fracturing in the planned Point Pleasant well. Well is plugged.	Well was plugged 5/30/2008.

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API Number	Operator Name	Total Depth	Perforated Fms	Producing zones not perforated	Is this well "known or reasonably expected to penetrate a depth that could be within the range of Fracture propagation"? 1000' is max limit I would assign to wells that might be within in range of fracture propagation	Comments
4705100974	Consolidation Coal Co.	unknown	unknown	unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be affected by fracturing in the planned Point Pleasant well. Well is plugged.	Well was plugged 2/3/2005.
4705100900	Consolidation Coal Co.	unknown	unknown	unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be affected by fracturing in the planned Point Pleasant well. Well is plugged.	Well was plugged 4/9/2003.
4705100938	Consolidation Coal Co.	unknown	unknown	unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be affected by fracturing in the planned Point Pleasant well. Well is plugged.	Well was plugged 9/7/2005.
4705170466	unknown	unknown	unknown	unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be affected by fracturing in the planned Point Pleasant well.	State records are incomplete.

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WV Geological & Economic Survey:

Well: County = 51 Permit = 01082

Report Time: Tuesday, April 13, 2021 10:03:30 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705101082	Marshall	1082	Cameron	Glen Easton	Cameron	39.829496	-80.627436	531880.9	4408899.7

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705101082	7/3/2008	Plugging	Completed	J Richard Wayt		M-1334				Consolidation Coal Co.			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BE	G_U
4705101082	7/3/2008	6/18/2008	1262	Ground Level				unclassified	unclassified	not available	unknown	unknown						

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well *** some operators may have reported NGL under Oil

There is no Production NGL data for this well ** some operators may have reported NGL under Oil

There is no Production Water data for this well

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4705101082	Plugging	Pittsburgh coal	Well Record	946	Reasonable	5	Reasonable	1262	Ground Level

There is no Wireline (E-Log) data for this well

Plugging Information:

API	PLG_DT	DEPTH_PBT
4705101082	7/3/2008	0

There is no Sample data for this well

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WV Geological & Economic Survey:

Well: County = 51 Permit = 70164

Report Time: Tuesday, April 13, 2021 10:04:50 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705170164	Marshall	70164	Liberty	Glen Easton	Cameron	39.829496	-80.626308	531977.5	4408900.1

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_P
4705170164	-/-		Original Loc	Completed	Elijah Williams	1	547			Hope Natural Gas Company			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AI
4705170164	-/-	-/-	1420	Barometer	Big Injun (undiff)	Big Injun (undiff)	Big Injun (undiff)	unclassified	unclassified	not available	unknown	unknown	2374			2374		

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well ** some operators may have reported NGL under Oil

There is no Production NGL data for this well ** some operators may have reported NGL under Oil

There is no Production Water data for this well

There is no Stratigraphy data for this well

There is no Wireline (E-Log) data for this well

There is no Plugging data for this well

There is no Sample data for this well

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WV Geological & Economic Survey

Well: County = 51 Permit = 02346

Report Time: Tuesday, April 13, 2021 10:05:07 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705102346	Marshall	2346	Cameron	Glen Easton	Cameron	39.830284	-80.626735	531940.6	4408987.3

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705102346	1	As Proposed	532233.1	4408596.4	-80.623336

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM
4705102346	-/-	Dvtd Wrkd Ovr	Permitted	CNX Land LLC		S-10HM	Breckenridge		Hasans Ventures et al	Tug Hill Operating, LLC	7115	Marcellus Frm

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEI
4705102346	-/-	-/-	1380	Ground Level															

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well ** some operators may have reported NGL under Oil

There is no Production NGL data for this well ** some operators may have reported NGL under Oil

There is no Production Water data for this well

There is no Stratigraphy data for this well

There is no Wireline (E-Log) data for this well

There is no Plugging data for this well

There is no Sample data for this well

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WV Geological & Economic Survey:

Well: County = 51 Permit = 01077

Report Time: Tuesday, April 13, 2021 4:17:32 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705101077	Marshall	1077	Liberty	Glen Easton	Cameron	39.820216	-80.631385	531547.3	4407868.3

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705101077	5/30/2008	Plugging	Completed	Carroll & Anna Morris		M-110				Consolidation Coal Co.			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT
4705101077	5/30/2008	5/19/2008	1420	Ground Level				unclassified	unclassified	not available	unknown	unknown						

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well ** some operators may have reported NGL under Oil

There is no Production NGL data for this well ** some operators may have reported NGL under Oil

There is no Production Water data for this well

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4705101077	Plugging	Pittsburgh coal	Well Record	1145	Reasonable	6	Reasonable	1420	Ground Level

There is no Wireline (E-Log) data for this well

Plugging Information:

API	PLG_DT	DEPTH_PBT
4705101077	5/30/2008	0

There is no Sample data for this well

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WV Geological & Economic Survey:

Well: County = 51 Permit = 00974

Report Time: Tuesday, April 13, 2021 4:17:53 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705100974	Marshall	974	Liberty	Cameron	Cameron	39.812821	-80.624689	532123.8	4407049.9

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST
4705100974	2/3/2005	Plugging	Completed	Samantha G Morris		M-328A			Consolidation Coal Co	Consolidation Coal Co.			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_A
4705100974	2/3/2005	1/21/2005	1182	Ground Level				unclassified	unclassified	not available	unknown	unknown						

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well *** some operators may have reported NGL under Oil

There is no Production NGL data for this well ** some operators may have reported NGL under Oil

There is no Production Water data for this well

There is no Stratigraphy data for this well

There is no Wireline (E-Log) data for this well

Plugging Information:

API	PLG_DT	DEPTH_PBT
4705100974	2/3/2005	2

There is no Sample data for this well

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WV Geological & Economic Survey:

Well: County = 51 Permit = 00900

Report Time: Tuesday, April 13, 2021 4:18:07 PM

Well Reassignment Information: Reassigned From

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	70455	51	900

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705100900	Marshall	900	Liberty	Cameron	Cameron	39 800901	-80 615099	532950.3	4405730.4

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM
4705100900	4/9/2003	Plugging	Completed	Kenneth Wayne Steele		M-367			Consolidation Coal Co	Consolidation Coal Co.			
4705100900	-/-	Original Loc	Prpty Map	Frank Hibbs		1				unknown			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEFG	G_L
4705100900	4/9/2003	3/19/2003	1149	Ground Level				unclassified	unclassified	not available	unknown	unknown						
4705100900	-/-	-/-	1149	Ground Level				unclassified	unclassified	not available	unknown	unknown						

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well ** some operators may have reported NGL under Oil

There is no Production NGL data for this well ** some operators may have reported NGL under Oil

There is no Production Water data for this well

There is no Stratigraphy data for this well

There is no Wireline (E-Log) data for this well

Plugging Information:

API	PLG_DT	DEPTH_PBT
4705100900	4/9/2003	0

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WV Geological & Economic Survey

Well: County = 51 Permit = 00938

Report Time: Tuesday, April 13, 2021 4:18:20 PM

Well Reassignment Information: Reassigned From

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	70466	51	938

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705100938	Marshall	938	Liberty	Cameron	Cameron	39.802643	-80.615288	532933.3	4405923.7

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705100938	9/7/2005	Plugging	Completed	Jean Jamison		M-389				Consolidation Coal Co.			
4705100938	-/-	unknown	Prpty Map	Alfred Caldwell	1					----- unknown -----			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEf	G_AF
4705100938	9/7/2005	8/5/2005	1041	Ground Level								UnFinWStm						
4705100938	-/-	-/-						unclassified	unclassified	not available	unknown	unknown						

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well ** some operators may have reported NGL under Oil

There is no Production NGL data for this well ** some operators may have reported NGL under Oil

There is no Production Water data for this well

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4705100938	Original Loc	Pittsburgh coal	Well Record	798	Reasonable	6	Reasonable		Ground Level

There is no Wireline (E-Log) data for this well

Plugging Information:

API	PLG_DT	DEPTH_PST
4705100938	9/7/2005	0

There is no Sample data for this well

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WV Geological & Economic Survey:

Well: County = 51 Permit = 70466

Report Time: Tuesday, April 13, 2021 4:18:56 PM

Well Reassignment Information: Reassigned To

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	70466	51	938

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705170466	Marshall	70466	Liberly	Cameron	Cameron	39.802671	-80.615283	532933.7	4405926.8

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705170466	-/-	unknown	Reassign							----- unknown -----			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	
4705170466	-/-	-/-																			

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well ** some operators may have reported NGL under Oil

There is no Production NGL data for this well ** some operators may have reported NGL under Oil

There is no Production Water data for this well

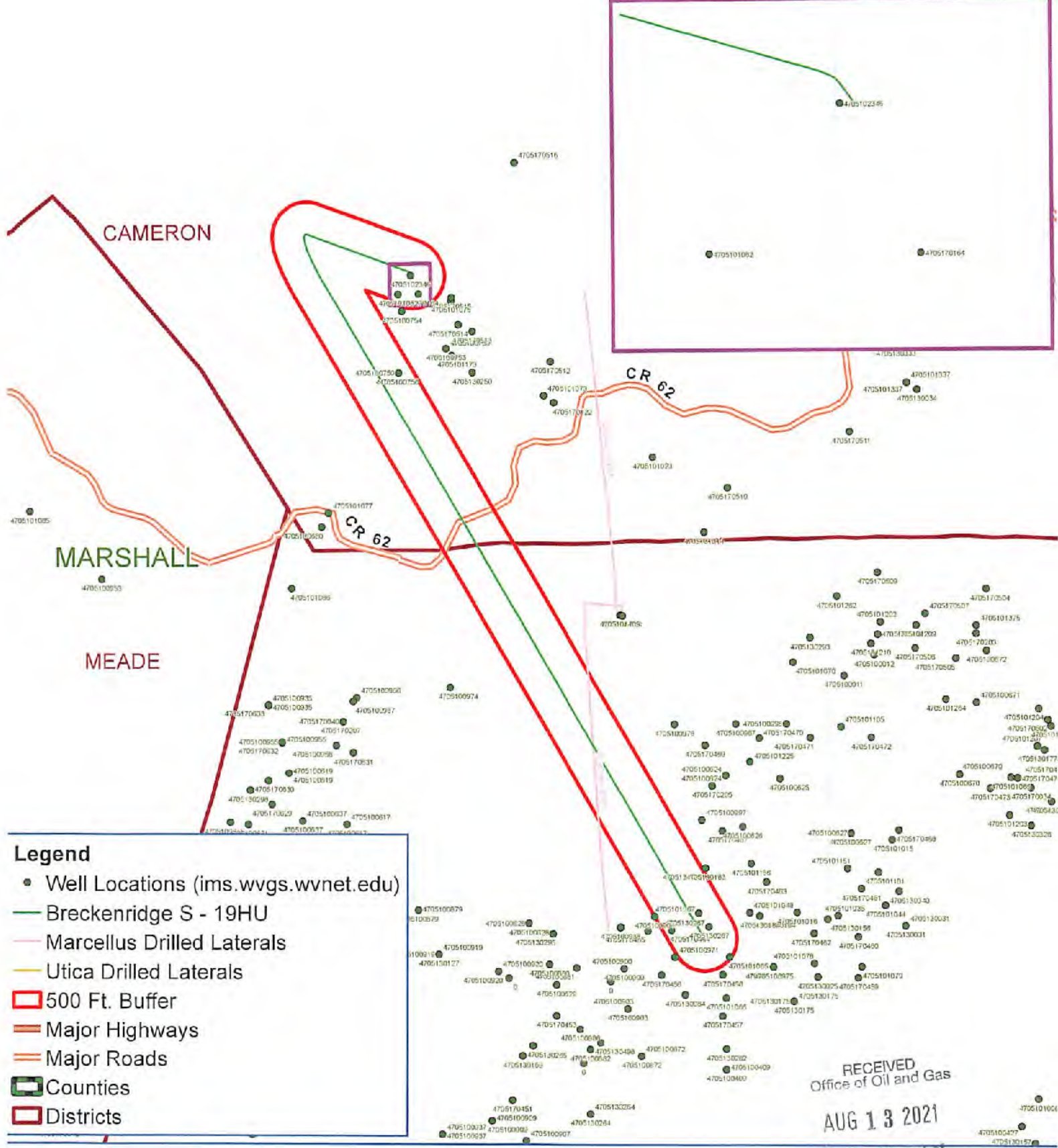
There is no Stratigraphy data for this well

There is no Wireline (E-Log) data for this well

There is no Plugging data for this well

There is no Sample data for this well

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Legend

- Well Locations (ims.wvgs.wvnet.edu)
- Breckenridge S - 19HU
- Marcellus Drilled Laterals
- Utica Drilled Laterals
- 500 Ft. Buffer
- Major Highways
- Major Roads
- ▭ Counties
- ▭ Districts

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Breckenridge S - 19HU Cameron District Marshall County, WV



Map Prepared by:
DPS
LAND SERVICES

11/19/2021

Map Created: April 7, 2021

Notes:
All locations are approximate and are for visualization purposes only.

WW-9
(4/16)

API Number 47 - 051 - _____
Operator's Well No. Breckenridge S-18HU

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) Grave Creek & Laurel Run Quadrangle Glen Easton 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 staging 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? Wetzel County Sanitary Landfill (SWF-1021 / WV0109185) 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 James A. Pancake
Company Official (Typed Name) Jim Pancake
Company Official Title Vice President - Geosciences

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Subscribed and sworn before me this 9th day of April, 2021

Susanne Deliere

Notary Public

My commission expires 1/15/2025

Commonwealth of Pennsylvania - Notary Seal
Susanne Deliere, Notary Public
Washington County
My commission expires January 15, 2025
Commission number 1382332
Member, Pennsylvania Association of Notaries

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 45.40 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: Bruce Zilber

Comments: _____

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Title: Oil and Gas Inspector Date: 6-17-21

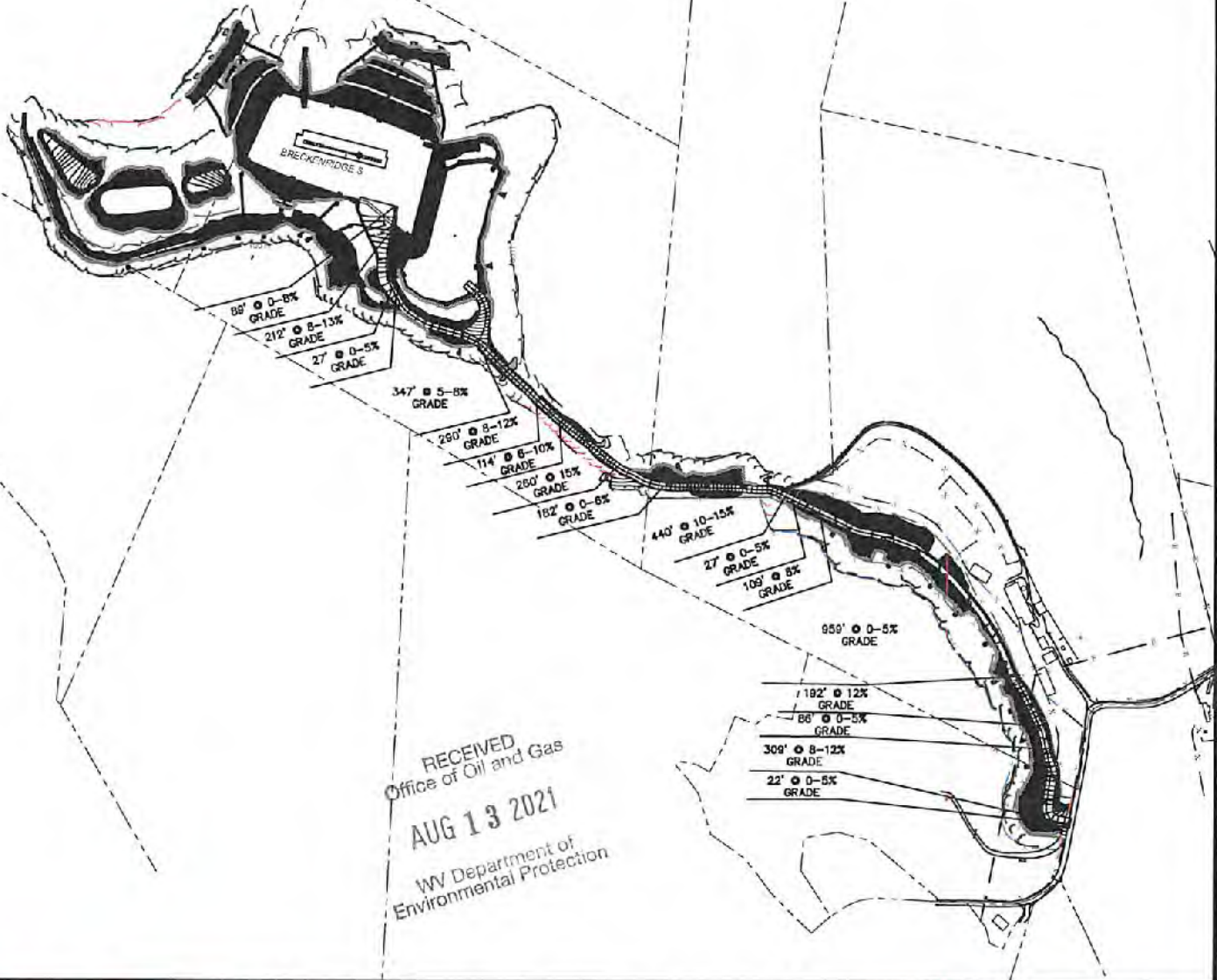
Field Reviewed? Yes No

PROPOSED BRECKENRIDGE S - 18HU



NOTES:

1. DRAWING NOT TO SCALE
2. REFERENCE IS HEREBY MADE TO THE WV 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.
3. ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED.
4. SEE BRECKENRIDGE N SITE PLAN PREPARED BY KELLEY SURVEYING, FOR COMPLETE CONSTRUCTION & EROSION AND SEDIMENT CONTROL DETAILS.



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12 Vanhook Drive | P.O. Box 150 | Clerskov, WV 26031 | 204-462-9551
 442 Kanawha Boulevard, East | Charleston, WV 25301 | 504-368-3992
 254 East Backley Bypass | Berea, WV 25801 | 804-259-5259
 slsww.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR: TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317	
COUNTY	DISTRICT		
MARSHALL	CAMERON		
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	9026	04-08-21	NONE



**TUG HILL
OPERATING**
11/19/2021

Breckenridge Coal Exhibit



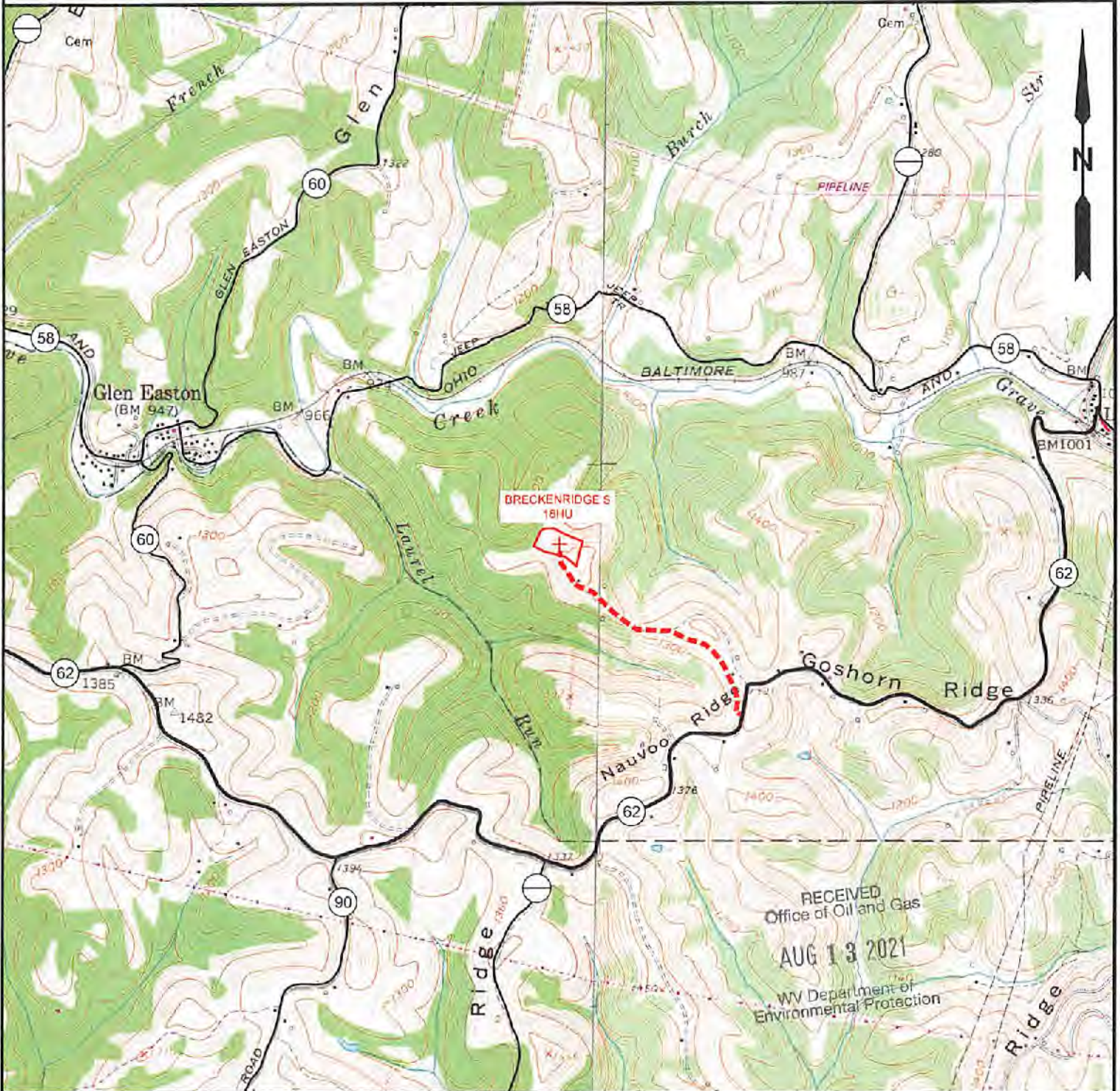
Office of Oil and Gas

AUG 13 2021

WV Department of
Environmental Protection

11/19/2021

PROPOSED BRECKENRIDGE S - 18HU



NOTE: CLOSEST WATER PURVEYOR
CITY OF CAMERON - FRANK WALKER RESERVOIR
CAMDEN, WV

LAT: 39.829885
LON: -80.573724
LOCATED: S 88°42'19" E AT 14,928.72' FROM THE CENTER OF BRECKENRIDGE N WELL PAD LOCATION.



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5534
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.345.3452
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.6296
slswv.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR: TUG HILL OPERATING LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317	
COUNTY	DISTRICT		
MARSHALL	CAMERON		
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	9026	04/08/2021	1" = 2000'



TUG HILL
OPERATING
11/19/2021



TUG HILL
OPERATING

Well Site Safety Plan *B.S. 8-12-21*
Part A – Site Specific Data and Figures

Well Name: Breckenridge S-18HU

Pad Name: Breckenridge

County: Marshall

UTM (meters), NAD83, Zone 17

Northing: 4,408,986.47

Easting: 531,951.29

**KEY CONTACT FOR WELL SITE SAFETY PLAN
DEVELOPMENT AND MAINTENANCE**

Jerry V. DeRosa, Director EH&S Affairs

(724) 338-2029 (office)

(412) 736-5767 (cellular)

24-HOUR EMERGENCY PHONE NUMBER

(800) 921-9745

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WV Department of
Environmental Protection

11/19/2021

**BRECKENRIDGE S LEASE
UTICA UNIT - 331.76 AC±
WELL 18HU
TUG HILL OPERATING**

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

T.H.

T.H. LONGITUDE 80°37'30"
B.H. LONGITUDE 80°35'00"

1,114' T.H.

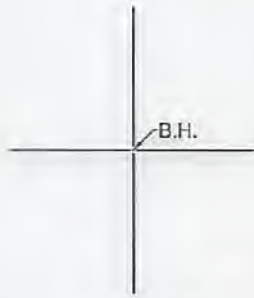
11,357' B.H.

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

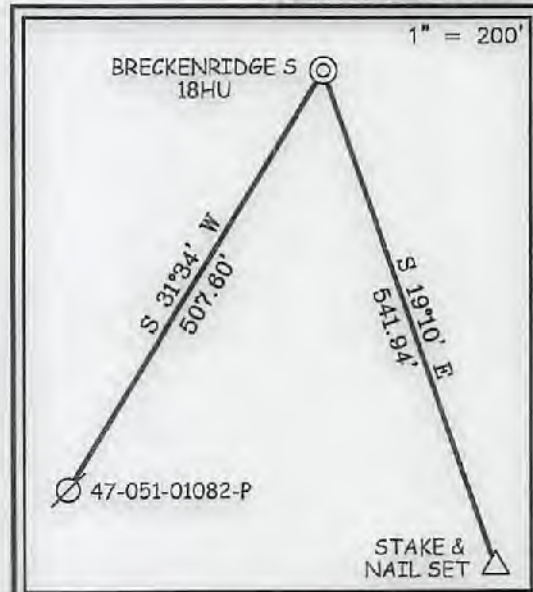
NAD'83 S.P.C.(FT)	N. 486,619.17	E. 1,652,087.22
NAD'83 GEO.	LAT-(N) 39.830276	LONG-(W) 80.626693
NAD'83 UTM (M)	N. 4,408,886.47	E. 531,944.17
LANDING POINT		
NAD'83 S.P.C.(FT)	N. 484,893.2	E. 1,650,228.0
NAD'83 GEO.	LAT-(N) 39.825785	LONG-(W) 80.633247
NAD'83 UTM (M)	N. 4,403,483.5	E. 531,385.4
BOTTOM HOLE		
NAD'83 S.P.C.(FT)	N. 476,232.2	E. 1,655,035.3
NAD'83 GEO.	LAT-(N) 39.802155	LONG-(W) 80.615742
NAD'83 UTM (M)	N. 4,405,869.3	E. 532,894.7

TAG	SURFACE OWNER	PARCEL	ACRES
A	CNX LAND, LLC	3-19-76	53.25
B	CNX LAND, LLC	3-19-74	44.59
C	CNX LAND, LLC	3-19-78	30.927
D	CNX LAND, LLC	3-19-79	10.75
E	XCL PROCESSING OPERATING LLC	3-19-80	30.54
F	RAYMOND DEWAINE DOBBS	9-3-12	66.843
G	CNX LAND, LLC	9-3-11	1.00
H	XCL PROCESSING OPERATING LLC	3-19-82	14.89
I	XCL PROCESSING OPERATING LLC	3-19-81	26.52
J	ANNA D. MORRIS	7-1-1	179.00
K	SONJA J. STROPE	3-19-77	46.783
L	NANCY L. PARSONS - LIFE	7-1-7	40.86
M	SONJA J. STROPE	3-18-3	74.757
N	NANCY L. PARSONS - LIFE	7-1-9	4.94
O	NANCY L. PARSONS - LIFE	7-1-10	1.00
P	NANCY L. PARSONS - LIFE	7-1-8	33.00
Q	MOLLY KAY HUBBS COLLINS, ET AL.	7-1-11	98.44
R	NANCY L. PARSONS - LIFE	7-1-6	1.00
S	MOLLY KAY HUBBS COLLINS, ET AL.	7-1-15	57.32
T	MOLLY KAY HUBBS COLLINS, ET AL.	7-1-16	54.44
U	JEFFREY L. ALBRIGHT	7-1-17	57.17
V	KAREN S. EVANS & JUDY K. MATTHEWS	7-7-1	124.12
W	JAMES TIMOTHY HUGGS, ET AL.	7-1-18	21.20
X	JEAN JAMISON	7-1-19	51.89

MAP/PARCEL	ADJOINING SURFACE OWNER LIST	ACRES
3-18-3.1	CAROL J. EVANS - LIFE	1.173
3-18-3.2	DAVID L. & ARIANNE R. ROBINSON	1.886
3-18-3.3	DAVID L. & ARIANNE R. ROBINSON	16.884
3-18-4	CHARLES JARED STROPE	7.25
7-1-5.2	NICHOLAS J. EVANS	22.42
7-1-7.1	NANCY L. PARSONS	0.50
7-1-12	OLIVIA SUZANNE HUBBS	17.68
7-7-9	WILLARD JUNIOR EVANS & ROSE MARY EVENS - LIFE	2.214
9-3-13	XCL PROCESSING OPERATING LLC	28.00
9-3-13.1	XCL PROCESSING OPERATING LLC	10.00
9-3-15	RAYMOND DEWAINE DOBBS	70.7424
9-9-7.2	XCL MIDSTREAM OPERATING LLC	3.907



REFERENCES



NOTES ON SURVEY

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
 - WELL SPOT CIRCLE & TOP MARK SCALE ARE 1"=2000'
 - PROPOSED LATERAL OR TOP HOLE OF PROPOSED BRECKENRIDGE S-18HU IS WITHIN 3000' OF THE TOP HOLES OR LATERALS OF PROPOSED OR EXISTING WELLS:
- PROPOSED BRECKENRIDGE S-17HU,
PROPOSED BRECKENRIDGE S-19HU,
PROPOSED BRECKENRIDGE S-20HU,
PROPOSED BRECKENRIDGE S-21HU,
PROPOSED BRECKENRIDGE S-22HU,
PROPOSED BRECKENRIDGE S-23HU.



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26031 | 304.462.5634
1412 Kenawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5295
slsvw.com

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



P.S. 677 *Gregory A. Smith*

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE MAY 3, 20 21
REVISED JULY 15, AUGUST 12, 20 21
OPERATORS WELL NO. BRECKENRIDGE S-18HU
API WELL NO. 47 - 051 - 02397
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 9026P18HUR2.dwg
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'
BRECKENRIDGE S-18HU-REV5

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

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

LOCATION: GROUND = 1,386.70' ELEVATION PROPOSED = 1,370.10' WATERSHED GRAVE CREEK (HUC 10) & LAUREL RUN
DISTRICT CAMERON COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'

SURFACE OWNER CNX LAND LLC ACREAGE 53.25±
ROYALTY OWNER HASAN'S VENTURES, ET AL ACREAGE 53.25±

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

PHYSICAL CHANGE IN WELL (SPECIFY) TARGET FORMATION POINT PLEASANT
ESTIMATED DEPTH TVD: 12,066' / TMD: 22,594'

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

COUNTY NAME
PERMIT

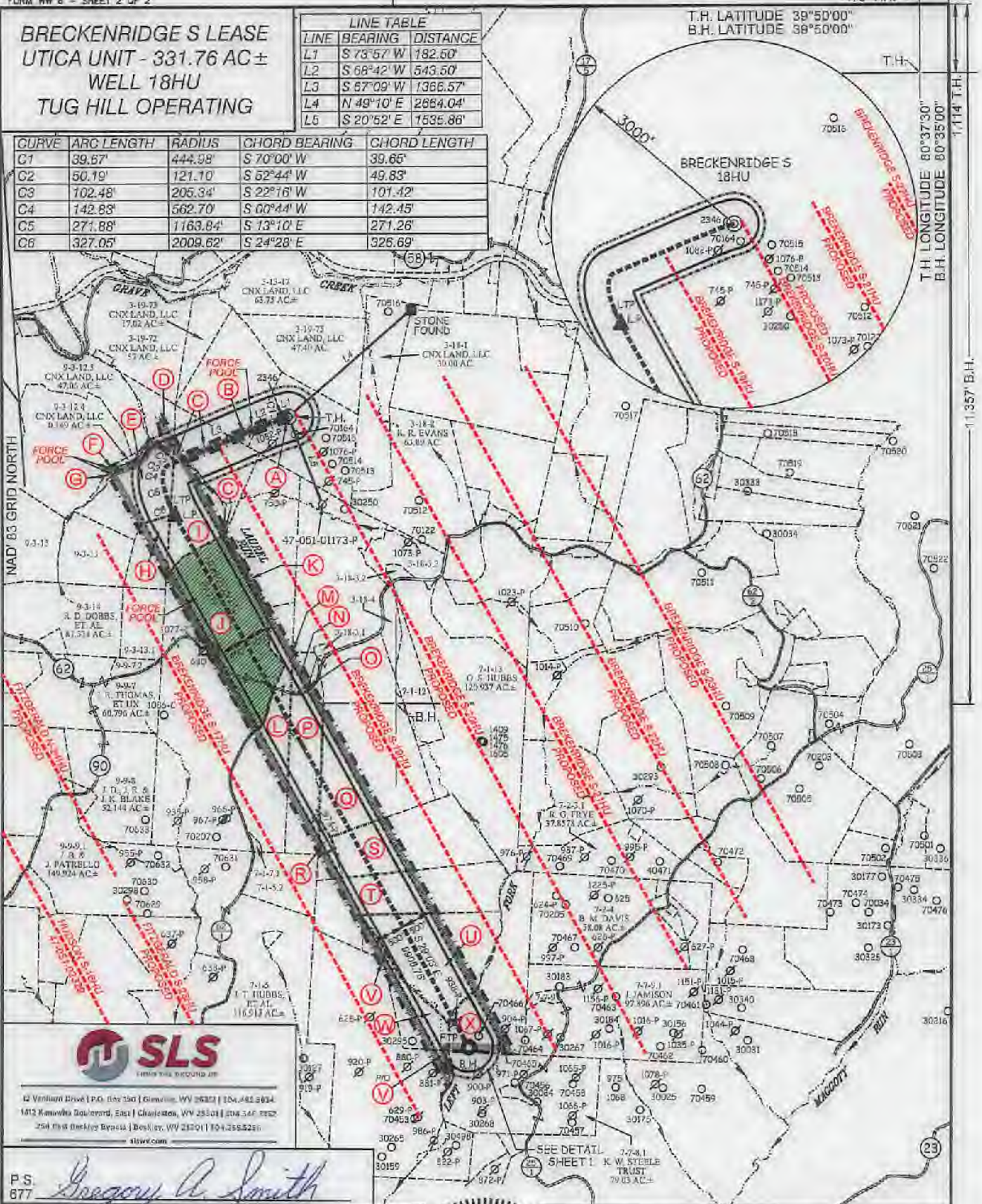
11/19/2021

**BRECKENRIDGE S LEASE
UTICA UNIT - 331.76 AC ±
WELL 18HU
TUG HILL OPERATING**

LINE TABLE		
LINE	BEARING	DISTANCE
L1	S 73°57' W	182.50'
L2	S 68°42' W	543.50'
L3	S 87°09' W	1366.57'
L4	N 49°10' E	2664.04'
L5	S 20°52' E	1535.86'

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	39.67'	444.98'	S 70°00' W	39.65'
C2	50.19'	121.10'	S 52°44' W	49.83'
C3	102.48'	205.34'	S 22°16' W	101.42'
C4	142.83'	562.70'	S 00°44' W	142.45'
C5	271.88'	1163.84'	S 13°10' E	271.26'
C6	327.05'	2009.62'	S 24°28' E	326.69'

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



T.H. LONGITUDE 80°37'30"
B.H. LONGITUDE 80°35'00"

11,114' T.H.

11,357' B.H.

NAD 83 GRID NORTH



12 Venturian Drive | P.O. Box 150 | Glenview, WV 26033 | 304.482.8834
1812 Kanawha Boulevard, East | Charleston, WV 25304 | 304.546.7852
254 First Bankers Bypass | Beckley, WV 26201 | 304.258.5255
sllwv.com

P.S. 677 *Gregory A. Smith*



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

LEGEND

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

COUNTY NAME

PERMIT

SCALE 1" = 2000' FILE NO. 9028P18HUR2.dwg
BRECKENRIDGE S-18HU-REV5
DATE MAY 3 20 21
REVISED JULY 15, AUGUST 12 20 21
OPERATORS WELL NO. BRECKENRIDGE S-18HU
API WELL 47 — 051 — 02397
NO. STATE COUNTY PERMIT

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



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

11/19/2021

**BRECKENRIDGE S LEASE
UTICA UNIT - 331.76 AC±
WELL 18HU
TUG HILL OPERATING**



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
254 East Beckley Bypass | Beckley, WV 25001 | 304.255.5296
slswv.com

NO.	Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Deed Book/Page	
✓ 1	10*31242	3-19-76	A	EVELYN I. BUTLER, ET AL	729	49
✓ 2	**FORCE POOL**	3-19-74	B	KATHERINE ZOGG OLIVER	663	449
✓ 3	10*25525	3-19-78	C	JAN MARIE CREGO, ET AL	939	601
✓ 4	10*22872	3-19-79	D	OKEY RAY GILBERT SR, ET AL	974	210
✓ 5	10*25182	3-19-80	E	CHARLES ISAAH PARK ALBRIGHT AND EUN JI LEE	1029	503
✓ 6	**FORCE POOL**	9-3-12	F	C. WILLIAM HARRIS	670	177
✓ 7	**FORCE POOL**	9-3-11	G	C. WILLIAM HARRIS	670	177
✓ 8	10*25188	3-19-82	H	JEFFREY LEE ALBRIGHT AND HYESOO PARK ALBRIGHT, ET AL	1029	505
✓ 9	10*25525	3-19-81	I	JAN MARIE CREGO, ET AL	939	601
✓ 10	**FORCE POOL**	7-1-1	J	CARROLL E. MORRIS AND ANNA D. MORRIS	778	231
✓ 11	10*25525	3-19-77	K	JAN MARIE CREGO, ET AL	939	601
✓ 12	10*23798	7-1-7	L	WILLIAM E PARSONS AND NANCY L PARSONS	1011	489
✓ 13	10*17925	3-18-3	M	BOUNTY MINERALS LLC	928	393
✓ 14	10*17925	7-1-9	N	BOUNTY MINERALS LLC	928	393
✓ 15	10*17925	7-1-10	O	BOUNTY MINERALS LLC	928	393
✓ 16	10*17925	7-1-8	P	BOUNTY MINERALS LLC	928	393
✓ 17	10*17925	7-1-11	Q	BOUNTY MINERALS LLC	928	393
✓ 18	10*17925	7-1-6	R	BOUNTY MINERALS LLC	928	393
✓ 19	10*17925	7-1-15	S	BOUNTY MINERALS LLC	928	393
✓ 20	10*17925	7-1-16	T	BOUNTY MINERALS LLC	928	393
✓ 21	10*17925	7-1-17	U	BOUNTY MINERALS LLC	928	393
✓ 22	10*25927	7-7-1	V	JUDY K MATTHEWS	945	103
✓ 23	10*25530	7-7-1	V	KAREN S WHEIZAL	945	99
✓ 24	10*17925	7-1-18	W	BOUNTY MINERALS LLC	928	393
✓ 25	10*17925	7-1-19	X	BOUNTY MINERALS LLC	928	393

FILE NO. 9026P18HUR2.dwg
BRECKENRIDGE S-18HU-REV5

DATE MAY 3, 20 21

REVISED JULY 15, AUGUST 12, 20 21

OPERATORS WELL NO. BRECKENRIDGE S-18HU

API WELL NO. 47 — 051 — 02397
STATE COUNTY PERMIT



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



P.S. 677

Gregory A. Smith

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

DARREN BROWN
CT CORPORATION
5098 WASHINGTON ST. W, STE 407
CHARLESTON, WV 25313-1561

COUNTY NAME

PERMIT

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

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

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

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

*See attached pages

RECEIVED
Office of Oil and Gas

AUG 13 2021

WV Department of
Environmental Protection

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

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

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

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

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

WELL BORE TRACTS

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 Office of Oil and Gas
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 Department of
 Environmental Protection

Lease ID	TMP	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment			
10*31242	3-19-76	A	EVELYN L BUTLER	TRANS ENERGY INC	1/8*	729 49	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Trans Energy Inc to Republic Energy Ventures LLC: 24/260	Republic Energy Ventures LLC, Republic Partners VI, LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	EQT Production Company to TH Exploration LLC: 48/21	
10*31241	3-19-76	A	JAMES R WAYT	TRANS ENERGY INC	1/8*	729 40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Trans Energy Inc to Republic Energy Ventures LLC: 24/260	Republic Energy Ventures LLC, Republic Partners VI, LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	EQT Production Company to TH Exploration LLC: 48/21	
FORCE POOL	3-19-74	B	KATHERINE ZOGG OLIVER	GREAT LAKES ENERGY PARTNERS, LLC	1/8*	663 449	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Name change to Range Resources - Appalachia LLC: CB 19/443	Range Resources - Appalachia LLC to Chesapeake Appalachia LLC and Statoil USA Onshore Properties Inc: 663/449	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/363	Chesapeake Appalachia LLC to SWN Production Company LLC: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC: 33/424	Cert of Merger - SWN Exchange Titleholder LLC merged with and into SWN Production Company LLC: CB 19/624	**FORCE POOL**	
10*25525	3-19-78	C	JAN MARIE CREGO	AMERICAN PETROLEUM PARTNERS LLC	1/8*	939 601	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*29085	3-19-78	C	LUJEAN EGAN	TH EXPLORATION LLC	1/8*	1084 192	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*30579	3-19-78	C	GREENFIELD RESOURCES, LLC	TH EXPLORATION LLC	1/8*	1105 272	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*38500	3-19-78	C	NINA FLETCHER AND RICHARD FLETCHER	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8*	779 525	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LLC, Republic Partners VI, LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120
10*38501	3-19-78	C	DOUGLAS BRIGGS	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8*	779 526	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LLC, Republic Partners VI, LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120
10*38502	3-19-78	C	THOMAS BRIGGS AND BRENDA M BRIGGS	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8*	779 527	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LLC, Republic Partners VI, LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120
10*38504	3-19-78	C	REGINA D FIGUEROA	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8*	779 529	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LLC, Republic Partners VI, LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120

WELL BORE TRACTS

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Office of Oil and Gas
AUG 13 2021

WV Department of
Environmental Protection

Lease ID	TMP	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment		
10*38505	3-19-78	C	DANNY S KERNS	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8+	779 530	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LLC, Republic Partners VI, LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120
10*38506	3-19-78	C	ROGER BRIGGS	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8+	779 540	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LLC, Republic Partners VI, LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120
10*38527	3-19-78	C	DEENA J PALOMO	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8+	779 531	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LLC, Republic Partners VI, LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120
10*38529	3-19-78	C	GERRI A BANNISTER	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8+	779 532	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LLC, Republic Partners VI, LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120
10*38530	3-19-78	C	JULIE BRIGGS	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8+	779 533	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LLC, Republic Partners VI, LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120
10*38531	3-19-78	C	JOHN BRIGGS	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8+	779 534	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LLC, Republic Partners VI, LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120
10*38532	3-19-78	C	JEFF BRIGGS AND CONNIE BRIGGS	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8+	779 537	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LLC, Republic Partners VI, LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120
10*38533	3-19-78	C	GARY BRIGGS	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8+	779 538	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LLC, Republic Partners VI, LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120

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10*38534	3-19-78	C	JERRILYN LITTS AND IVAN LITTS	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8+	779 539	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LP, Republic Partners VI, LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120
10*25182	3-19-80	E	CHARLES ISAIHAH PARK ALBRIGHT AND EUN JI LEE	TH EXPLORATION LLC	1/8+	1029 503	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*25525	3-19-81	I	JAN MARIE CREGO	AMERICAN PETROLEUM PARTNERS LLC	1/8+	939 601	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	American Petroleum Partners Operating LLC to TH Exploration LLC: 43/503
10*29085	3-19-81	I	LUJEAN EGAN	TH EXPLORATION LLC	1/8+	1084 192	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*30579	3-19-81	I	GREENFIELD RESOURCES, LLC	TH EXPLORATION LLC	1/8+	1105 272	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*38500	3-19-81	I	NINA FLETCHER AND RICHARD FLETCHER	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8+	779 525	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120
10*38501	3-19-81	I	DOUGLAS BRIGGS	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8+	779 526	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120
10*38502	3-19-81	I	THOMAS BRIGGS AND BRENDA M BRIGGS	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8+	779 527	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120
10*38504	3-19-81	I	REGINA D FIGUEROA	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8+	779 529	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120
10*38505	3-19-81	I	DANNY S KERNS	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8+	779 530	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120
10*38506	3-19-81	I	ROGER BRIGGS	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8+	779 540	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120

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10*38527	3-19-81	I	DEENA J PALOMO	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8+	779 531	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LLC, Republic Partners VI, LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120
10*38529	3-19-81	I	GERRI A BANNISTER	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8+	779 532	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LLC, Republic Partners VI, LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120
10*38530	3-19-81	I	JULIE BRIGGS	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8+	779 533	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LLC, Republic Partners VI, LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120
10*38531	3-19-81	I	JOHN BRIGGS	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8+	779 534	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LLC, Republic Partners VI, LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120
10*38532	3-19-81	I	JEFF BRIGGS AND CONNIE BRIGGS	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8+	779 537	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LLC, Republic Partners VI, LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120
10*38533	3-19-81	I	GARY BRIGGS	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8+	779 538	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LLC, Republic Partners VI, LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120
10*38534	3-19-81	I	JERRILYN LITTS AND IVAN LITTS	AMERICAN SHALE DEVELOPMENT INC AND REPUBLIC ENERGY VENTURES LLC	1/8+	779 539	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Shale Development Inc to Republic Partners VIII LLC: 31/482	Republic Energy Ventures LLC, Republic Partners VI, LP, Republic Partners VII & VIII, LLC, and Republic Energy Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/104	SWN Production Company LLC to TH Exploration LLC: 49/120
FORCE POOL	7-1-1	J	CARROLL E. MORRIS AND ANNA D. MORRIS	CHEVRON USA INC	1/8+	778 231	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to EQT Aurora LLC: 47/1	**FORCE POOL**
10*23798	7-1-7	L	WILLIAM E PARSONS AND NANCY L PARSONS	TH EXPLORATION LLC	1/8+	1011 489	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*17925	7-1-8	P	BOUNTY MINERALS LLC	TH EXPLORATION LLC	1/8+	928 393	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*17925	7-1-11	Q	BOUNTY MINERALS LLC	TH EXPLORATION LLC	1/8+	928 393	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*17925	7-1-15	S	BOUNTY MINERALS LLC	TH EXPLORATION LLC	1/8+	928 393	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*17925	7-1-16	T	BOUNTY MINERALS LLC	TH EXPLORATION LLC	1/8+	928 393	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*17925	7-1-17	U	BOUNTY MINERALS LLC	TH EXPLORATION LLC	1/8+	928 393	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

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10*17925	7-1-19	X	BOUNTY MINERALS LLC	TH EXPLORATION LLC	1/8*	928 393	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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ASSIGNMENT AND CONVEYANCE

This Assignment and Conveyance (this "*Assignment*") is from SWN PRODUCTION COMPANY, LLC, a Texas limited liability company ("*Assignor*"), to TH Exploration, LLC, a Texas limited liability company ("*Assignee*"), and is executed on June 30, 2021 (the "*Effective Date*"). Assignor and Assignee may be referred to herein collectively as the "*Parties*," or individually as a "*Party*." Capitalized terms used herein but not otherwise defined herein (including in Section 3.7) shall have the meanings given such terms in that certain Acreage Trade Agreement between the Assignor and the Assignee dated June 22, 2021 (the "*Acreage Trade Agreement*").

ARTICLE 1
ASSIGNMENT OF ASSETS

Section 1.1 Assignment. For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Assignor hereby GRANTS, BARGAINS, ASSIGNS, CONVEYS AND TRANSFERS unto Assignee all of Assignor's right, title and interest in and to (i) the oil and gas leases described in more detail on Exhibit A attached hereto (the "*Leases*") INSOFAR AND ONLY INSOFAR as they cover those lands described on Exhibit A (the "*Leasehold Rights*") and (ii) any surface use agreements that relate to such Leasehold Rights (collectively with the Leasehold Rights, the "*Conveyed Assets*").

TO HAVE AND TO HOLD the Conveyed Assets, together with all and singular the rights, privileges, contracts and appurtenances, in any way appertaining or belonging thereto, unto Assignee, its successors and assigns, forever, subject, to the terms and conditions of this Assignment.

Section 1.2 Assignment Subject to Acreage Trade Agreement. This Assignment is made in accordance with and is subject to the terms, covenants and conditions contained in that certain Acreage Trade Agreement. In the event of a conflict between the provisions of the Acreage Trade Agreement and this Assignment, the provisions of the Acreage 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 either Party with respect to the other under the Acreage Trade Agreement.

ARTICLE 2
SPECIAL WARRANTY OF TITLE AND DISCLAIMERS

Section 2.1 Special Warranty of Title. Assignor hereby agrees to warrant and defend Defensible Title to the Leases unto Assignee, its successors and assigns, against every Person whomsoever lawfully claiming or to claim the same or any part thereof by, through or under Assignor or any of its Affiliates, but not otherwise.

Section 2.2 Disclaimers of Warranties and Representations.

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ASSIGNMENT AND BILL OF SALE

This ASSIGNMENT AND BILL OF SALE (this "Assignment") dated as of December 1, 2020 (the "Execution Date"), is made by and between EQT PRODUCTION COMPANY, a Pennsylvania corporation, with an address at 625 Liberty Avenue, Suite 1700, Pittsburgh, Pennsylvania 15222 ("EQT"), and TH EXPLORATION, L.L.C., a Texas limited liability company, with an address at 1320 S. University Drive, Suite 500, Fort Worth, Texas 76107 ("TH") pursuant to the terms of that certain Acreage Trade Agreement by and among EQT, TH and TH Exploration II, LLC ("TH II"), dated July 8, 2020 (the "Agreement"). EQT and TH may be referred to herein together as the "Parties", and each individually as a "Party".

RECITALS

WHEREAS, EQT desires to transfer, convey and assign to TH certain of EQT's oil and gas leasehold interests located in Marshall County, West Virginia set forth on Exhibit A attached hereto and incorporated herein ("EQT Leases") in accordance with this Assignment and the Agreement; and

WHEREAS, TH desires to receive from EQT, all of EQT's right, title and interest in and to the EQT Leases in accordance with this Assignment and the Agreement.

NOW, THEREFORE, for and in consideration of the mutual promises contained herein and in the Agreement, the benefits to be derived by each Party hereunder and under the Agreement, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereby agree as follows:

ARTICLE I DEFINED TERMS

1.1 *Definitions.* Capitalized terms used herein and not otherwise defined throughout this Assignment shall have the meanings given such terms in the Agreement.

ARTICLE II ASSIGNMENT OF ASSETS

2.1 *Assignment.* Subject to the terms and conditions of this Assignment and the Agreement, EQT does hereby assign, convey and transfer to TH all of the right, title and interest of EQT in and to the following (collectively for purposes of this Assignment, the "EQT Assets"):

(a) Subject to the conveyance of the Wells Assets from EQT to TH II as described in the Agreement, the EQT Leases and appurtenances thereto (including rights of access and to install facilities), all Hydrocarbons within, produced from, derived from, or sold from the EQT Leases (and all proceeds related thereto), on and after the Valuation Date, and all Surface Contracts including but not limited to those set forth on Exhibit B attached hereto and incorporated herein (the "EQT Surface Contracts") related to the EQT Leases and such Hydrocarbons; and

(b) Copies of deeds, files and all other ownership information directly related to the acquisition, operations and maintenance of the EQT Leases, lease files for the EQT Leases

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Environmental Protection

COPY

STATE OF WEST VIRGINIA §
§
COUNTY OF MARSHALL §

Marshall County
Jan Post, Clerk
Instrument 1453305
04/24/2019 @ 11:51:22 AM
ASSIGNMENTS
Book 43 @ Page 505
Pages Recorded 10
Recording Cost \$ 17.00

ASSIGNMENT AND CONVEYANCE

THIS ASSIGNMENT AND CONVEYANCE (the "Assignment") is made and entered into this 23rd day of April, 2019 (the "Effective Date"), by and between AMERICAN PETROLEUM PARTNERS OPERATING, LLC, (hereinafter "Assignor") and TH EXPLORATION, LLC (hereinafter "Assignee") pursuant to the terms of that certain Acreage Trade Agreement between the Assignor and the Assignee dated November 15, 2018 (the "Acreage Trade Agreement"). Capitalized terms used but not defined herein and defined in the Acreage Trade Agreement shall have the meanings given to such terms in the Acreage Trade Agreement.

WITNESSETH:

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

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

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

1. Assignment. Assignor does hereby grant, bargain, sell, convey, deliver, assign, set over and transfer, as of the Effective Date, to Assignee, its respective successors and assigns, forever, all of Assignor's right, title and interest in and to the Leases, and the lands covered thereby, together with all rights incident thereto and appurtenances thereon.

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

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

Assignor represents and warrants that Assignor has paid any and all bonuses, rentals, royalties, overriding royalties, and other payments required by the Leases which were due for the period in which Assignor held its interests in the Leases, and that Assignor has fully performed all conditions necessary to maintain the Leases in full force and effect during such period, free and clear of all Encumbrances, except for and subject only to Permitted Encumbrances.

3. Successors and Assigns. The terms of this Assignment shall be binding upon and inure to the benefit of the parties hereto and each of their respective successors

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11/19/2021



August 11, 2021

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

RE: Breckenridge S-18HU

Subject: Proposed Voluntary Pooling and Unitization

Dear Susan:

Tug Hill Operating, LLC is authorized through, either lease or other agreement, to unitize and pool all lands falling within the boundaries of the proposed voluntary unit included with this submission, with the exception of the following tracts which we intend to force pool.

3-19-74
9-3-11
9-3-12
7-1-1

9-3-12.5 + 12.4 ?

If your office has any questions or concerns regarding the contents of this letter, please do not hesitate to contact me directly at 724-749-8388, or by email at amorris@tug-hilop.com.

Sincerely,

Amy L. Morris
Permitting Specialist – Appalachia Region
Tug Hill Operating

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CERTIFICATE OF CONSENT AND EASEMENT

The undersigned, for valuable consideration, the receipt and sufficiency of which is hereby acknowledged, being the owner of the surface of that certain lots, tracts or parcels of land located in Cameron District, Marshall County, State of West Virginia, shown on the attached plat or survey, hereby consents and grants an easement (subject to the terms of a separate Surface Use Agreement between the undersigned and TH Exploration, LLC (the "SUA")), pursuant to West Virginia Code, Section 22C-9-7(b)(4) and Operating Rule 4.4 of the Rules and Regulations of the West Virginia Oil and Gas Conservation Commission, to TH Exploration, LLC, its successors or permitted assigns subject to the SUA, for the drilling and operation of a deep well for the production of oil or gas at the location shown on the attached plat or survey.

[Signatures on the Following Page]

Marshall County
Jan Pest, Clerk
Instrument 1472063
11/04/2020 @ 01:07:07 PM
RIGHT OF WAY W/O CONSIDERATION
Book 1098 @ Page 555
Pages Recorded 3
Recording Cost \$ 11.00

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Office of Oil and Gas

AUG 13 2021

WV Department of
Environmental Protection

11/19/2021

Executed the date set forth in the notary but effective as of November 2, 2020.

CNX LAND LLC

By: [Signature]
Name: Peter J. Binotto
Title: Assistant Vice President

COMMONWEALTH OF PENNSYLVANIA

SS:

COUNTY OF WASHINGTON

On this, the 30 day of Oct, 2020, before me, a notary public, the undersigned officer, personally appeared Peter J. Binotto who acknowledged himself/herself to be the Assistant Vice President of CNX Land LLC and that he/she as such, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the company by himself/herself as Assistant Vice President.

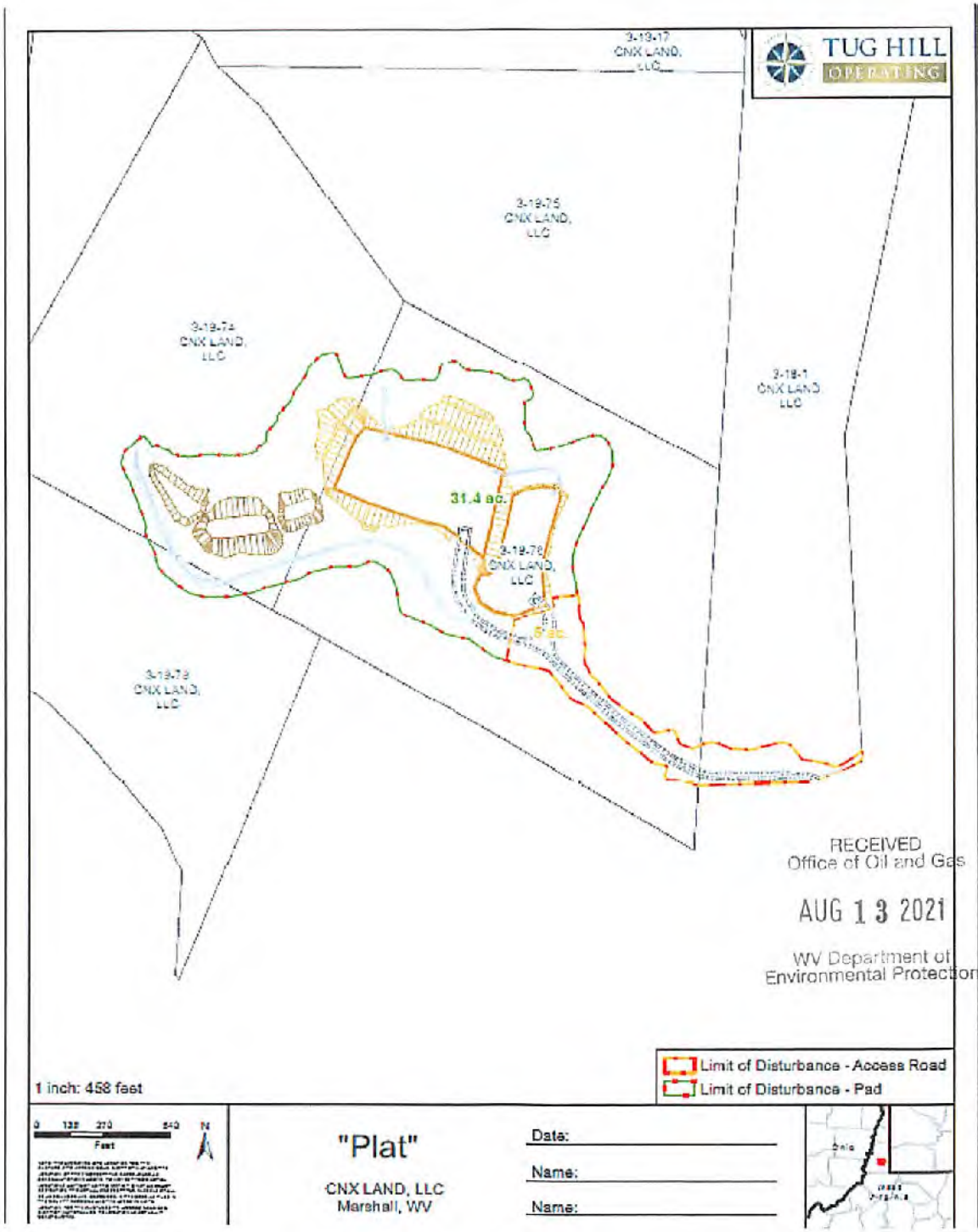
IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission Expires: _____
Signature of Notary Public: [Signature]
Name/Notary Public (print): _____

This instrument prepared by:
WV Oil and Gas Conservation Commission
601 57th Street
Charleston, WV 25304

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Douglas E. Smith, Notary Public
Cecil Twp., Washington County
My Commission Expires Dec. 6, 2020
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

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AUG 13 2021
WV Department of
Environmental Protection

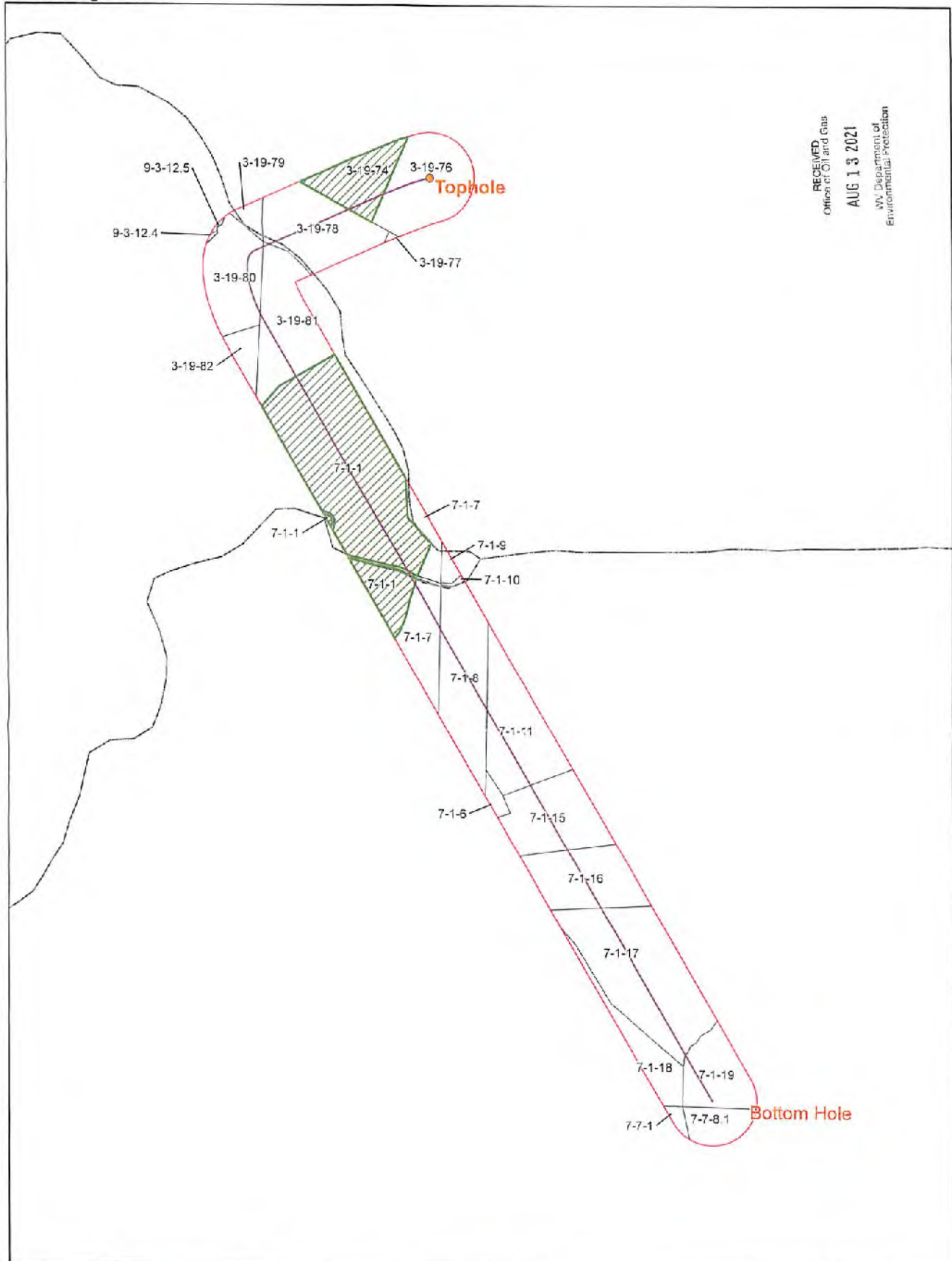


STATE OF WEST VIRGINIA, MARSHALL COUNTY, SCT.:

I, JAN PEST, Clerk of the County Commission of said County, do hereby certify that the annexed writing, bearing date on the 2nd day of November, 2020, was presented for and by me, admitted to record in my office upon the above certificate as to the parties therein named this 4th day of November, 2020 at 1:07 11/19/2021 P.M.

(Handwritten signature)

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AUG 13 2021
WV Department of
Environmental Protection



Company Name: 100-1000-0000
 Population: 1000
 County: Boone
 State: West Virginia
 Date: 10/10/2017
 Scale: 1:10000
 Author: J. Smith
 Date: 10/10/2017

CONFIDENTIAL



Document Name: Breckenridge_S-18HU_REV05_500_Foot_Analysis
 Date Saved: 6/2/2021

- Utica Well
- Force Pool
- 500' Buffer

Breckenridge S-18HU
 Operators within 500 Feet of Well Borehole



11/19/2021

**Offset Operator's within 500'
Breckenridge S - 18HU**

COUNTY	DISTRICT	TMP	OWNER	ADDRESS
MARSHALL	CAMERON	3-19-74	SOUTHWESTERN ENERGY	10000 Energy Drive Spring, TX 77389
MARSHALL	CAMERON	3-19-74	EQUINOR USA ONSHORE PROPERTIES INC	6300 Bridge Point Pkwy Bldg 2 Suite 100 Austin, TX 78730
MARSHALL	CAMERON	3-19-76	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	CAMERON	3-19-77	TH EXPLORATION LLC	1321 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	CAMERON	3-19-78	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	CAMERON	3-19-79	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	CAMERON	3-19-80	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	CAMERON	3-19-81	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	CAMERON	3-19-82	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	LIBERTY	7-1-1	EQT PRODUCTION COMPANY	625 Liberty Avenue Suite 1700 Pittsburgh, PA 15222
MARSHALL	LIBERTY	7-1-10	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	LIBERTY	7-1-11	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	LIBERTY	7-1-15	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	LIBERTY	7-1-16	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	LIBERTY	7-1-17	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107

RECEIVED
Office of Oil and Gas

AUG 13 2021

**Offset Operator's within 500'
Breckenridge S - 18HU**

COUNTY	DISTRICT	TMP	OWNER	ADDRESS
MARSHALL	LIBERTY	7-1-18	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	LIBERTY	7-1-19	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	LIBERTY	7-1-6	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	LIBERTY	7-1-7	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	LIBERTY	7-1-8	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	LIBERTY	7-1-9	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	LIBERTY	7-7-1	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	LIBERTY	7-7-8.1	SOUTHWESTERN ENERGY	10000 Energy Drive Spring, TX 77389
MARSHALL	LIBERTY	7-7-8.1	EQUINOR USA ONSHORE PROPERTIES INC	6300 Bridge Point Pkwy Bldg 2 Suite 100 Austin, TX 78730
MARSHALL	MEADE	9-3-12.4	SOUTHWESTERN ENERGY	10000 Energy Drive Spring, TX 77389
MARSHALL	MEADE	9-3-12.4	EQUINOR USA ONSHORE PROPERTIES INC	6300 Bridge Point Pkwy Bldg 2 Suite 100 Austin, TX 78730
MARSHALL	MEADE	9-3-12.5	SOUTHWESTERN ENERGY	10000 Energy Drive Spring, TX 77389
MARSHALL	MEADE	9-3-12.5	EQUINOR USA ONSHORE PROPERTIES INC	6300 Bridge Point Pkwy Bldg 2 Suite 100 Austin, TX 78730

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AUG 13 2021

WV Department of
Environmental Protection



TUG HILL
OPERATING

Well: Breckenridge S-18 HU (slot Q)
Site: Breckenridge (1 row)
Project: Marshall County, West Virginia
Design: rev5
Rig:

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSEct	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	
2	3100.00	0.00	0.00	3100.00	0.00	0.00	0.00	0.000	0.00	KOP Begin 2°/100' build
3	3500.00	10.00	253.00	3597.47	-12.72	-41.62	2.00	253.000	0.81	Begin 10.00° tangent
4	4400.00	10.00	253.00	4335.31	-53.34	-174.47	0.00	0.000	2.56	Begin 2°/100' build/turn
5	4511.70	12.00	247.75	4494.96	-60.57	-194.49	2.00	-29.151	3.91	Begin 12.00° tangent
6	7072.71	12.00	247.75	7000.00	-262.10	-687.35	0.00	0.000	69.96	Begin 2°/100' build/turn
7	7441.33	19.36	246.18	7354.66	-301.34	-779.84	2.00	-4.085	72.12	Begin 19.36° tangent
8	11345.50	19.36	246.18	11038.05	-824.06	-1962.88	0.00	0.000	243.80	Begin 6°/100' build/turn
9	12166.28	50.00	168.70	11732.30	-1208.94	-2018.48	6.00	-96.149	597.90	Begin 8°/100' build/turn
10	12689.46	89.00	150.00	11913.13	-1550.27	-1833.29	8.00	-25.506	1073.36	Begin 89.00° lateral
11	22594.44	89.00	150.00	12086.00	-10226.90	3118.49	0.00	0.000	1050.86	PBH/TD 22594.44 MD 12086.00 TVD

DESIGN TARGET DETAILS

Name	TVD	+N/S	+E/W	Northing	Easting	Latitude	Longitude
Breckenridge S-18HU LP r2	11892.00	-623.54	-2428.04	14464526.23	1742792.12	39.82659131	80.63535048
- plan misses target center by 861.04ft at 11922.96ft MD (11556.27 TVD, -1043.86 N, -2043.87 E)							
Breckenridge S-18HU BHL r5	12086.00	-10226.90	3118.49	14464922.86	1748338.64	39.80215464	-90.61574171
- plan hits target center							

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

System Datum: Mean Sea Level
Depth Reference: GL @ 1370.00ft

Northing: 14465149.70
Easting: 1745220.16
Latitude: 39.83027617
Longitude: -80.62669299
Total Corr. (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.96°

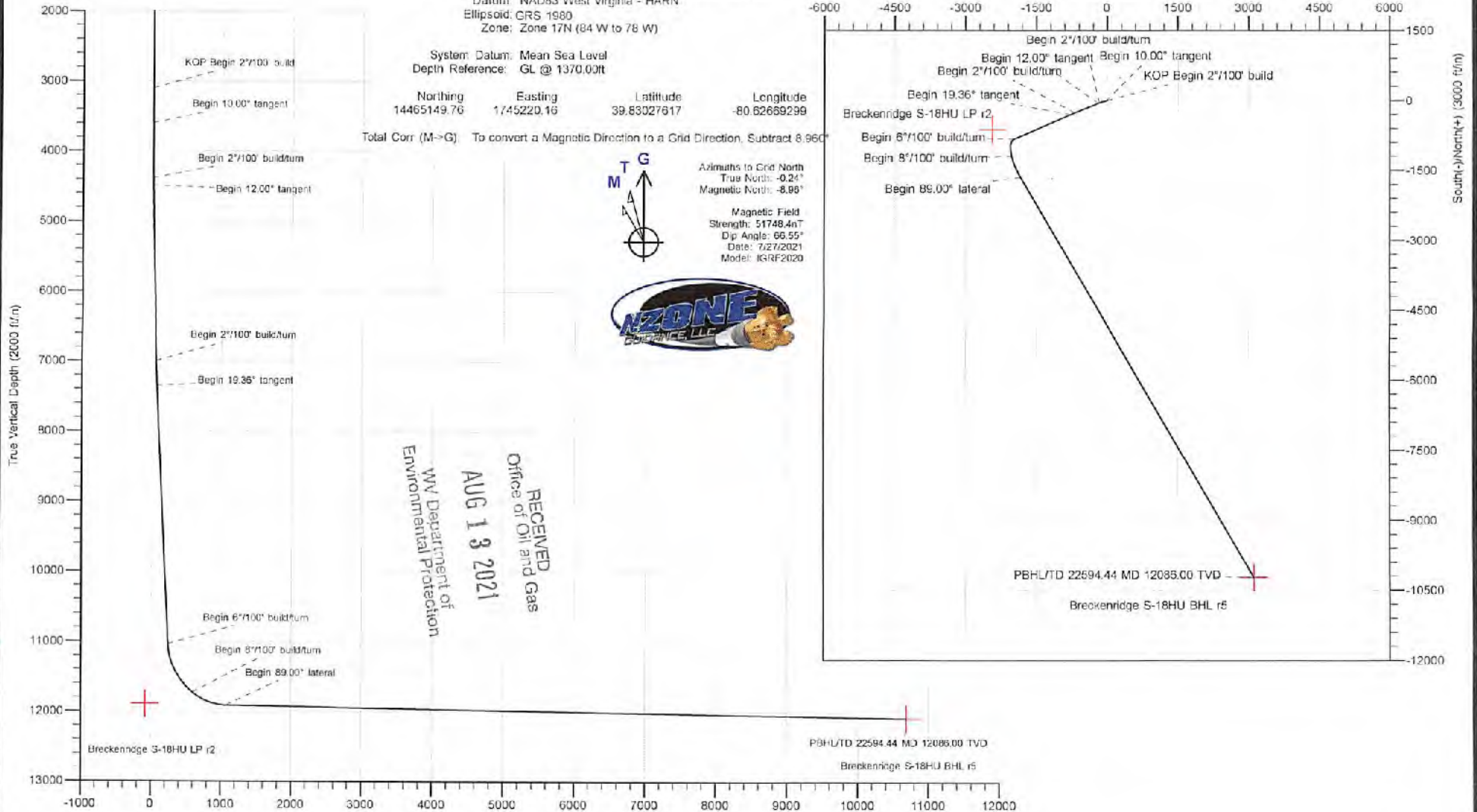


Azimuths to Grid North
True North: -0.24°
Magnetic North: -8.96°

Magnetic Field
Strength: 517.48 nT
Dip Angle: 66.55°
Date: 7/27/2021
Model: IGRF2020



RECEIVED
Office of Oil and Gas
AUG 13 2021
WV Department of
Environmental Protection





11-19-21

west virginia department of environmental protection

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

Randall M. Albert, Chairman
dep.wv.gov

August 27, 2021

Equinor USA Onshore Properties, Inc.
6300 Bridge Point Pkwy Bldg 2 Ste 100
Austin TX 78730

9489 0090 0027 6201 3319 70

RE: Intentional Deviation of New Deep Well
Tug Hill Operating, LLC – Breckenridge S-18HU

Dear Sir or Ma'am:

Please be advised that Tug Hill Operating, LLC, has applied to the Oil and Gas Conservation Commission for approval to intentionally deviate a new deep well. The Code of State Regulations Title 39 Section 1.4.10 requires that the Commission notify the offset operators of the applicants' intent to deviate the proposed well. You are receiving this notice because you are listed as an offset operator (unleased mineral owner is also an "offset operator") to the proposed well. Any offset operator has ten days to object to the Commissions' granting approval to the proposed deviation. If you file an objection, the Commission will schedule a hearing and you will be notified of the date and time to attend.

A copy of the location plat is enclosed for your review. If no objection(s) are received within ten 10 days from the date of delivery, the application will be processed in the normal manner.

If you have any questions please call me at (304) 414-1239.

Sincerely,

A handwritten signature in cursive script that reads "Susan Rose".

Susan Rose
Administrator

encl:

11/19/2021



in transit

west virginia department of environmental protection

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

Randall M. Albert, Chairman
dep.wv.gov

August 27, 2021

EQT Production Company
625 Liberty Ave Ste 1700
Pittsburgh, PA 15222

9489 0090 0027 6201 3319 94

RE: Intentional Deviation of New Deep Well
Tug Hill Operating, LLC – Breckenridge S-18HU

Dear Sir or Ma'am:

Please be advised that Tug Hill Operating, LLC, has applied to the Oil and Gas Conservation Commission for approval to intentionally deviate a new deep well. The Code of State Regulations Title 39 Section 1.4.10 requires that the Commission notify the offset operators of the applicants' intent to deviate the proposed well. You are receiving this notice because you are listed as an offset operator (unleased mineral owner is also an "offset operator") to the proposed well. Any offset operator has ten days to object to the Commissions' granting approval to the proposed deviation. If you file an objection, the Commission will schedule a hearing and you will be notified of the date and time to attend.

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If you have any questions please call me at (304) 414-1239.

Sincerely,

A handwritten signature in cursive script that reads "Susan Rose".

Susan Rose
Administrator

encl:

11/19/2021



September 22, 2021

Dear Customer,

The following is the proof-of-delivery for tracking number: 283967525791

Delivery Information:

Status:	Delivered	Delivered To:	
Signed for by:	Signature release on file	Delivery Location:	400 WOODCLIFF DR
Service type:	FedEx Priority Overnight		
Special Handling:	Deliver Weekday		CANONSBURG, PA, 15317
		Delivery date:	Sep 22, 2021 10:33

Shipping Information:

Tracking number:	283967525791	Ship Date:	Sep 21, 2021
		Weight:	0.5 LB/0.23 KG

Recipient:
Corey Peck, EQT Production Company
400 Woodcliff Drive
CANONSBURG, PA, US, 15317

Shipper:
AMY MORRIS, TUH HILL OPERATING, LLC
380 SOUTHPOINTE BLVD
PLAZA II, SUITE 200
CANONSBURG, PA, US, 15317

Proof-of-delivery details appear below; however, no signature is available for this FedEx Express shipment because a signature was not required.

11/19/2021



west virginia department of environmental protection

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

Randall M. Albert, Chairman
dep.wv.gov

August 27, 2021

TH Exploration, LLC
1320 S. University Dr Ste 500
Ft Worth TX 76107

9489 0090 00276201 331987

RE: Intentional Deviation of New Deep Well
Tug Hill Operating, LLC – Breckenridge S-18HU

Dear Sir or Ma'am:

Please be advised that Tug Hill Operating, LLC, has applied to the Oil and Gas Conservation Commission for approval to intentionally deviate a new deep well. The Code of State Regulations Title 39 Section 1.4.10 requires that the Commission notify the offset operators of the applicants' intent to deviate the proposed well. You are receiving this notice because you are listed as an offset operator (unleased mineral owner is also an "offset operator") to the proposed well. Any offset operator has ten days to object to the Commission's granting approval to the proposed deviation. If you file an objection, the Commission will schedule a hearing and you will be notified of the date and time to attend.

A copy of the location plat is enclosed for your review. If no objection(s) are received within ten 10 days from the date of delivery, the application will be processed in the normal manner.

If you have any questions please call me at (304) 414-1239.

Sincerely,

A handwritten signature in black ink that reads "Susan Rose". The signature is written in a cursive, flowing style.

Susan Rose
Administrator

encl:

11/19/2021

September 14, 2021

Dear Susan Rose:

The following is in response to your request for proof of delivery on your item with the tracking number:
9489 0090 0027 6201 3319 87.


Item Details

Status:	Delivered, Front Desk/Reception/Mail Room
Status Date / Time:	September 2, 2021, 1:35 pm
Location:	FORT WORTH, TX 76107
Postal Product:	First-Class Mail®
Extra Services:	Certified Mail™ Return Receipt Electronic

Shipment Details

Weight:	20lb, 3.9oz
----------------	-------------

Recipient Signature

Signature of Recipient:	
Address of Recipient:	JB Attn Covid-19 1320 S University 76107 #500

Note: Scanned image may reflect a different destination address due to Intended Recipient's delivery instructions on file.

Thank you for selecting the United States Postal Service® for your mailing needs. If you require additional assistance, please contact your local Post Office™ or a Postal representative at 1-800-222-1811.

Sincerely,
United States Postal Service®
475 L'Enfant Plaza SW
Washington, D.C. 20260-0004

11/19/2021



west virginia department of environmental protection

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

Randall M. Albert, Chairman
dep.wv.gov

August 27, 2021

Southwestern Energy
10000 Energy Dr
Spring TX 77389

9489 0090 0027 6349 892012

RE: Intentional Deviation of New Deep Well
Tug Hill Operating, LLC – Breckenridge S-18HU

Dear Sir or Ma'am:

Please be advised that Tug Hill Operating, LLC, has applied to the Oil and Gas Conservation Commission for approval to intentionally deviate a new deep well. The Code of State Regulations Title 39 Section 1.4.10 requires that the Commission notify the offset operators of the applicants' intent to deviate the proposed well. You are receiving this notice because you are listed as an offset operator (unleased mineral owner is also an "offset operator") to the proposed well. Any offset operator has ten days to object to the Commissions' granting approval to the proposed deviation. If you file an objection, the Commission will schedule a hearing and you will be notified of the date and time to attend.

A copy of the location plat is enclosed for your review. If no objection(s) are received within ten 10 days from the date of delivery, the application will be processed in the normal manner.

If you have any questions please call me at (304) 414-1239.

Sincerely,

A handwritten signature in black ink that reads "Susan Rose". The signature is written in a cursive, flowing style. The first letter 'S' is large and loops around the first few letters. The name is written in a clear, legible hand.

Susan Rose
Administrator

encl:

11/19/2021



September 14, 2021

Dear Susan Rose:

The following is in response to your request for proof of delivery on your item with the tracking number:
9489 0090 0027 6349 8920 12.

Item Details

Status:	Delivered, Front Desk/Reception/Mail Room
Status Date / Time:	September 1, 2021, 11:55 am
Location:	MORGANTOWN, WV 26508
Postal Product:	First-Class Mail®
Extra Services:	Certified Mail™ Return Receipt Electronic

Shipment Details

Weight:	20lb, 3.3oz
----------------	-------------

Recipient Signature

Signature of Recipient:	CO-19 MARVIN
Address of Recipient:	1300 FORT Pierpont #201

Note: Scanned image may reflect a different destination address due to Intended Recipient's delivery instructions on file.

Thank you for selecting the United States Postal Service® for your mailing needs. If you require additional assistance, please contact your local Post Office™ or a Postal representative at 1-800-222-1811.

Sincerely,
United States Postal Service®
475 L'Enfant Plaza SW
Washington, D.C. 20260-0004

11/19/2021



August 4, 2021

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

RE: Breckenridge S-18HU

Subject: Road Crossing Letter

Dear Taylor:

Tug Hill Operating, LLC (THO) hereby submits this letter as confirmation that THO has obtained the right to drill, extract and produce the minerals under Marshall County Route 62 and 62/1 in the area reflected on the Breckenridge S-18HU well plat. THO has conducted a full title search in the relevant Court House to confirm its ownership under said County Route and is not currently aware of any recorded document that would suggest an ownership other than THO.

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 amorris@tug-hilop.com.

Sincerely,

Amy L. Morris
Permitting Specialist – Appalachia Region

RECEIVED
Office of Oil and Gas

AUG 13 2021

WV Department of
Environmental Protection

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

Date of Notice Certification: 08/05/2021

API No. 47- 051 - _____

Operator's Well No. Breckenridge S-18HU

Well Pad Name: Breckenridge

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>531,944.17</u>
County:	<u>Marshall</u>		Northing:	<u>4,408,986.47</u>
District:	<u>Cameron</u>	Public Road Access:	<u>County Route 62</u>	
Quadrangle:	<u>Glen Easton 7.5'</u>	Generally used farm name:	<u>CNX Land, LLC</u>	
Watershed:	<u>Grave Creek (HUC 10) & Laurel Run</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: 40px;"><input type="checkbox"/> WRITTEN WAIVER 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>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>
---	---

RECEIVED
Office of Oil and Gas
AUG 13 2021
WV Department of
Environmental Protection

Required Attachments:

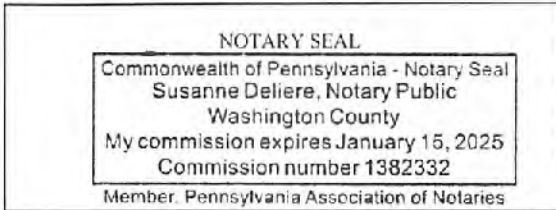
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication 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.

WW-6AC
(1/12)

Certification of Notice is hereby given:

THEREFORE, I Amy L. Morris, 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. Morris <i>Amy L. Morris</i></u>		<u>Canonsburg, PA 15317</u>
Its:	<u>Permitting Specialist - Appalachia Region</u>	Facsimile:	<u>724-338-2030</u>
Telephone:	<u>724-749-8388</u>	Email:	<u>amorris@tug-hill.com</u>



Subscribed and sworn before me this, 5th day of August 2021
Susanne Deliere Notary Public
 My Commission Expires 1/15/2025

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.

RECEIVED
Office of Oil and Gas

AUG 13 2021

WV Department of
Environmental Protection

11/19/2021

**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: 0/11/2021 **Date Permit Application Filed:** 8/12/2021

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: CNX Land, LLC (Well Pad and Access Road)
Address: 1000 Consol Energy Drive
Canonsburg, PA 15317

COAL OWNER OR LESSEE
Name: CNX Land, LLC
Address: 1000 Consol Energy Drive
Canonsburg, PA 15317

Name: _____
Address: _____

COAL OPERATOR
Name: Marshall County Coal Resources, Inc. Attn: Steve Blair
Address: 46226 National Road
St. Clairsville, OH 43950

SURFACE OWNER(s) (Road and/or Other Disturbance)
Name: Kevin R. & Shelly Jo Evans
Address: 3820 New Bethel Road
Cameron, WV 26033
Name: David L. & Arianne R. Robinson
Address: 3518 New Bethel Road
Cameron, WV 26033

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
Name: *see attached
Address: _____

SURFACE OWNER(s) (Impoundments or Pits)
Name: _____
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD
Name: _____
Address: _____

*Please attach additional forms if necessary

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Department of
Environmental Protection
11/19/2021

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.

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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

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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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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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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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WW-6A
(8-13)

API NO. 4705102397
OPERATOR WELL NO. Brackenridge S-10HU
Well Pad Name: Brackenridge

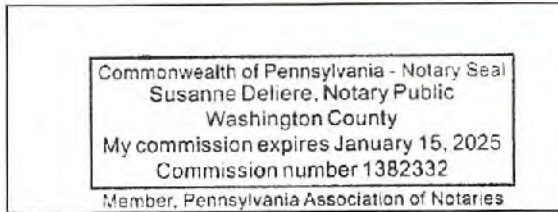
Notice is hereby given by:

Well Operator: Tug Hill Operating, LLC
Telephone: 724-749-8388
Email: amorris@tug-hill-op.com *amorris*

Address: 380 Southpointe Boulevard, Plaza II, Suite 200
Canonsburg, PA 15317
Facsimile: 724-336-2030

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 5th day of August 2021
Susanne Deliere Notary Public
My Commission Expires 1/15/2025

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Exhibit WW-6A**Supplement Pg. 1A**

Tug Hill Operating, LLC
380 Southpointe Blvd, Suite 200
Cannonsburg, PA 15137

Residences within Two-Thousand Feet (2,000')

Well: Breckenridge S – 18HU
District: Cameron
State: WV

There is one (1) residence, no business or commercial sites, no churches, no schools or no emergency facilities within two-thousand feet (2,000') of the above referenced well location.

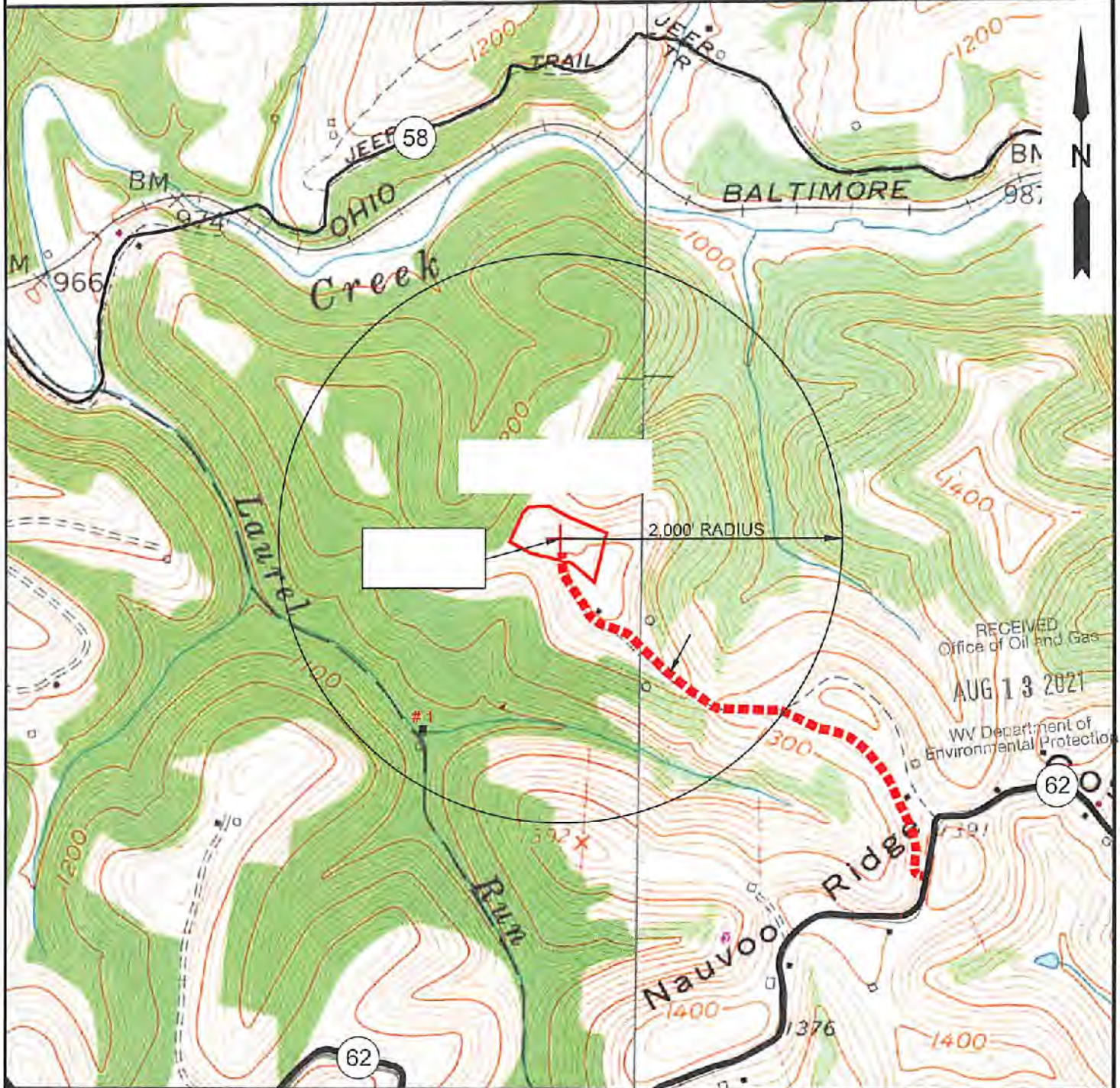
<p>Residence (#1) TM 3-19-78 CNX Land, LLC Phone: 724-485-4000 Physical Address: Unknown – Possible Unoccupied Home or Hunting Cabin Tax Address: 1000 Consol Energy DR Canonsburg, PA 15317-6506</p>
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WW-6A

PROPOSED BRECKENRIDGE S - 18HU

SUPPLEMENT PG. 1B



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NOTE: THERE APPEARS TO BE ONE (1) POSSIBLE WATER SOURCE WITHIN 2,000'.



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5654
1412 Kanawha Boulevard East | Charleston, WV 25301 | 304.546.3952
254 East Beckley Bypass | Beckley, WV 25801 | 304.295.3296
sllwv.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	CAMERON	360 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	9026	04/08/2021	1" = 1000'



TUG HILL
OPERATING

11/19/2021

WW-6A3
(1/12)

**STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF ENTRY FOR PLAT SURVEY**

Notice Time Requirement: Notice shall be provided at least **SEVEN (7)** days but no more than **FORTY-FIVE (45)** days prior to entry

Date of Notice: 12/1/2020 **Date of Planned Entry:** 12/7/2020

Delivery method pursuant to West Virginia Code § 22-6A-10a

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

Pursuant to West Virginia Code § 22-6A-10(a), Prior to filing a permit application, the operator shall provide notice of planned entry on to the surface tract to conduct any plat surveys required pursuant to this article. Such notice shall be provided at least seven days but no more than forty-five days prior to such entry to: (1) The surface owner of such tract; (2) to any owner or lessee of coal seams beneath such tract that has filed a declaration pursuant to section thirty-six, article six, chapter twenty-two of this code; and (3) any owner of minerals underlying such tract in the county tax records. The notice shall include a statement that copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, which statement shall include contact information, including the address for a web page on the Secretary's web site, to enable the surface owner to obtain copies from the secretary.

Notice is hereby provided to:

SURFACE OWNER(s)
Name: CNX Land, LLC (Well Pad and Access Road)
Address: 1000 Consol Energy Drive
Canonsburg, PA 15317
Name: Kevin R & Shelly Jo Evans (Access Road)
Address: 3620 New Bethel Road
Cameron, WV 26033
Name: David L. & Arianne R. Robinson
Address: 3518 New Bethel Road
Cameron, WV 26033

COAL OWNER OR LESSEE
Name: CNX Land, LLC
Address: 1000 Consol Energy Drive
Canonsburg, PA 15317

MINERAL OWNER(s)
Name: Onward E. Burge
Address: RD 3 Box 33
Cameron, WV 26033 **See attached list
*please attach additional forms if necessary

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Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(a), notice is hereby given that the undersigned well operator is planning entry to conduct a plat survey on the tract of land as follows:

State: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>39.83027651; -80.82685846</u>
County: <u>Marshall</u>	Public Road Access: <u>County Route 62</u>
District: <u>Cameron</u>	Watershed: <u>Grave Creek (HUC 10) and Laurel Run</u>
Quadrangle: <u>Glen Easton 7.5'</u>	Generally used farm name: <u>CNX Land, LLC</u>

Copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production 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). Copies of such documents or additional information related to horizontal drilling may be obtained from the Secretary by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

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

Address: 380 Southpointe Boulevard, Plaza II, Suite 200
Canonsburg, PA 15317
Facsimile: 724-338-2020

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 of your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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4705102397

WW-6A3 Attachment
Breckenridge Well Pad

Jan Marie Crego 2110 Plum Street Parkersburg, WV 26101	Nina K. Fletcher 45 Briarwood Drive Wheeling, WV 26003
Leon McCard 25 Honour Cir NW Atlanta, GA 30305	Gary Briggs 1508 26th Street Cody, WY 82414
Jeff and Connie Briggs 803 Meadow Lane Ave Apt 5 Cody, WY 42414	Roger L. Briggs 908 Amble Court Harrington, DE 19952
Thomas A. Briggs 996 Tunnel Hill Road Cameron, WV 26033	Julia A. Briggs 8154 W. Ohio State Lane NW Lancaster, OH 43130
Deena J. Palomo 20 Maxwell Street, Apartment 4 Hebron, IN 46341	Jerrilyn Litts 5582 Fairview Street Stevensville, MI 49127
Douglas Briggs PO Box 1416 Gillette, WY 82717	Gerri A Bannister 508 Richards Ave Gillette, WY 82717
John Briggs PO Box 2008 Richland, WA 99352	Noble Marcellus LP 15601 North Dallas Parkway, Suite 900 Addison, TX 75001
Meridius Ventures LLC PO Box 1099 Ripley, WV 25271	Hasan's Ventures LLC PO Box 1099 Ripley, WV 25271
Bounty Minerals LLC 777 Main Street, Suite 3400 Fort Worth, TX 76102	Goshorn Ridge, LLC 112 Algonquin Trace Wheeling, WV 26003

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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: 09/11/2021 **Date Permit Application Filed:** 08/12/2021

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: CNX Land, LLC
Address: 1000 Consol Energy Drive
Canonsburg, PA 15317

Name: Kevin R. and Shelly Jo Evans *See Attached
Address: 3820 New Bethel Road
Cameron, WV 26033

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>531,944.17</u>
County:	<u>Marshall</u>	UTM NAD 83 Northing:	<u>4,403,986.47</u>
District:	<u>Cameron</u>	Public Road Access:	<u>CR 62</u>
Quadrangle:	<u>Glen Easton 7.5'</u>	Generally used farm name:	<u>CNX Land, LLC</u>
Watershed:	<u>Grace Creek (Huc 10) & Laurel Run</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: amorris@tug-hillop.com

Address: 380 Southpointe Boulevard, Plaza II, Suite 200
Canonsburg, PA 15317
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.

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**Additional Notice for WW-6A5
Breckenridge Pad**

David L. & Arianne R. Robinson
3518 New Bethel Road
Cameron, WV 26033

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WV Department of
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4705102397

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

January 8, 2021

Jimmy Wriston, P. E.
Deputy Secretary/
Acting 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 Breckenridge Pad, Marshall County
Breckenridge S-18HU Well site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2020-0398 issued to Tug Hill Operating for access to the State Road for a well site located off Marshall County Route 62 SLS MP 3.81.

This operator is in compliance with §22-6A-20 of the WV Code. Operator has signed a DISTRICT WIDE 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,

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

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

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TUG HILL

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PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Breckenridge Wells

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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Breckenridge Well Site

Site Design, Construction Plans, & Erosion and Sediment Control Plans

Tug Hill Operating
Marshall County
Cameron District

Latitude 39.83027651°

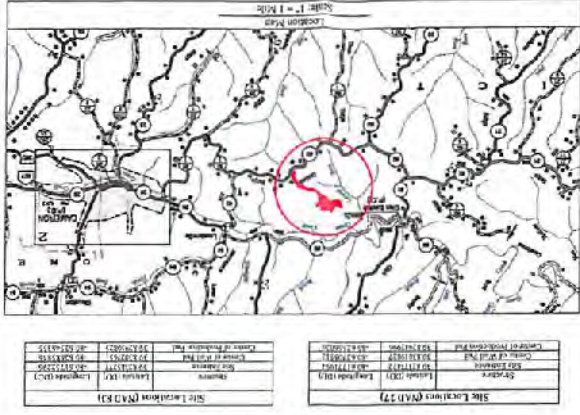
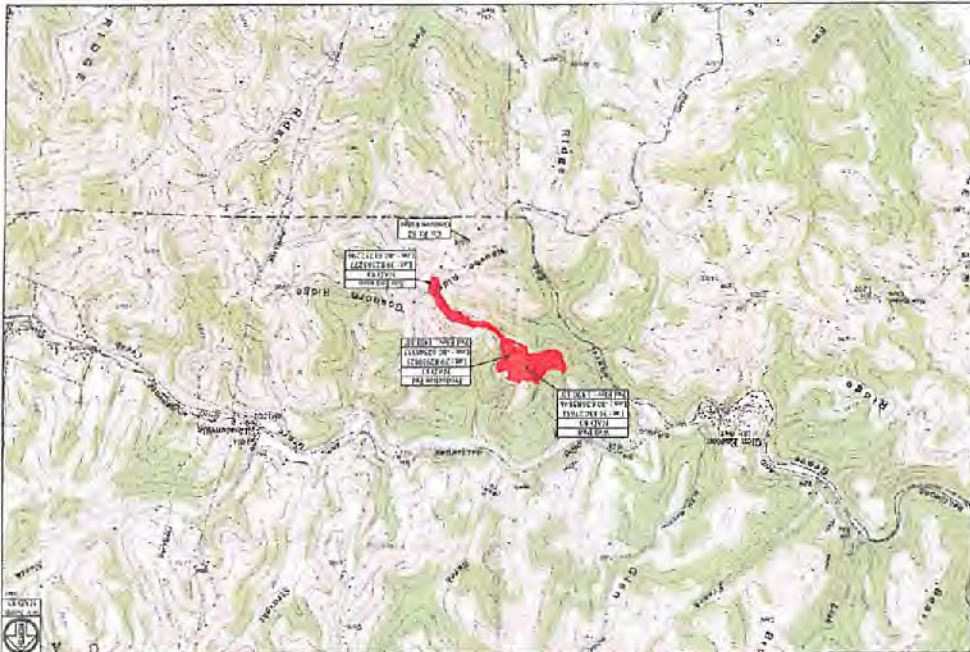
Longitude -80.62683846°

Middle Grave Creek Watershed

Exhibit A: Final Design: Issue for Permitting



Topographic		Soils		Vegetation		Geology		Seismicity	
1:25,000 scale USGS 7.5 Minute Series	1:25,000 scale USGS 7.5 Minute Series	1:25,000 scale USGS 7.5 Minute Series	1:25,000 scale USGS 7.5 Minute Series	1:25,000 scale USGS 7.5 Minute Series	1:25,000 scale USGS 7.5 Minute Series	1:25,000 scale USGS 7.5 Minute Series	1:25,000 scale USGS 7.5 Minute Series	1:25,000 scale USGS 7.5 Minute Series	1:25,000 scale USGS 7.5 Minute Series
...



Sheet	1-1-1	Description
VI	1-1-1-1	Schedule of Quantities
VII	1-1-1-2	Construction Site Conditions
VIII	1-1-1-3	Site Soil Map
IX	1-1-1-4	Clearing Plan
X	1-1-1-5	Site Plan
XI	1-1-1-6	Clearing Detail
XII	1-1-1-7	Site Key
XIII	1-1-1-8	Plan View
XIV	1-1-1-9	Cross Section - Access Road
XV	1-1-1-10	Cross Section - Landowner Access Road
XVI	1-1-1-11	Landowner Access Road Elevation
XVII	1-1-1-12	Site Elevation
XVIII	1-1-1-13	Access Road Detail
XIX	1-1-1-14	Access Road Detail
XX	1-1-1-15	Site Elevation

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Cover Sheet
Breckenridge Well Site
Cameron District
Marshall County, WV

Sheet	1-1-1	Description
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XX	1-1-1-15	Site Elevation

Property Owner Information - Breckenridge Well Site			
Name	Address	City	State
...
...
...

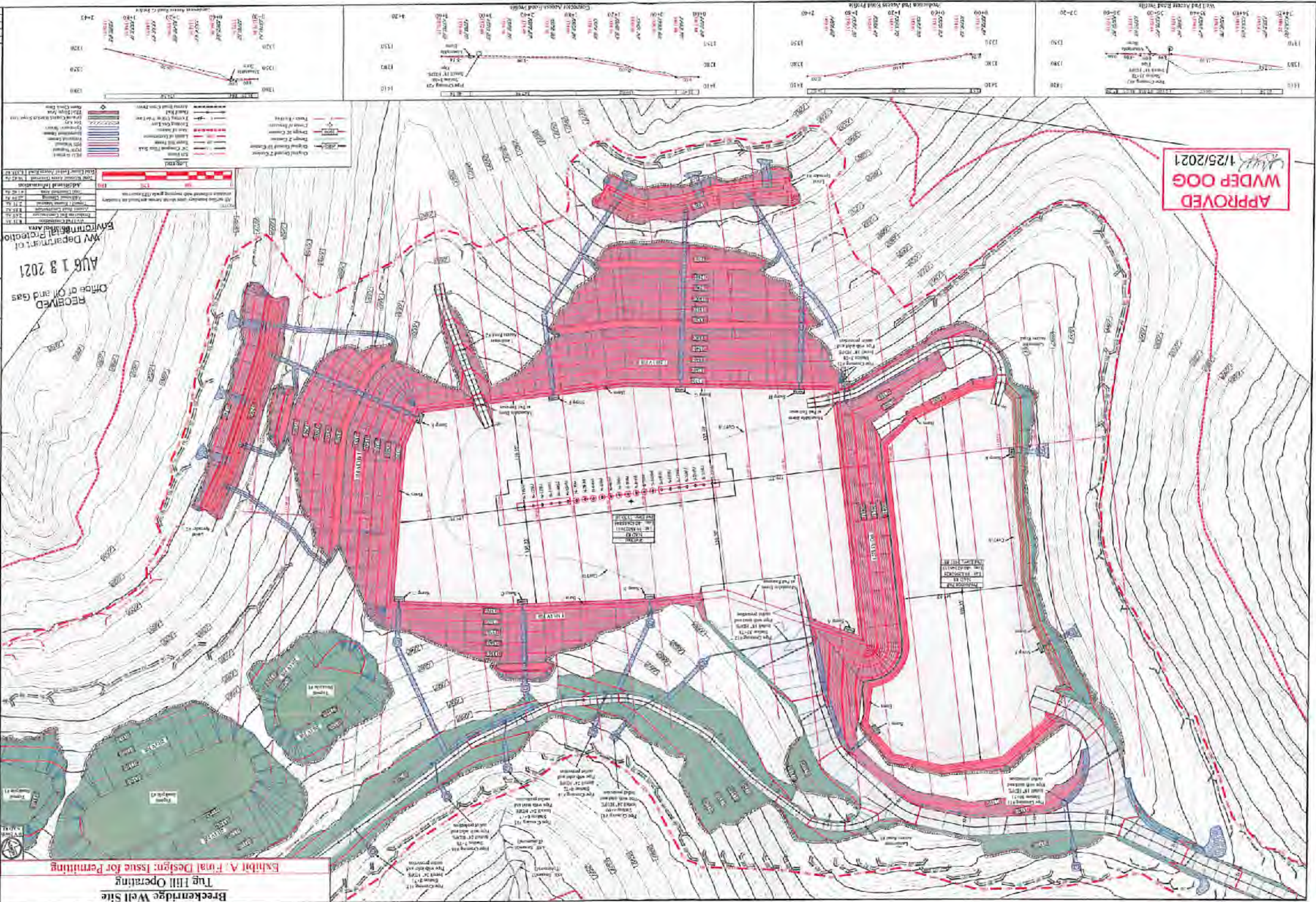
Access Road	
Access Road	1:25,000 scale
...	...

Breckenridge Well Site Quantities	
Item	Quantity
...	...
...	...

Additional Information	
...	...
...	...

Breckenridge Well Site Quantities	
Item	Quantity
...	...
...	...

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Legend

- Well Path
- Production Profile
- Wetland
- Stream Channel
- Road
- Access Road
- Production Pipeline
- Other Features



THIS DOCUMENT
 IS PREPARED FOR
 TUG HILL
 OIL & GAS
 COMPANY

Breckenridge Well Site
 Carbon District
 Marshall County, WV

Sheet 1 of 2

DATE	10/10/2020
BY	PLM
REVISION	7/2
SCALE	AS SHOWN

Tug Hill Operating Issue for Permitting
 Exhibit A: Final Design: Issue for Permitting