



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

Friday, January 21, 2022
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-7HM
47-051-02428-00-00

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.

A blue ink signature of James A. Martin.

James A. Martin
Chief

Operator's Well Number: BRECKENRIDGE S-7HM
Farm Name: CNX LAND LLC
U.S. WELL NUMBER: 47-051-02428-00-00
Horizontal 6A New Drill
Date Issued: 1/21/2022

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 DEPOCGNotify@wv.gov.

01/21/2022

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-7HM Well Pad Name: Breckenridge

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

4) Elevation, current ground: 1,380' Elevation, proposed post-construction: 1,370.10'

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

Other _____

(b) If Gas Shallow X Deep _____

Horizontal X _____

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus is the target formation at a depth of 6,944' - 6,995', thickness of 51' and anticipated pressure of approx. 3800 psi.

8) Proposed Total Vertical Depth: 7,095'

9) Formation at Total Vertical Depth: Onondaga

10) Proposed Total Measured Depth: 20,088'

11) Proposed Horizontal Leg Length: 11,466.54'

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

13) Method to Determine Fresh Water Depths: Based on the depth of Pittsburgh Coal seam, per WVGES mapping contours

14) Approximate Saltwater Depths: 1,515'

15) Approximate Coal Seam Depths: Sewickley Coal - 952' and Pittsburgh Coal - 1,042'

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

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

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(a) If Yes, provide Mine Info: Name: Marshall County Mine
Depth: Pittsburgh coal - 1,042'; subsea level - 328'
Seam: Pittsburgh
Owner: Marshall County Coal Resources, Inc.

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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	13 3/8"	NEW	J55	54.5#	1,150'	1,150' ✓	1149ft ³ (CTS)
Intermediate	9 5/8"	NEW	J55	36#	3,060'	3,060' ✓	1015ft ³ (CTS)
Production	5 1/2"	NEW	P110	20#	20,088'	20,088' ✓	5130ft ³ (CTS)
Tubing	2 3/8"	NEW	N80	4.7#	8,054'		
Liners							

B.S. 10-14-21

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	13 3/8"	17 1/2"	.38	2,740	2,192	SEE #24	1.2
Intermediate	9 5/8"	12 1/4"	.352	3,520	2,816	SEE #24	1.19
Production	5 1/2"	8 7/8" _ 8 3/4"	.361	12,640	10,112	SEE #24	1.17/1.19
Tubing	2 3/8"		.19	11,200	8,960		
Liners							

PACKERS

Kind:	N/A			RECEIVED Office of Oil and Gas
Sizes:	N/A			DEC 14 2021
Depths Set:	N/A			WV Department of Environmental Protection

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

Drill through the Marcellus and TD Pilot Hole 100' into the Onondaga. Log vertical section and run a solid cement plug back to proposed KOP. Drill curve and lateral per proposed well plan, run and cement production casing. Perform CBL from 60 deg to surface, make cleanout run, and stimulate.

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

Well to be completed with approximately 28,700,000 lb proppant and 520,000 bbl of water. Max rate = 80 bpm; max psi = 9,000#.

B.S. 10-14-21

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 45.50 acres

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

23) Describe centralizer placement for each casing string:

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

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

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

25) Proposed borehole conditioning procedures:

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

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*Note: Attach additional sheets as needed.



Tug Hill Operating, LLC Casing and Cement Program

Breckenridge S-7HM

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	13 3/8"	J55	17 1/2"	1,150'	CTS
Intermediate	9 5/8"	J55	12 1/4"	3,060'	CTS
Production	5 1/2"	CYHP110	8 7/8 x 8 3/4"	20,068'	CTS

Cement

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

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

Intermediate: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15 ppg, Y=1.38

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

Production: 50.50 Poz: Premium NE-1 + .1% bwoc ASA-301 + 60lb/sk ASCA-1 + .35% bwoc BA-10A + .25% bwoc MPA-170, 44 lb sack + .5% bwoc R-3 + .75 gals/100sk FP-13L – Production Cement mixed at 14.5 ppg, Y = 1.3

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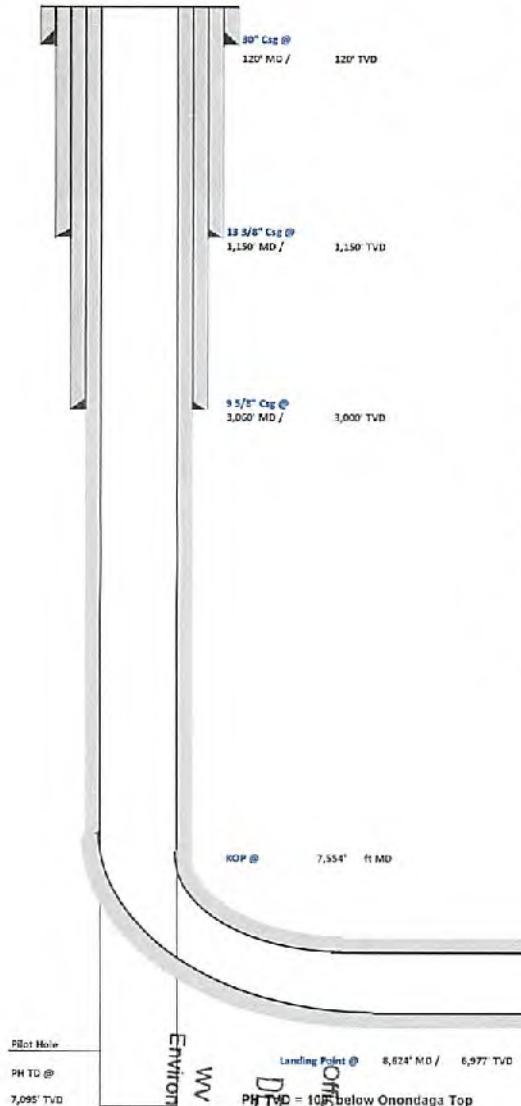


WELL NAME: Breckenridge 5-7HM
STATE: WV COUNTY: Marshall
DISTRICT: Cameron
DF Elev: 1,370' **GT Elev:** 1,370'
TD: 20,088'
TH Latitude: 39.830129
TH Longitude: -80.626984
BH Latitude: 39.798011
BH Longitude: -80.617998

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	1048
Sewickley Coal	952
Pittsburgh Coal	1042
Big Lime	2103
Weir	2624
Berea	2821
Gordon	3073
Rhinestreet	6253
Genesee/Burkett	8788
Tully	8824
Hamilton	6853
Marcellus	6944
Landing Depth	6977
Onondaga	6995
Pilot Hole TD	7095

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	120'	120'	BW	BW	Surface
Surface	17 1/2	13 3/8	1,150'	1,150'	54.5	J55	Surface
Intermediate 1	12 1/4	9 5/8	3,060'	3,000'	36	J55	Surface
Production	8 7/8 x 8 3/4	5 1/2	20,088'	7,476'	20	CYHP110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
Type	Sacks	Class	Density (ppg)	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,105	A	15.6	Air	5 Centralizers at equal distance
Intermediate 1	878	A	15	Air	1 Centralizer every other joint
Production	4,463	A	14.5	Air / SCBM	1 every other joint in lateral; 1 per joint in curve; 1 every other joint to surface



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Pilot Hole
 PH TD @ 7,095' TVD
 Landing Point @ 8,624' MD / 6,977' TVD
 PH MD = 10' below Onondaga Top
 KOP @ 7,554' ft MD

Lateral TD @ 20,088' ft MD
 7,176' ft TVD

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WW-9
(4/16)

API Number 47 - 051 - 62428
Operator's Well No. Breckenridge S-7HM

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) Middle Fish Creek 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 slaging fresh water for frac and flow back water

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

Proposed Disposal Method For Treated Pit Wastes:

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

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

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

-If oil based, what type? Synthetic, petroleum, etc. n/a

Additives to be used in drilling medium? _____

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 EOH1386426)

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

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

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

Company Official Signature Jim Pancake
Company Official (Typed Name) Jim Pancake
Company Official Title Vice President - Geosciences

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Subscribed and sworn before me this 2nd day of December, 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 # 012112022
Member, Pennsylvania Association of Notaries

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 5.44 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: Bary Stites

Comments: _____

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Title: Oil and Gas Inspector Date: 10-14-21

Field Reviewed? () Yes () No

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TUG HILL
OPERATING

Well: Breckenridge S-07 HM (slot J)
Site: Breckenridge (1 row)
Project: Marshall County, West Virginia
Design: rev5
Rig:

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Breckenridge S-07HM LP r4	6963.00	-1212.10	-3524.41	14463956.56	1741613.97	39.82704000	-80.63655500
- plan misses target center by 328.88ft at 6100.00ft MD (6798.54 TVD, -1384.29 N, -3305.80 E)							
Breckenridge S-07HM BHL r4	7176.00	-11757.34	2573.01	14453411.35	1747711.38	39.79601100	-80.61799800
- plan hits target center							

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	1600.00	0.00	0.00	1600.00	0.00	0.00	0.00	0.000	0.00	KOP Begin 2 1/100' build
3	2000.00	8.00	230.00	1998.70	-17.92	-21.35	2.00	230.000	12.62	Begin 2 1/100' build/tum
4	3712.01	41.60	251.12	3532.39	-286.42	-689.82	2.00	25.167	127.38	Begin 41.60° tangent
5	7553.64	41.60	251.12	6405.03	-1111.67	-3083.32	0.00	0.000	384.92	Begin 8 1/100' build/tum
6	6055.13	50.00	193.05	6776.58	-1367.00	-3300.19	8.00	-100.299	585.32	Begin 10 1/100' build/tum
7	8623.79	89.01	149.74	6977.12	-1856.12	-3202.85	10.00	-57.217	1083.00	Begin 89.00° lateral
8	20088.25	89.01	149.74	7176.00	-11757.34	2573.01	0.00	0.00012034.59	PBHL/TD 20088.26 MD 7176.00 TVD	



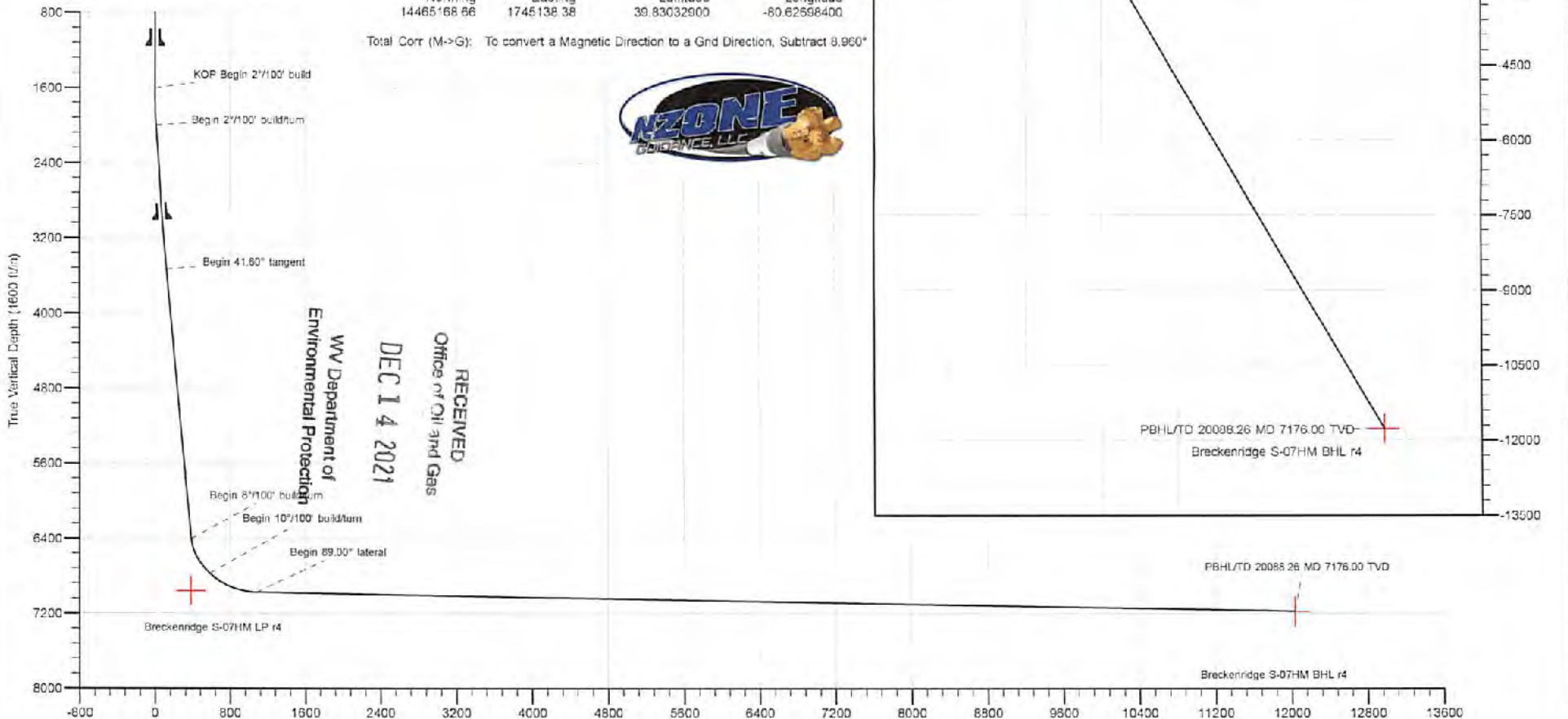
Azimuths to Grid North
True North: -0.24°
Magnetic North: 8.96°

Magnetic Field
Strength: 51737.1nT
Dip Angle: 66.54°
Date: 9/5/2021
Model: IGRF2020

Geodetic System: Universal Transverse Mercator (US Survey Feet)
Datum: NAD83 West Virginia - HARN
Ellipsoid: GRS 1980
Zone: Zone 17N (84 W to 78 W)
System Datum: Mean Sea Level
Depth Reference: CL @ 1370.00ft

Northing: 14465168.66 Easting: 1745138.38 Latitude: 39.83032900 Longitude: -80.62558400

Total Corr (M->G): To convert a Magnetic Direction to a Grd Direction, Subtract 8.960°



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Planning Report - Geographic

Database:	DB_Dec2220_v16	Local Co-ordinate Reference:	Well Breckenridge S-07 HM (slot J)
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-07 HM (slot J)	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 76 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-07 HM (slot J)					
Well Position	+N/-S	0.00 ft	Northing:	14,465,168.86 usft	Latitude:	39.83032900
	+E/-W	0.00 ft	Easting:	1,745,138.38 usft	Longitude:	-80.62698400
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
	IGRF2020	9/5/2021	(°)	(°)	(nT)
			-8.721	66.539	51,737.05693790

Design	rev5			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	186.92

Plan Survey Tool Program	Date			
Depth From	Depth To	Survey (Wellbore)	Tool Name	Remarks
(ft)	(ft)			
1	0.00	20,088.26 rev5 (Original Hole)		

Plan Sections										
Measured			Vertical							
Depth	Inclination	Azimuth	Depth	+N/-S	+E/-W	Dogleg	Build	Turn		TFO
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(°/100ft)	(°/100ft)	(°/100ft)		(°)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.000
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00		0.000
2,000.00	8.00	230.00	1,998.70	-17.92	-21.36	2.00	2.00	0.00		230.000
3,712.01	41.60	251.12	3,532.39	-286.42	-669.82	2.00	1.96	1.23		25.166
7,553.64	41.60	251.12	6,405.03	-1,111.67	-3,063.32	0.00	0.00	0.00		0.000
8,065.13	50.00	193.85	6,776.58	-1,367.80	-3,300.19	8.00	1.64	-11.20		-100.299
8,823.79	89.01	149.74	6,977.12	-1,856.12	-3,202.85	10.00	6.98	-7.90		-57.217
20,088.26	89.01	149.74	7,176.00	-11,757.34	2,573.01	0.00	0.00	0.00		0.000 Breckenridge S-07HM

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Planning Report - Geographic

Database:	DB_Dec2220_v16	Local Co-ordinate Reference:	Well Breckenridge S-07 HM (slot J)
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-07 HM (slot J)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev5		

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	14,465,168.66	1,745,138.38	39.83032900	-80.62698400	
100.00	0.00	0.00	100.00	0.00	0.00	14,465,168.66	1,745,138.38	39.83032900	-80.62698400	
200.00	0.00	0.00	200.00	0.00	0.00	14,465,168.66	1,745,138.38	39.83032900	-80.62698400	
300.00	0.00	0.00	300.00	0.00	0.00	14,465,168.66	1,745,138.38	39.83032900	-80.62698400	
400.00	0.00	0.00	400.00	0.00	0.00	14,465,168.66	1,745,138.38	39.83032900	-80.62698400	
500.00	0.00	0.00	500.00	0.00	0.00	14,465,168.66	1,745,138.38	39.83032900	-80.62698400	
600.00	0.00	0.00	600.00	0.00	0.00	14,465,168.66	1,745,138.38	39.83032900	-80.62698400	
700.00	0.00	0.00	700.00	0.00	0.00	14,465,168.66	1,745,138.38	39.83032900	-80.62698400	
800.00	0.00	0.00	800.00	0.00	0.00	14,465,168.66	1,745,138.38	39.83032900	-80.62698400	
900.00	0.00	0.00	900.00	0.00	0.00	14,465,168.66	1,745,138.38	39.83032900	-80.62698400	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,465,168.66	1,745,138.38	39.83032900	-80.62698400	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,465,168.66	1,745,138.38	39.83032900	-80.62698400	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,465,168.66	1,745,138.38	39.83032900	-80.62698400	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,465,168.66	1,745,138.38	39.83032900	-80.62698400	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,465,168.66	1,745,138.38	39.83032900	-80.62698400	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,465,168.66	1,745,138.38	39.83032900	-80.62698400	
1,600.00	0.00	0.00	1,600.00	0.00	0.00	14,465,168.66	1,745,138.38	39.83032900	-80.62698400	
KOP Begin 2°/100' build										
1,700.00	2.00	230.00	1,699.98	-1.12	-1.34	14,465,167.54	1,745,137.04	39.83032594	-80.62698378	
1,800.00	4.00	230.00	1,799.84	-4.49	-5.35	14,465,164.18	1,745,133.03	39.83031674	-80.62700311	
1,900.00	6.00	230.00	1,899.45	-10.09	-12.02	14,465,158.58	1,745,126.35	39.83030144	-80.62702697	
2,000.00	8.00	230.00	1,998.70	-17.92	-21.36	14,465,150.74	1,745,117.02	39.83028003	-80.62706034	
Begin 2°/100' build/turn										
2,100.00	9.85	234.98	2,097.49	-27.30	-33.69	14,465,141.36	1,745,104.68	39.83025441	-80.62710441	
2,200.00	11.74	238.38	2,195.72	-37.55	-49.36	14,465,131.12	1,745,089.02	39.83022846	-80.62716038	
2,300.00	13.67	240.84	2,293.26	-48.64	-68.35	14,465,120.03	1,745,070.03	39.83019621	-80.62722817	
2,400.00	15.61	242.70	2,390.01	-60.57	-90.63	14,465,108.10	1,745,047.75	39.83016371	-80.62730770	
2,500.00	17.57	244.16	2,485.84	-73.32	-116.17	14,465,095.34	1,745,022.20	39.83012898	-80.62739888	
2,600.00	19.53	245.33	2,580.64	-86.86	-144.95	14,465,081.79	1,744,993.42	39.83009208	-80.62750158	
2,700.00	21.51	246.30	2,674.29	-101.22	-176.93	14,465,067.44	1,744,961.44	39.83005304	-80.62761571	
2,800.00	23.48	247.11	2,766.68	-116.34	-212.07	14,465,052.32	1,744,926.30	39.83001192	-80.62774111	
2,900.00	25.46	247.80	2,857.89	-132.22	-250.33	14,465,036.45	1,744,888.04	39.82996877	-80.62787762	
3,000.00	27.44	248.40	2,947.22	-148.83	-291.66	14,465,019.84	1,744,846.71	39.82992363	-80.62802508	
3,100.00	29.43	248.92	3,035.15	-166.15	-336.01	14,465,002.52	1,744,802.36	39.82987656	-80.62818331	
3,200.00	31.41	249.38	3,121.38	-184.16	-383.33	14,464,984.50	1,744,755.04	39.82982763	-80.62835212	
3,300.00	33.40	249.79	3,205.80	-202.85	-433.56	14,464,965.81	1,744,704.82	39.82977688	-80.62853130	
3,400.00	35.39	250.16	3,288.31	-222.19	-486.64	14,464,946.48	1,744,651.74	39.82972439	-80.62872064	
3,500.00	37.38	250.50	3,368.81	-242.15	-542.50	14,464,926.52	1,744,595.86	39.82967021	-80.62891990	
3,600.00	39.37	250.81	3,447.20	-262.71	-601.07	14,464,905.96	1,744,537.30	39.82961441	-80.62912804	
3,700.00	41.36	251.09	3,523.39	-283.84	-662.29	14,464,884.82	1,744,476.09	39.82955705	-80.62934721	
3,712.01	41.60	251.12	3,532.39	-286.42	-669.82	14,464,882.24	1,744,468.56	39.82955008	-80.62937405	
Begin 41.60° tangent										
3,800.00	41.60	251.12	3,598.18	-305.32	-725.10	14,464,863.34	1,744,413.28	39.82949860	-80.62957123	
3,900.00	41.60	251.12	3,672.96	-326.80	-787.92	14,464,841.86	1,744,350.45	39.82944052	-80.62979532	
4,000.00	41.60	251.12	3,747.73	-348.29	-850.75	14,464,820.38	1,744,287.63	39.82938224	-80.63001941	
4,100.00	41.60	251.12	3,822.51	-369.77	-913.57	14,464,798.90	1,744,224.80	39.82932396	-80.63024350	
4,200.00	41.60	251.12	3,897.29	-391.25	-976.40	14,464,777.41	1,744,161.98	39.82926568	-80.63046759	
4,300.00	41.60	251.12	3,972.06	-412.73	-1,039.22	14,464,755.93	1,744,099.15	39.82920740	-80.63069168	
4,400.00	41.60	251.12	4,046.84	-434.21	-1,102.05	14,464,734.45	1,744,036.33	39.82914912	-80.63091577	
4,500.00	41.60	251.12	4,121.62	-455.69	-1,164.87	14,464,712.97	1,743,973.50	39.82909083	-80.63113986	
4,600.00	41.60	251.12	4,196.39	-477.18	-1,227.70	14,464,691.49	1,743,910.68	39.82903255	-80.63136394	
4,700.00	41.60	251.12	4,271.17	-498.66	-1,290.52	14,464,670.01	1,743,847.85	39.82897427	-80.63158803	
4,800.00	41.60	251.12	4,345.95	-520.14	-1,353.35	14,464,648.53	1,743,785.03	39.82891599	-80.63181212	
4,900.00	41.60	251.12	4,420.72	-541.62	-1,416.17	14,464,627.04	1,743,722.20	39.82885770	-80.63203620	

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Planning Report - Geographic

Database:	DB_Dec2220_v16	Local Co-ordinate Reference:	Well Breckenridge S-07 HM (slot J)
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-07 HM (slot J)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev5		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
5,000.00	41.60	251.12	4,495.50	-563.10	-1,479.00	14,464,605.56	1,743,859.38	39.82879942	-80.63225029	
5,100.00	41.60	251.12	4,570.28	-584.58	-1,541.82	14,464,568.08	1,743,596.55	39.82874114	-80.63248438	
5,200.00	41.60	251.12	4,645.05	-606.07	-1,604.65	14,464,562.60	1,743,533.73	39.82868285	-80.63270846	
5,300.00	41.60	251.12	4,719.83	-627.55	-1,667.47	14,464,541.12	1,743,470.90	39.82862457	-80.63293255	
5,400.00	41.60	251.12	4,794.61	-649.03	-1,730.30	14,464,519.64	1,743,408.08	39.82856628	-80.63315663	
5,500.00	41.60	251.12	4,869.38	-670.51	-1,793.13	14,464,498.15	1,743,345.25	39.82850800	-80.63338072	
5,600.00	41.60	251.12	4,944.16	-691.99	-1,855.95	14,464,476.67	1,743,282.43	39.82844971	-80.63360480	
5,700.00	41.60	251.12	5,018.94	-713.47	-1,918.78	14,464,455.19	1,743,219.60	39.82839142	-80.63382888	
5,800.00	41.60	251.12	5,093.71	-734.96	-1,981.60	14,464,433.71	1,743,156.78	39.82833313	-80.63405297	
5,900.00	41.60	251.12	5,168.49	-756.44	-2,044.43	14,464,412.23	1,743,093.96	39.82827485	-80.63427705	
6,000.00	41.60	251.12	5,243.27	-777.92	-2,107.25	14,464,390.75	1,743,031.13	39.82821656	-80.63450113	
6,100.00	41.60	251.12	5,318.04	-799.40	-2,170.08	14,464,369.26	1,742,968.31	39.82815827	-80.63472521	
6,200.00	41.60	251.12	5,392.82	-820.88	-2,232.90	14,464,347.78	1,742,905.48	39.82809998	-80.63494930	
6,300.00	41.60	251.12	5,467.60	-842.36	-2,295.73	14,464,326.30	1,742,842.66	39.82804169	-80.63517338	
6,400.00	41.60	251.12	5,542.37	-863.85	-2,358.55	14,464,304.82	1,742,779.83	39.82798340	-80.63539746	
6,500.00	41.60	251.12	5,617.15	-885.33	-2,421.38	14,464,283.34	1,742,717.01	39.82792511	-80.63562154	
6,600.00	41.60	251.12	5,691.93	-906.81	-2,484.20	14,464,261.86	1,742,654.18	39.82786682	-80.63584562	
6,700.00	41.60	251.12	5,766.70	-928.29	-2,547.03	14,464,240.37	1,742,591.36	39.82780853	-80.63606970	
6,800.00	41.60	251.12	5,841.48	-949.77	-2,609.85	14,464,218.89	1,742,528.53	39.82775024	-80.63629378	
6,900.00	41.60	251.12	5,916.26	-971.25	-2,672.68	14,464,197.41	1,742,465.71	39.82769195	-80.63651786	
7,000.00	41.60	251.12	5,991.03	-992.74	-2,735.50	14,464,175.93	1,742,402.88	39.82763366	-80.63674194	
7,100.00	41.60	251.12	6,065.81	-1,014.22	-2,798.33	14,464,154.45	1,742,340.06	39.82757536	-80.63696602	
7,200.00	41.60	251.12	6,140.59	-1,035.70	-2,861.15	14,464,132.97	1,742,277.23	39.82751707	-80.63719010	
7,300.00	41.60	251.12	6,215.36	-1,057.18	-2,923.98	14,464,111.48	1,742,214.41	39.82745877	-80.63741417	
7,400.00	41.60	251.12	6,290.14	-1,078.66	-2,986.80	14,464,090.00	1,742,151.58	39.82740048	-80.63763825	
7,500.00	41.60	251.12	6,364.92	-1,100.14	-3,049.63	14,464,068.52	1,742,088.76	39.82734219	-80.63786233	
7,553.64	41.60	251.12	6,405.03	-1,111.67	-3,083.32	14,464,057.00	1,742,055.06	39.82731092	-80.63793299	
Begin 8°/100' build/turn										
7,600.00	41.07	245.56	6,439.85	-1,122.95	-3,111.76	14,464,045.72	1,742,026.62	39.82728024	-80.63808397	
7,650.00	40.81	239.47	6,477.63	-1,138.05	-3,140.80	14,464,030.62	1,741,997.58	39.82723910	-80.63818782	
7,700.00	40.86	233.35	6,515.48	-1,156.12	-3,168.01	14,464,012.55	1,741,970.37	39.82719978	-80.63829478	
7,750.00	41.24	227.29	6,553.20	-1,177.07	-3,193.25	14,463,991.60	1,741,945.13	39.82713253	-80.63837498	
7,800.00	41.93	221.35	6,590.62	-1,200.80	-3,216.40	14,463,967.87	1,741,921.98	39.82706732	-80.63845779	
7,850.00	42.91	215.60	6,627.54	-1,227.19	-3,237.36	14,463,941.48	1,741,901.02	39.82699538	-80.63853280	
7,900.00	44.18	210.09	6,663.80	-1,256.12	-3,258.01	14,463,912.55	1,741,882.37	39.82691615	-80.63859955	
7,950.00	45.99	204.85	6,699.20	-1,287.44	-3,272.27	14,463,881.23	1,741,866.12	39.82683032	-80.63865801	
8,000.00	47.43	199.89	6,733.58	-1,321.00	-3,288.05	14,463,847.67	1,741,852.33	39.82673830	-80.63870759	
8,050.00	49.38	195.21	6,766.79	-1,356.64	-3,297.30	14,463,812.03	1,741,841.09	39.82664055	-80.63874815	
8,065.13	50.00	193.85	6,776.58	-1,367.80	-3,300.19	14,463,800.87	1,741,838.19	39.82660993	-80.63875882	
Begin 10°/100' build/turn										
8,100.00	51.95	190.13	6,798.54	-1,394.29	-3,305.80	14,463,774.37	1,741,832.58	39.82653723	-80.63877899	
8,150.00	54.93	185.13	6,828.33	-1,434.08	-3,311.10	14,463,734.58	1,741,827.29	39.82642803	-80.63879842	
8,200.00	58.11	180.50	6,855.92	-1,475.71	-3,313.11	14,463,692.95	1,741,825.27	39.82631372	-80.63880620	
8,250.00	61.44	176.18	6,881.10	-1,518.87	-3,311.83	14,463,649.79	1,741,826.55	39.82619518	-80.63880226	
8,300.00	64.90	172.13	6,903.67	-1,563.24	-3,307.27	14,463,605.43	1,741,831.11	39.82607329	-80.63878664	
8,350.00	68.46	168.31	6,923.47	-1,608.46	-3,299.46	14,463,560.20	1,741,838.93	39.82594900	-80.63875946	
8,400.00	72.11	164.68	6,940.34	-1,654.21	-3,288.45	14,463,514.48	1,741,849.93	39.82582325	-80.63872093	
8,450.00	75.82	161.19	6,954.15	-1,700.13	-3,274.34	14,463,468.54	1,741,864.04	39.82569700	-80.63867133	
8,500.00	79.58	157.61	6,964.81	-1,745.87	-3,257.23	14,463,422.80	1,741,881.15	39.82557120	-80.63861104	
8,550.00	83.37	154.52	6,972.22	-1,791.08	-3,237.25	14,463,377.59	1,741,901.13	39.82544681	-80.63854053	
8,600.00	87.19	151.28	6,976.33	-1,835.42	-3,214.55	14,463,333.24	1,741,923.83	39.82532478	-80.63846033	
8,623.79	89.01	149.74	6,977.12	-1,855.12	-3,202.85	14,463,312.54	1,741,935.54	39.82526761	-80.63841894	
Begin 89.00° lateral										
8,700.00	89.01	149.74	6,978.45	-1,921.94	-3,164.45	14,463,246.73	1,741,973.93	39.82508664	-80.63828314	

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Planning Report - Geographic

Database:	DB_Dec2220_v16	Local Co-ordinate Reference:	Well Breckenridge S-07 HM (slot J)
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-07 HM (slot J)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev5		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
8,800.00	89.01	149.74	6,980.18	-2,008.30	-3,114.07	14,463,160.37	1,742,024.31	39.82484891	-80.63810495	
8,900.00	89.01	149.74	6,981.92	-2,094.67	-3,063.69	14,463,074.00	1,742,074.69	39.82461117	-80.63792676	
9,000.00	89.01	149.74	6,983.65	-2,181.03	-3,013.31	14,462,987.64	1,742,125.07	39.82437344	-80.63774857	
9,100.00	89.01	149.74	6,985.39	-2,267.39	-2,962.93	14,462,901.27	1,742,175.45	39.82413570	-80.63757038	
9,200.00	89.01	149.74	6,987.12	-2,353.76	-2,912.55	14,462,814.91	1,742,225.83	39.82389796	-80.63739219	
9,300.00	89.01	149.74	6,988.85	-2,440.12	-2,862.17	14,462,728.54	1,742,276.21	39.82366023	-80.63721401	
9,400.00	89.01	149.74	6,990.59	-2,526.49	-2,811.79	14,462,642.18	1,742,326.59	39.82342249	-80.63703582	
9,500.00	89.01	149.74	6,992.32	-2,612.85	-2,761.41	14,462,555.82	1,742,376.97	39.82318475	-80.63685764	
9,600.00	89.01	149.74	6,994.06	-2,699.22	-2,711.03	14,462,469.45	1,742,427.35	39.82294702	-80.63667946	
9,700.00	89.01	149.74	6,995.79	-2,785.58	-2,660.65	14,462,383.09	1,742,477.73	39.82270928	-80.63650127	
9,800.00	89.01	149.74	6,997.53	-2,871.95	-2,610.27	14,462,296.72	1,742,528.11	39.82247154	-80.63632309	
9,900.00	89.01	149.74	6,999.26	-2,958.31	-2,559.89	14,462,210.36	1,742,578.49	39.82223381	-80.63614492	
10,000.00	89.01	149.74	7,001.00	-3,044.67	-2,509.51	14,462,124.00	1,742,628.87	39.82199607	-80.63596674	
10,100.00	89.01	149.74	7,002.73	-3,131.04	-2,459.13	14,462,037.63	1,742,679.26	39.82175833	-80.63578856	
10,200.00	89.01	149.74	7,004.47	-3,217.40	-2,408.75	14,461,951.27	1,742,729.64	39.82152059	-80.63561039	
10,300.00	89.01	149.74	7,006.20	-3,303.77	-2,358.37	14,461,864.90	1,742,780.02	39.82128285	-80.63543221	
10,400.00	89.01	149.74	7,007.94	-3,390.13	-2,307.98	14,461,778.54	1,742,830.40	39.82104511	-80.63525404	
10,500.00	89.01	149.74	7,009.67	-3,476.50	-2,257.60	14,461,692.17	1,742,880.78	39.82080737	-80.63507587	
10,600.00	89.01	149.74	7,011.41	-3,562.86	-2,207.22	14,461,605.81	1,742,931.16	39.82056963	-80.63489770	
10,700.00	89.01	149.74	7,013.14	-3,649.22	-2,156.84	14,461,519.45	1,742,981.54	39.82033189	-80.63471953	
10,800.00	89.01	149.74	7,014.88	-3,735.59	-2,106.46	14,461,433.08	1,743,031.92	39.82009415	-80.63454136	
10,900.00	89.01	149.74	7,016.61	-3,821.95	-2,056.08	14,461,346.72	1,743,082.30	39.81985641	-80.63436319	
11,000.00	89.01	149.74	7,018.35	-3,908.32	-2,005.70	14,461,260.35	1,743,132.68	39.81961867	-80.63418503	
11,100.00	89.01	149.74	7,020.08	-3,994.68	-1,955.32	14,461,173.99	1,743,183.06	39.81938093	-80.63400687	
11,200.00	89.01	149.74	7,021.81	-4,081.05	-1,904.94	14,461,087.63	1,743,233.44	39.81914319	-80.63382870	
11,300.00	89.01	149.74	7,023.55	-4,167.41	-1,854.56	14,461,001.26	1,743,283.82	39.81890545	-80.63365054	
11,400.00	89.01	149.74	7,025.28	-4,253.77	-1,804.18	14,460,914.90	1,743,334.20	39.81866771	-80.63347238	
11,500.00	89.01	149.74	7,027.02	-4,340.14	-1,753.80	14,460,828.53	1,743,384.58	39.81842996	-80.63329422	
11,600.00	89.01	149.74	7,028.75	-4,426.50	-1,703.42	14,460,742.17	1,743,434.96	39.81819222	-80.63311606	
11,700.00	89.01	149.74	7,030.49	-4,512.87	-1,653.04	14,460,655.80	1,743,485.34	39.81795448	-80.63293791	
11,800.00	89.01	149.74	7,032.22	-4,599.23	-1,602.65	14,460,569.44	1,743,535.72	39.81771674	-80.63275975	
11,900.00	89.01	149.74	7,033.96	-4,685.60	-1,552.28	14,460,483.08	1,743,586.10	39.81747899	-80.63258160	
12,000.00	89.01	149.74	7,035.69	-4,771.96	-1,501.90	14,460,396.71	1,743,636.48	39.81724125	-80.63240344	
12,100.00	89.01	149.74	7,037.43	-4,858.32	-1,451.52	14,460,310.35	1,743,686.86	39.81700350	-80.63222529	
12,200.00	89.01	149.74	7,039.16	-4,944.69	-1,401.14	14,460,223.98	1,743,737.24	39.81676575	-80.63204714	
12,300.00	89.01	149.74	7,040.90	-5,031.05	-1,350.76	14,460,137.62	1,743,787.62	39.81652802	-80.63186899	
12,400.00	89.01	149.74	7,042.63	-5,117.42	-1,300.38	14,460,051.26	1,743,838.00	39.81629027	-80.63169084	
12,500.00	89.01	149.74	7,044.37	-5,203.78	-1,249.99	14,459,964.89	1,743,888.38	39.81605253	-80.63151270	
12,600.00	89.01	149.74	7,046.10	-5,290.15	-1,199.61	14,459,878.53	1,743,938.76	39.81581478	-80.63133455	
12,700.00	89.01	149.74	7,047.84	-5,376.51	-1,149.23	14,459,792.16	1,743,989.14	39.81557704	-80.63115641	
12,800.00	89.01	149.74	7,049.57	-5,462.88	-1,098.85	14,459,705.80	1,744,039.53	39.81533929	-80.63097826	
12,900.00	89.01	149.74	7,051.30	-5,549.24	-1,048.47	14,459,619.43	1,744,089.91	39.81510154	-80.63080012	
13,000.00	89.01	149.74	7,053.04	-5,635.60	-998.09	14,459,533.07	1,744,140.29	39.81486380	-80.63062198	
13,100.00	89.01	149.74	7,054.77	-5,721.97	-947.71	14,459,446.71	1,744,190.67	39.81462605	-80.63044384	
13,200.00	89.01	149.74	7,056.51	-5,808.33	-897.33	14,459,360.34	1,744,241.05	39.81438830	-80.63026570	
13,300.00	89.01	149.74	7,058.24	-5,894.70	-846.95	14,459,273.98	1,744,291.43	39.81415056	-80.63008756	
13,400.00	89.01	149.74	7,059.98	-5,981.06	-796.57	14,459,187.61	1,744,341.81	39.81391281	-80.62990943	
13,500.00	89.01	149.74	7,061.71	-6,067.43	-746.19	14,459,101.25	1,744,392.19	39.81367506	-80.62973129	
13,600.00	89.01	149.74	7,063.45	-6,153.79	-695.81	14,459,014.89	1,744,442.57	39.81343731	-80.62955316	
13,700.00	89.01	149.74	7,065.18	-6,240.15	-645.43	14,458,928.52	1,744,492.95	39.81319957	-80.62937503	
13,800.00	89.01	149.74	7,066.92	-6,326.52	-595.05	14,458,842.16	1,744,543.33	39.81296182	-80.62919690	
13,900.00	89.01	149.74	7,068.65	-6,412.88	-544.67	14,458,755.79	1,744,593.71	39.81272407	-80.62901877	
14,000.00	89.01	149.74	7,070.39	-6,499.25	-494.29	14,458,669.43	1,744,644.09	39.81248632	-80.62884064	
14,100.00	89.01	149.74	7,072.12	-6,585.61	-443.91	14,458,583.06	1,744,694.47	39.81224857	-80.62866251	
14,200.00	89.01	149.74	7,073.86	-6,671.98	-393.53	14,458,496.70	1,744,744.85	39.81201082	-80.62848438	

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Planning Report - Geographic

Database:	DB_Dec2220_v18	Local Co-ordinate Reference:	Well Breckenridge S-07 HM (slot J)
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-07 HM (slot J)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev5		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
14,300.00	89.01	149.74	7,075.59	-6,758.34	-343.15	14,458,410.34	1,744,795.23	39.81177307	-80.62830626	
14,400.00	89.01	149.74	7,077.33	-6,844.70	-292.77	14,458,323.97	1,744,845.61	39.81153532	-80.62812814	
14,500.00	89.01	149.74	7,079.06	-6,931.07	-242.39	14,458,237.61	1,744,895.99	39.81129757	-80.62795001	
14,600.00	89.01	149.74	7,080.79	-7,017.43	-192.00	14,458,151.24	1,744,946.37	39.81105982	-80.62777189	
14,700.00	89.01	149.74	7,082.53	-7,103.80	-141.62	14,458,064.88	1,744,996.75	39.81082207	-80.62759377	
14,800.00	89.01	149.74	7,084.26	-7,190.16	-91.24	14,457,978.52	1,745,047.13	39.81058432	-80.62741565	
14,900.00	89.01	149.74	7,086.00	-7,276.53	-40.86	14,457,892.15	1,745,097.51	39.81034656	-80.62723754	
15,000.00	89.01	149.74	7,087.73	-7,362.89	9.52	14,457,805.79	1,745,147.89	39.81010881	-80.62705942	
15,100.00	89.01	149.74	7,089.47	-7,449.26	59.90	14,457,719.42	1,745,198.27	39.80987106	-80.62688130	
15,200.00	89.01	149.74	7,091.20	-7,535.62	110.28	14,457,633.06	1,745,248.65	39.80963331	-80.62670319	
15,300.00	89.01	149.74	7,092.94	-7,621.98	160.66	14,457,546.69	1,745,299.03	39.80939555	-80.62652508	
15,400.00	89.01	149.74	7,094.67	-7,708.35	211.04	14,457,460.33	1,745,349.41	39.80915780	-80.62634697	
15,500.00	89.01	149.74	7,096.41	-7,794.71	261.42	14,457,373.97	1,745,399.80	39.80892005	-80.62616886	
15,600.00	89.01	149.74	7,098.14	-7,881.08	311.80	14,457,287.60	1,745,450.18	39.80868229	-80.62599075	
15,700.00	89.01	149.74	7,099.88	-7,967.44	362.18	14,457,201.24	1,745,500.56	39.80844454	-80.62581264	
15,800.00	89.01	149.74	7,101.61	-8,053.81	412.56	14,457,114.87	1,745,550.94	39.80820679	-80.62563453	
15,900.00	89.01	149.74	7,103.35	-8,140.17	462.94	14,457,028.51	1,745,601.32	39.80796903	-80.62545643	
16,000.00	89.01	149.74	7,105.08	-8,226.53	513.32	14,456,942.15	1,745,651.70	39.80773128	-80.62527832	
16,100.00	89.01	149.74	7,106.82	-8,312.90	563.70	14,456,855.78	1,745,702.08	39.80749352	-80.62510022	
16,200.00	89.01	149.74	7,108.55	-8,399.26	614.08	14,456,769.42	1,745,752.46	39.80725577	-80.62492212	
16,300.00	89.01	149.74	7,110.28	-8,485.63	664.46	14,456,683.05	1,745,802.84	39.80701801	-80.62474402	
16,400.00	89.01	149.74	7,112.02	-8,571.99	714.84	14,456,596.69	1,745,853.22	39.80678026	-80.62456592	
16,500.00	89.01	149.74	7,113.75	-8,658.36	765.22	14,456,510.32	1,745,903.60	39.80654250	-80.62438782	
16,600.00	89.01	149.74	7,115.49	-8,744.72	815.60	14,456,423.96	1,745,953.98	39.80630474	-80.62420972	
16,700.00	89.01	149.74	7,117.22	-8,831.08	865.99	14,456,337.60	1,746,004.36	39.80606699	-80.62403163	
16,800.00	89.01	149.74	7,118.96	-8,917.45	916.37	14,456,251.23	1,746,054.74	39.80582923	-80.62385353	
16,900.00	89.01	149.74	7,120.69	-9,003.81	966.75	14,456,164.87	1,746,105.12	39.80559147	-80.62367544	
17,000.00	89.01	149.74	7,122.43	-9,090.18	1,017.13	14,456,078.50	1,746,155.50	39.80535372	-80.62349735	
17,100.00	89.01	149.74	7,124.16	-9,176.54	1,067.51	14,455,992.14	1,746,205.88	39.80511596	-80.62331926	
17,200.00	89.01	149.74	7,125.90	-9,262.91	1,117.89	14,455,905.78	1,746,256.26	39.80487820	-80.62314117	
17,300.00	89.01	149.74	7,127.63	-9,349.27	1,168.27	14,455,819.41	1,746,306.64	39.80464044	-80.62296308	
17,400.00	89.01	149.74	7,129.37	-9,435.63	1,218.65	14,455,733.05	1,746,357.02	39.80440268	-80.62278499	
17,500.00	89.01	149.74	7,131.10	-9,522.00	1,269.03	14,455,646.68	1,746,407.40	39.80416492	-80.62260691	
17,600.00	89.01	149.74	7,132.84	-9,608.36	1,319.41	14,455,560.32	1,746,457.78	39.80392717	-80.62242882	
17,700.00	89.01	149.74	7,134.57	-9,694.73	1,369.79	14,455,473.95	1,746,508.16	39.80368941	-80.62225074	
17,800.00	89.01	149.74	7,136.31	-9,781.09	1,420.17	14,455,387.59	1,746,558.54	39.80345165	-80.62207266	
17,900.00	89.01	149.74	7,138.04	-9,867.46	1,470.55	14,455,301.23	1,746,608.92	39.80321389	-80.62189457	
18,000.00	89.01	149.74	7,139.77	-9,953.82	1,520.93	14,455,214.86	1,746,659.30	39.80297613	-80.62171649	
18,100.00	89.01	149.74	7,141.51	-10,040.19	1,571.31	14,455,128.50	1,746,709.69	39.80273837	-80.62153842	
18,200.00	89.01	149.74	7,143.24	-10,126.55	1,621.69	14,455,042.13	1,746,760.07	39.80250060	-80.62136034	
18,300.00	89.01	149.74	7,144.98	-10,212.91	1,672.07	14,454,955.77	1,746,810.45	39.80226284	-80.62118226	
18,400.00	89.01	149.74	7,146.71	-10,299.28	1,722.45	14,454,869.41	1,746,860.83	39.80202508	-80.62100418	
18,500.00	89.01	149.74	7,148.45	-10,385.64	1,772.83	14,454,783.04	1,746,911.21	39.80178732	-80.62082611	
18,600.00	89.01	149.74	7,150.18	-10,472.01	1,823.21	14,454,696.68	1,746,961.59	39.80154956	-80.62064804	
18,700.00	89.01	149.74	7,151.92	-10,558.37	1,873.59	14,454,610.31	1,747,011.97	39.80131180	-80.62047000	
18,800.00	89.01	149.74	7,153.65	-10,644.74	1,923.98	14,454,523.95	1,747,062.35	39.80107403	-80.62029190	
18,900.00	89.01	149.74	7,155.39	-10,731.10	1,974.36	14,454,437.58	1,747,112.73	39.80083627	-80.62011383	
19,000.00	89.01	149.74	7,157.12	-10,817.46	2,024.74	14,454,351.22	1,747,163.11	39.80059851	-80.61993577	
19,100.00	89.01	149.74	7,158.86	-10,903.83	2,075.12	14,454,264.85	1,747,213.49	39.80036075	-80.61975770	
19,200.00	89.01	149.74	7,160.59	-10,990.19	2,125.50	14,454,178.49	1,747,263.87	39.80012298	-80.61957963	
19,300.00	89.01	149.74	7,162.33	-11,076.56	2,175.88	14,454,092.13	1,747,314.25	39.79988522	-80.61940157	
19,400.00	89.01	149.74	7,164.06	-11,162.92	2,226.26	14,454,005.76	1,747,364.63	39.79964745	-80.61922351	
19,500.00	89.01	149.74	7,165.80	-11,249.29	2,276.64	14,453,919.40	1,747,415.01	39.79940969	-80.61904545	
19,600.00	89.01	149.74	7,167.53	-11,335.65	2,327.02	14,453,833.04	1,747,465.39	39.79917192	-80.61886739	
19,700.00	89.01	149.74	7,169.26	-11,422.01	2,377.40	14,453,746.67	1,747,515.77	39.79893416	-80.61868933	

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Planning Report - Geographic

Database:	DB_Dec2220_v16	Local Co-ordinate Reference:	Well Breckenridge S-07 HM (slot J)
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-07 HM (slot J)	Survey Calculation Method:	Minimum Curvature
Wallbore:	Original Hole		
Design:	rev5		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
19,800.00	89.01	149.74	7,171.00	-11,508.38	2,427.78	14,453,660.31	1,747,566.15	39.79869639	-80.61851127	
19,900.00	89.01	149.74	7,172.73	-11,594.74	2,476.16	14,453,573.94	1,747,616.53	39.79845863	-80.61833321	
20,000.00	89.01	149.74	7,174.47	-11,681.11	2,528.54	14,453,487.58	1,747,666.91	39.79822086	-80.61815515	
20,088.26	89.01	149.74	7,176.00	-11,757.34	2,573.01	14,453,411.35	1,747,711.38	39.79801100	-80.61799800	
PBHL/TD 20088.26 MD 7176.00 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-07HM L - hit/miss target - Shape - Point	0.00	0.00	6,963.00	-1,212.10	-3,524.41	14,463,956.57	1,741,613.97	39.82704000	-80.63955500	
- plan misses target center by 326.68ft at 8100.00ft MD (6796.54 TVD, -1394.29 N, -3305.80 E)										
Breckenridge S-07HM B - plan hits target center - Point	0.00	0.00	7,176.00	-11,757.34	2,573.01	14,453,411.35	1,747,711.38	39.79801100	-80.61799800	

Casing Points						
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")		
1,150.00	1,150.00	Csg 13 3/8	13-3/8	17-1/2		
3,059.80	3,000.00	Csg 9 5/8	9-5/8	12-1/4		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment	
1,800.00	1,600.00	0.00	0.00	KOP Begin 2°/100' build	
2,000.00	1,998.70	-17.92	-21.36	Begin 2°/100' build/turn	
3,712.01	3,532.39	-286.42	-569.82	Begin 41.60° tangent	
7,553.64	6,405.03	-1,111.67	-3,083.32	Begin 8°/100' build/turn	
8,065.13	6,776.58	-1,367.80	-3,300.19	Begin 10°/100' build/turn	
8,623.79	6,977.12	-1,856.12	-3,202.85	Begin 89.00° lateral	
20,088.26	7,176.00	-11,757.34	2,573.01	PBHL/TD 20088.26 MD 7176.00 TVD	

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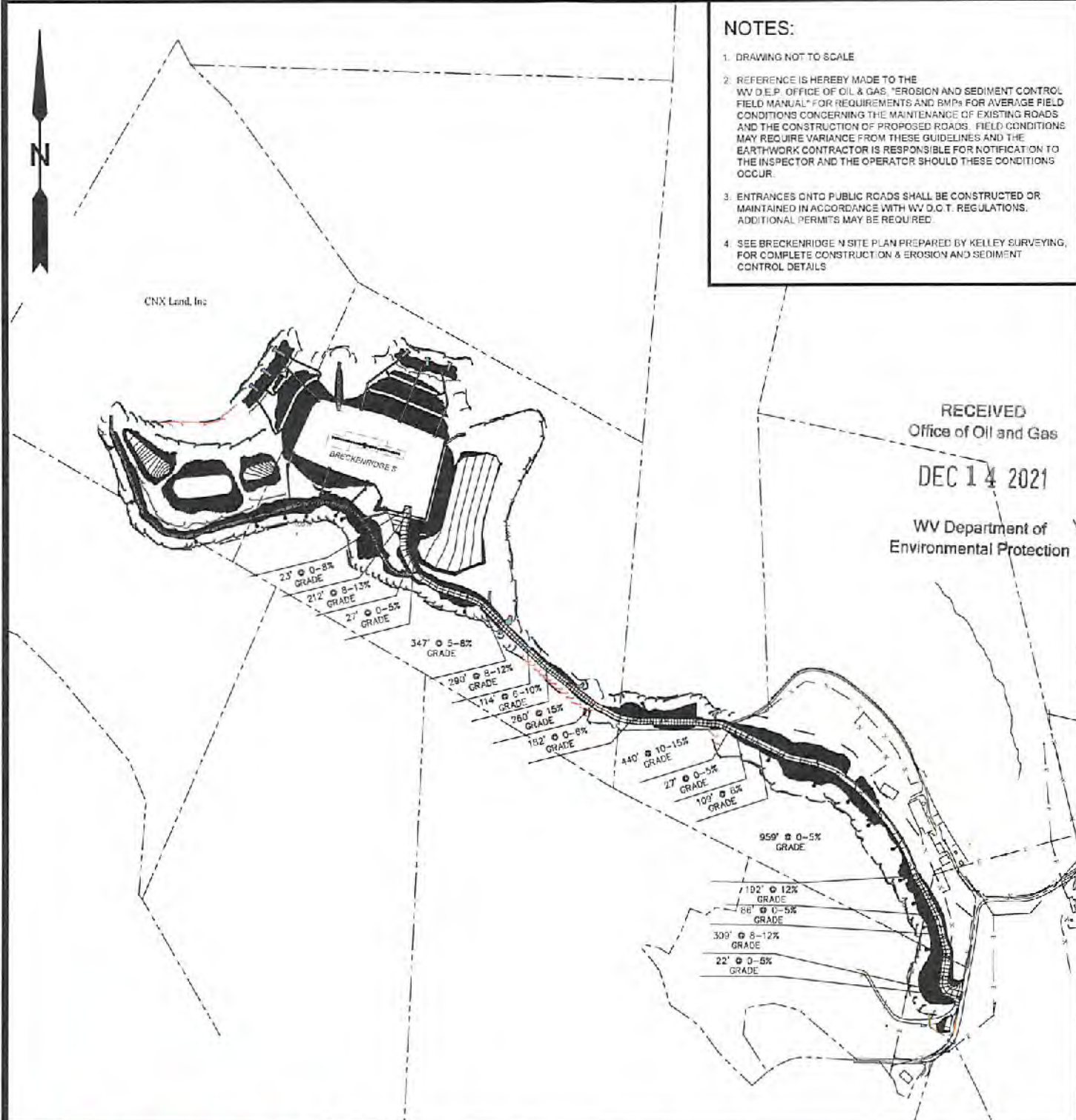
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PROPOSED BRECKENRIDGE S - 7HM

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 Vinton Drive | P.O. Box 1601 | Glenville, WV 26031 | 504.463.5634
1412 Harlowe + Rosewood, East | Charleston, WV 25301 | 304.340.0932
254 East Deckley Bypass | Beckley, WV 25801 | 304.250.9286
sllwa.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	CAMERON	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	9026	09-23-21	NONE



**TUG HILL
OPERATING**

01/21/2022



TUG HILL
OPERATING

Well Site Safety Plan
Part A – Site Specific Data and Figures

Well Name: Breckenridge S-7HM

Pad Name: Breckenridge

County: Marshall

UTM (meters), NAD83, Zone 17

Northing: 4,408,992.21

Easting: 531,919.23

B.S. 10-14-21

**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)

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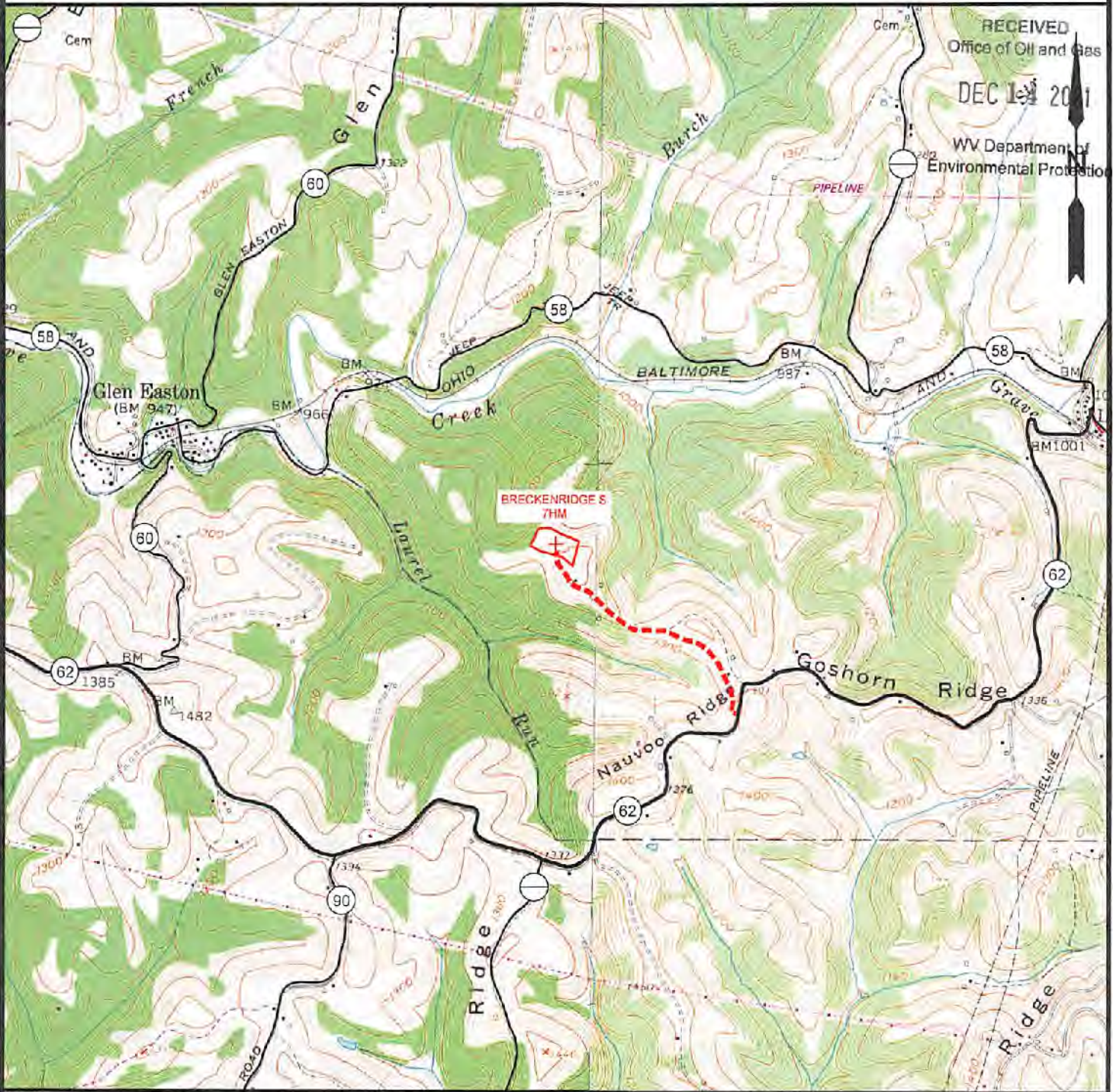
DEC 14 2021

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24-HOUR EMERGENCY PHONE NUMBER

(800) 921-9745

PROPOSED BRECKENRIDGE S - 7HM



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

LAT: 39.829865
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 | 304.346.3932
254 East Beckley Bypass | Beckley, WV 26601 | 304.255.5296
slswv.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	CAMERON	380 SOUTHPOINTE BLVD	
DRAWN BY		DATE	SCALE
K.G.M.		09/23/2021	1" = 2000'



TUG HILL
OPERATING

01/21/2022

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 (09/27/2021) 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 Enverus 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 Marcellus 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 Marcellus stimulation.	
4705102346	Tug Hill Operating, LLC	7115' TVD (proposed)	none	none	Yes, this is a proposed well in the Marcellus. Once completed the well will be within the expected fracture propagation from a Marcellus stimulation. Proper casing and cement should prevent migration of fluids between wellbores.	A Tug Hill Operating, LLC permitted well on the pad that is not drilled or perforated.
4705100754	Leatherwood, Inc.	3045' TVD	Gordon	unknown	No, the well is not deep enough to be within the expected fracture propagation from a Marcellus stimulation. Well is plugged.	Well was plugged 8/8/2008.

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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
4705100966	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 Marcellus well. Well is plugged.	Well was plugged 2/6/2006.
4705100967	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 Marcellus well. Well is plugged.	Well was plugged 12/12/2005.
4705101086	CNX Gas Co. LLC (North)	unknown	Pittsburgh Coal	unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be affected by fracturing in the planned Marcellus well.	
4705100628	CNX Gas Co. LLC (North)	3221' TVD	Gordon / Fifth / Pittsburgh Coal	unknown	No, the well is not deep enough to be within the expected fracture propagation from a Marcellus stimulation. Well is plugged.	Well was plugged 8/4/2005.
4705100629	CNX Gas Co. LLC (North)	2963' TVD	Gordon	unknown	No, the well is not deep enough to be within the expected fracture propagation from a Marcellus stimulation. Well is plugged.	Well was plugged 11/11/2004.

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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
4705100880	Consolidation Coal Co.	2935' TVD	Gordon	unknown	No, the well is not deep enough to be within the expected fracture propagation from a Marcellus stimulation. Well is plugged.	Well was plugged 12/17/2002.
4705100920	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 Marcellus well. Well is plugged.	Well was plugged 6/8/2004.
4705130295 (4705100880)	Consolidation Coal Co.	2935' TVD	Gordon	unknown	No, the well is not deep enough to be within the expected fracture propagation from a Marcellus stimulation. Well is plugged.	Well was plugged 12/17/2002. API # 4705130295 reassigned to 4705100880.
4705170453 (4705100629)	CNX Gas Co. LLC (North)	2963' TVD	Gordon	unknown	No, the well is not deep enough to be within the expected fracture propagation from a Marcellus stimulation. Well is plugged.	Well was plugged 11/11/2004. API # reassigned to 4705100629
4705100882	South Penn Oil (S. Penn Nat. Gas)	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 Marcellus well. Well is plugged.	Well was plugged 5/30/2003.

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WV Geological & Economic Survey:

Well: County = 51 Permit = 01082

Report Time: Friday, August 27, 2021 4:10:01 PM

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	4408399.7

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 Wayl			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_BEF	G_AF
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: Friday, August 27, 2021 4:11:58 PM

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	39.629496	-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_PR
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_AFT
4705170164	-/-	-/-	1420	Barometer	Big Injun (undiff)	Big Injun (undiff)		unclassified	unclassified	not available	unknown	unknown	2374				2374	

WV Geological & Economic Survey

Well: County = 51 Permit = 02346

Report Time: Friday, August 27, 2021 4:12:17 PM

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	39.630284	-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	TF
4705102346	-/-		Dvtd Wrkd Ovr	Permitted	CNX Land LLC	S-10HM	Breckenridge		Hasans Ventures et al	Tug Hill Operating, LLC	7115	Marcellus Fm	

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
4705102346	-/-	-/-	1380	Ground Level															

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Well: County = 51 Permit = 00966

Report Time: Wednesday, September 29, 2021 4:09:03 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_16	LAT_DD	LON_DD	UTME	UTMN
4705100966	Marshall	966	Liberty	Glen Easton	Cameron	39.812386	-80.62988	531679.6	4406999.8

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
4705100966	2/6/2006	Plugging	Completed	Carroll/Anna Morris		M-3286				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	O_BE
4705100966	2/6/2006	12/13/2005	1385	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
4705100966	Plugging	Pittsburgh coal	Well Record	1133	Reasonable	6	Reasonable	1385	Ground Level

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

Plugging Information:

API	PLG_DT	DEPTH_PBT
4705100966	2/6/2006	0

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WV Geological & Economic Survey

Well: County = 51 Permit = 00967

Report Time: Wednesday, September 29, 2021 4:09:52 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705100967	Marshall	967	Liberty	Glen Easton	Cameron	39.812241	-80.630068	531663.6	4406983.6

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
4705100967	12/12/2005	Plugging	Completed	Carroll & Anna Morris			M-328C			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	O_E
4705100967	12/12/2005	11/16/2005	1367	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
4705100967	12/12/2005	0

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WV Geological & Economic Survey

Well: County = 51 Permit = 01086

Report Time: Wednesday, September 29, 2021 4:10:17 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705101086	Marshall	1086	Liberty	Glen Easton	Cameron	39.817026	-80.633453	531371.7	4407513.5

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
4705101086	-/-	Original Loc	Permitted	Carroll & Anna Morris		5A2			Carroll & Anna Morris	CNX Gas Co. LLC (North)		999	

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_I
4705101086	-/-	-/-	1313	Ground Level			Pittsburgh coal	unclassified	unclassified	Methane (CBM)	unknown	unknown							

There is no Pay data for this well

Production Gas Information: (Volumes in Mcf)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101086	CNX Gas Co. LLC (North)	2018	0	0	0	0	0	0	0	0	0	0	0	0	0
4705101086	CNX Gas Co. LLC (North)	2019	0	0	0	0	0	0	0	0	0	0	0	0	0
4705101086	CNX Gas Co. LLC (North)	2020	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101086	CNX Gas Co. LLC (North)	2018	0	0	0	0	0	0	0	0	0	0	0	0	0
4705101086	CNX Gas Co. LLC (North)	2019	0	0	0	0	0	0	0	0	0	0	0	0	0
4705101086	CNX Gas Co. LLC (North)	2020	0	0	0	0	0	0	0	0	0	0	0	0	0

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WV Geological & Economic Survey.

Well: County = 61 Permit = 00628

Report Time: Wednesday, September 29, 2021 4:10:43 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX DISTRICT	QUAD_76	QUAD_16	LAT_DD	LOH_DD	UTME	UTMN
4705100628	Marshall	628	Liberty	Cameron	Cameron	39.602816	-80.620359	532499.1	4405941

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
4705100628	2/28/1901	Original Loc	Completed	George W Hubbs	1					South Penn Oil (S. Penn Nat. Gas)			
4705100628	8/4/2005	Plugging	Completed	James A Hubbs Est		M-364				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
4705100628	2/28/1901	12/13/1900	1380 Topo Estimation	Cameron-Gamer	Hampshire Grp	F5th	unclassified	unclassified	Oil w/ Gas Show	unknown	Nat/Open H	3221		3221		
4705100628	8/4/2005	7/1/2005	1292 Ground Level			Pittsburgh coal			not available	unknown	unknown					

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4705100628	2/28/1901	Show	Gas	Vertical				3045	Gordon	0	0		

Production Gas Information: (Volumes in Mcf)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705100628	Pennzoil Company	1981	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	Pennzoil Company	1982	4	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	Pennzoil Company	1983	8	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	Pennzoil Company	1984	67	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	Pennzoil Products Company	1987	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	Pennzoil Products Company	1996	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	Pennzoil Products Company	1999	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	East Resources, Inc.	2000	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	East Resources, Inc.	2001	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	CNX Gas Co. LLC (North)	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	East Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	CNX Gas Co. LLC (North)	2003	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	CNX Gas Co. LLC (North)	2004	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	CNX Gas Co. LLC (North)	2005	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	CNX Gas Co. LLC (North)	2006	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	CNX Gas Co. LLC (North)	2007	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	CNX Gas Co. LLC (North)	2008	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	CNX Gas Co. LLC (North)	2009	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	CNX Gas Co. LLC (North)	2010	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	CNX Gas Co. LLC (North)	2011	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705100628	Pennzoil Company	1981	189	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	Pennzoil Company	1982	103	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	Pennzoil Company	1983	188	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	Pennzoil Company	1984	134	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	Pennzoil Products Company	1987	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	Pennzoil Products Company	1996	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	Pennzoil Products Company	1999	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	East Resources, Inc.	2000	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	East Resources, Inc.	2001	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	CNX Gas Co. LLC (North)	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	East Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	CNX Gas Co. LLC (North)	2003	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	CNX Gas Co. LLC (North)	2004	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	CNX Gas Co. LLC (North)	2005	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	CNX Gas Co. LLC (North)	2006	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	CNX Gas Co. LLC (North)	2007	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	CNX Gas Co. LLC (North)	2008	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	CNX Gas Co. LLC (North)	2009	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	CNX Gas Co. LLC (North)	2010	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100628	CNX Gas Co. LLC (North)	2011	0	0	0	0	0	0	0	0	0	0	0	0	0

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
4705100628	Plugging	Pittsburgh coal	Well Record	1055	Reasonable	7	Reasonable	1380 Topo Estimation

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

Plugging Information:

API	PLG_DT	DEPTH_PBT
4705100628	8/4/2005	0

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WV Geological & Economic Survey

Well: County = 51 Permit = 00629

Report Time: Wednesday, September 29, 2021 4:11:25 PM

Well Reassignment Information: Reassigned From

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	70453	51	629

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_16	LAT_DD	LONG_DD	UTME	UTMN
4705100629	Marshall	629	Liberty	Cameron	Cameron	39.606206	-80.616854	532629.2	4405651.9

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
4705100629	10/31/1901	Original Loc	Completed	George W Hubbs	3					South Penn Oil (S. Penn Nat. Gas)			
4705100629	11/11/2004	Plugging	Completed	James A Hubbs est	M-370		James A Hubbs est			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
4705100629	10/31/1901	8/25/1901	1200	Topo Estimation	Cameron-Garner	Gordon			Development Well	Oil	Cable Tool	Flat/Open H	2963		2963
4705100629	11/11/2004	10/11/2004	1197	Ground Level					not available	unknown	unknown				

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4705100629	10/31/1901	Pay	Gas	Vertical	2932	Gordon	2948	Gordon	0	0	0	0	

Production Gas Information: (Volumes in Mcf)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705100629	Pennzoil Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100629	Pennzoil Company	1992	4	0	0	0	0	0	0	0	0	0	0	0	0
4705100629	Pennzoil Company	1993	8	0	0	0	0	0	0	0	0	0	0	0	0
4705100629	Pennzoil Company	1994	67	0	0	0	0	0	0	0	0	0	0	0	0
4705100629	Pennzoil Products Company	1999	41	5	12	0	6	16	0	0	0	0	0	0	0
4705100629	Pennzoil Products Company	1990	32	0	32	0	0	0	0	0	0	0	0	0	0
4705100629	Pennzoil Products Company	1991	213	0	19	0	0	0	0	0	0	0	6	102	86
4705100629	Pennzoil Products Company	1992	760	47	83	96	90	96	0	0	0	0	0	0	368
4705100629	Pennzoil Products Company	1993	3,755	348	342	307	127	317	225	455	404	396	374	215	234
4705100629	Pennzoil Products Company	1994	2,932	259	261	168	162	193	365	208	238	320	221	248	284
4705100629	Pennzoil Products Company	1995	2,959*	23*	26*	20*	23*	32*	22*	25*	27*	33*	26*	24*	11*
4705100629	Pennzoil Products Company	1996	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100629	Pennzoil Products Company	1997	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100629	Pennzoil Products Company	1998	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100629	Pennzoil Products Company	1999	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100629	East Resources Inc.	2000	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100629	East Resources Inc.	2001	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100629	CNX Gas Co. LLC (North)	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100629	East Resources Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100629	CNX Gas Co. LLC (North)	2003	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100629	CNX Gas Co. LLC (North)	2004	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100629	CNX Gas Co. LLC (North)	2005	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100629	CNX Gas Co. LLC (North)	2006	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100629	CNX Gas Co. LLC (North)	2007	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100629	CNX Gas Co. LLC (North)	2008	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100629	CNX Gas Co. LLC (North)	2009	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100629	CNX Gas Co. LLC (North)	2010	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100629	CNX Gas Co. LLC (North)	2011	0	0	0	0	0	0	0	0	0	0	0	0	0

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
4705100629	Original Loc	unidentified coal	Well Record	300	Reasonable	4	Reasonable	1200 Topo Estimation
4705100629	Original Loc	Sevickley coal	Well Record	850	Reasonable	3	Reasonable	1200 Topo Estimation
4705100629	Original Loc	Pittsburgh coal	Well Record	930	Reasonable	5	Reasonable	1200 Topo Estimation
4705100629	Plugging	Pittsburgh coal	Well Record	952	Gasible Plek	5	Reasonable	1200 unknown
4705100629	Original Loc	Big Lime	Well Record	2020	Reasonable	35	Reasonable	1200 Topo Estimation
4705100629	Original Loc	Big Injun (sandif)	Well Record	2055	Reasonable	145	Reasonable	1200 Topo Estimation
4705100629	Original Loc	Gordon	Well Record	2930	Reasonable	30	Reasonable	1200 Topo Estimation

Wireline (E-Log) Information:

API	LOG_TOP	LOG_BOT	DEEPEST_FML	LOGS_AVAIL	SCAN	DIGITIZED	GR_TOP	GR_BOT	D_TOP	D_BOT	N_TOP	N_BOT	L_TOP	L_BOT	T_TOP	T_BOT	S_TOP	S_BOT	O_TOP	O_BOT	INCF
4705100629	0	2400	Big Injun (PriceSeq)	G.D.I.C.	Y	N	0	2400	1882	2400			1918	2400					1882	2400	Y

Comment: *logs: caliper, on #42 no permit number, formation-density-no paper log

Downloadable Log Images: We advise you to save the log image file to your PC for viewing. To do so, right-click the .tif image of interest and select the save option. Then you can direct the file to a location of your choice. Please note these images vary in size and some may take several minutes to download, especially if using a 56k or slower dialup connection.

- Quick Reference Guide for Log File Names: For more info about WVGES scanned logs click [here](#)
- geologic log types:
- d density (includes bulk density, compensated density, density porosity, grain density, matrix density, etc.)
 - e photoelectric adsorption (PE or Fe, etc.)
 - g gamma ray
 - i induction (includes dual induction, medium induction, deep induction, etc.)
 - l laterolog
 - m dipmeter
 - n neutron (includes neutron porosity, sidewall neutron--SWN, etc.)
 - o other¹
 - s sonic or velocity
 - t temperature (includes borehole temperature, BHT, differential temperature, etc.)
 - z spontaneous potential or potential
- mechanical log types:
- b cement bond
 - c caliper
 - o other¹
 - p perforation depth control or perforate

¹other logs may include, but are not limited to: such curves as audio bit size, CCL--casing collar locator, continuous meter, directional survey, gas detector, guard, NCTL--Nuclear Cement Top Locator, radioactive tracer, tension

Plugging Information:

API	PLG_DT	DEPTH_PBT
4705100629	11/17/2004	0

There is no Sample data for this well

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01/21/2022

WV Geological & Economic Survey:

Well: County = 51 Permit = 00880

Report Time: Wednesday, September 29, 2021 4:12:12 PM

Well Reassignment Information: Reassigned From

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	30295	51	880

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705100880	Marshall	880	Liberty	Cameron	Cameron	39.801076	-80.61923	532596.5	4405748.3

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_TR
4705100880	5/18/1914	Original Loc	Completed	Geo W Hubbs heirs/Sophia Hubbs	6				Geo W Hubbs heirs/Sophia Hubbs	Tri-State Pipe Company, The		
4705100880	12/17/2002	Plugging	Completed	James A Hubbs Estate		M-366			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	KC
4705100880	5/18/1914	-/-	1180	Ground Level	Cameron-Gamer	UDev undf:Ber/LoHURN	Gordon	Development Well	Development Well	Oil	Cable Tool	unknown	2935		2935	
4705100880	12/17/2002	11/21/2002	1171	Ground Level				unclassified	unclassified	not available	unknown	unknown				

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4705100880	5/18/1914	Pay	Oil	Vertical		Gordon	2908	Gordon	0	0			

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
4705100880	5/7/1949	0
4705100880	12/17/2002	0

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WV Geological & Economic Survey

Well: County = 51 Permit = 00920

Report Time: Wednesday, September 29, 2021 4:12:33 PM

Well Reassignment Information: Reassigned From

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	70454	51	920

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705100920	Marshall	920	Liberty	Cameron	Cameron	39 800785	-80.62205	532355.3	4405715.1

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_PR
4705100920	6/8/2004	Plugging	Completed	James A Hubbs est		M-365				Consolidation Coal Co.			
4705100920	-/-	unknown	Prpty Map	Frank Hibbs	5	unknown				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
4705100920	6/8/2004	5/17/2004	1392	Ground Level															
4705100920	-/-	-/-						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
4705100920	Plugging	Pittsburgh coal	Well Record	1156	Reasonable	6	Reasonable		Ground Level

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

Plugging Information:

API	PLG_DT	DEPTH_PBT
4705100920	6/8/2004	0

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WV Geological & Economic Survey

Well: County = 51 Permit = 30295

Report Time: Wednesday, September 29, 2021 4:12:51 PM

Well Reassignment Information: Reassigned To

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	30295	51	880

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705130295	Marshall	30295	Liberty	Cameron	Cameron	39 802381	-80 619043	532612	4405893.2

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
4705130295	-/-		unknown	Reassign						Tri-State Pipe Company, The			

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	NGL_	
4705130295	-/-	-/-																				

WV Geological & Economic Survey

Well: County = 51 Permit = 70453

Report Time: Wednesday, September 29, 2021 4:13:10 PM

Well Reassignment Information: Reassigned To

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	70453	51	629

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705170453	Marshall	70453	Liberty	Cameron	Cameron	39 798901	-80 618853	532629.8	4405507.1

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_PR
4705170453	-/-		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	NGL_	
4705170453	-/-	-/-																				

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WV Geological & Economic Survey

Well: County = 51 Permit = 00882

Report Time: Wednesday, September 29, 2021 4:13:28 PM

Well Reassignment Information: Reassigned From

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	70452	51	882

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705100882	Marshall	882	Liberty	Cameron	Cameron	39.797451	-90.616973	532791.5	4405346.8

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_PF
4705100882	5/30/2003	Plugging	Completed	James A Hubbs Estate		M-421			Consolidation Coal Co	Consolidation Coal Co.			
4705100882	--	Original Loc	Prpty Map	John Hipsley	10					South Penn Oil (S. Penn Nat. Gas)			

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_BE
4705100882	5/30/2003	5/14/2003	1089	Ground Level				unclassified	unclassified	not available	unknown	unknown							
4705100882	--	--						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

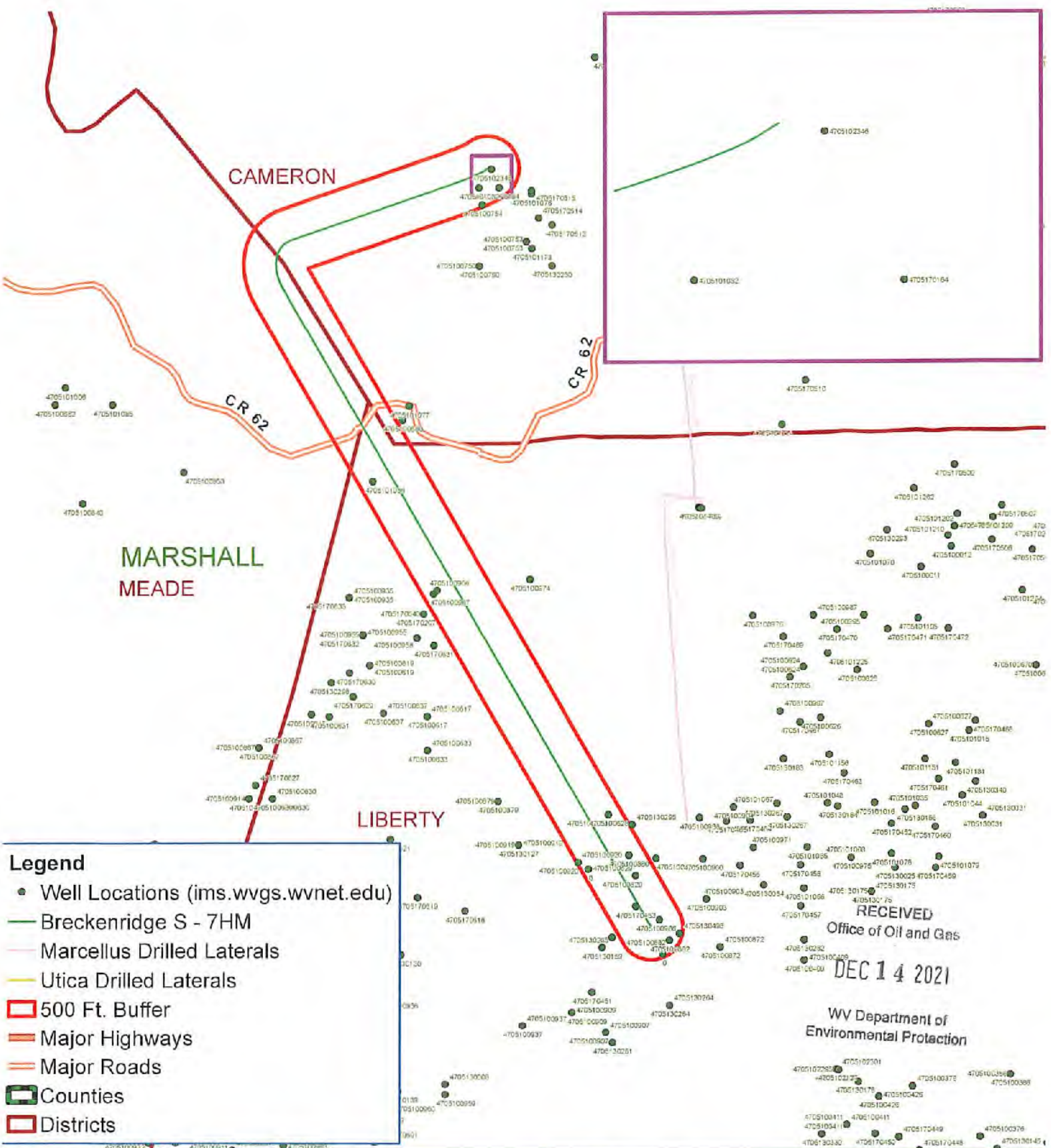
There is no Stratigraphy data for this well

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

Plugging Information:

API	PLG_DT	DEPTH_PBT
4705100882	5/30/2003	0

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- Legend**
- Well Locations (ims.wvgs.wvnet.edu)
 - Breckenridge S - 7HM
 - Marcellus Drilled Laterals
 - Utica Drilled Laterals
 - 500 Ft. Buffer
 - Major Highways
 - Major Roads
 - ▭ Counties
 - ▭ Districts

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Breckenridge S - 7HM Cameron District Marshall County, WV



Map Prepared by:
EPS
LAND SERVICES
01/21/2022

Map Created: September 27, 2021

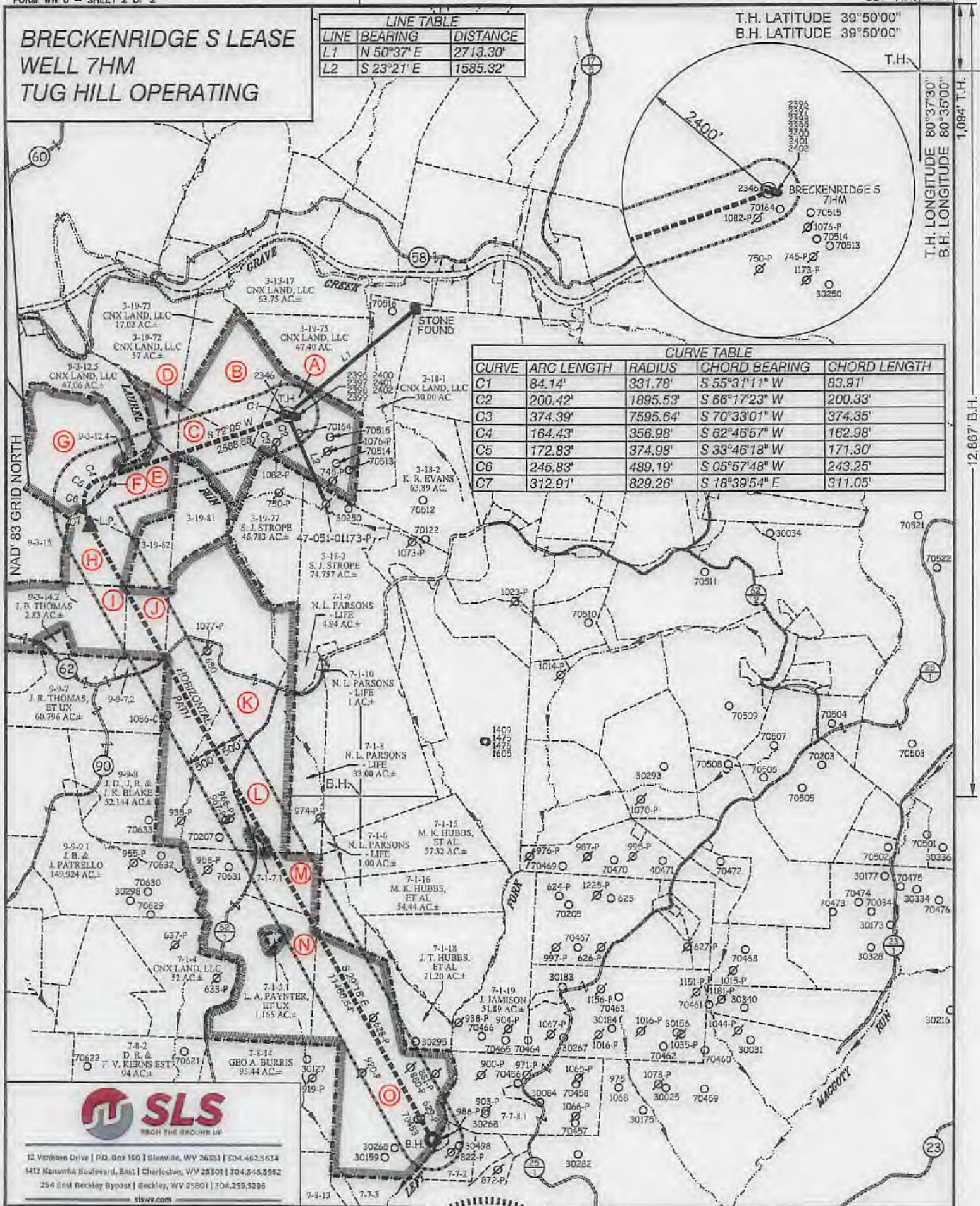
Notes:
All locations are approximate and are for visualization purposes only.

**BRECKENRIDGE S LEASE
WELL 7HM
TUG HILL OPERATING**

LINE TABLE		
LINE	BEARING	DISTANCE
L1	N 50°37' E	2713.30'
L2	S 23°21' E	1585.32'

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

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



CURVE TABLE				
CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	84.14'	331.78'	S 55°31'11" W	83.91'
C2	200.42'	1895.53'	S 66°17'23" W	200.33'
C3	374.39'	7595.64'	S 70°33'01" W	374.35'
C4	164.43'	356.98'	S 62°46'57" W	162.98'
C6	172.83'	374.98'	S 33°46'18" W	171.30'
C6	245.83'	489.19'	S 05°57'48" W	243.25'
C7	312.91'	829.26'	S 18°39'54" E	311.05'

NAD 83 GRID NORTH

12,867' B.H.



12 Vanhook Drive | P.O. Box 150 | Glenville, WV 26351 | 504.462.5634
1412 Maravilla Boulevard, East | Charleston, WV 25301 | 304.345.3952
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5295
slsvw.com

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)			
NAD'83 S.P.C.(FT)	N. 486,533.44	E. 1,652,005.74	
NAD'83 GEO.	LAT-(N) 39.830329	LONG-(W) 80.626984	
NAD'83 UTM (M)	N. 4,408,992.23	E. 531,919.24	
LANDING POINT			
NAD'83 S.P.C.(FT)	N. 484,790.5	E. 1,648,771.2	
NAD'83 GEO.	LAT-(N) 39.825268	LONG-(W) 80.638419	
NAD'83 UTM (M)	N. 4,408,428.5	E. 530,943.0	
BOTTOM HOLE			
NAD'83 S.P.C.(FT)	N. 474,730.8	E. 1,654,382.7	
NAD'83 GEO.	LAT-(N) 39.798011	LONG-(W) 80.617988	
NAD'83 UTM (M)	N. 4,405,408.6	E. 532,703.5	



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

P.S. *Gregory A. Smith*
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LEGEND	
LEASE LINE	
SURFACE LINE	
WELL LATERAL	
OFFSET LINE	
TIE LINE	
CREEK	
ROAD	
COUNTY ROUTE	
PROPOSED WELL	
EXISTING WELL	
PERMITTED WELL	
TAX MAP-PARCEL	00-00
SURFACE OWNER (SEE TABLE)	
LEASE # (SEE WW-6A1)	

SCALE 1" = 2000' FILE NO. 9026P7HM.dwg
BRECKENRIDGE S-7HM REV5
DATE OCTOBER 13, 2021
REVISED _____, 20____
OPERATORS WELL NO. BRECKENRIDGE S-7HM
API WELL NO. 47-051-02428
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 - CT CORPORATION
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5098 WASHINGTON ST. W, STE 407
FORT WORTH, TX 76107 CHARLESTON, WV 25313-1661

COUNTY NAME PERMIT

**BRECKENRIDGE S LEASE
WELL 7HM
TUG HILL OPERATING**

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

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

NAD'83 S.P.C.(FT)	N. 486,533.44	E. 1,652,005.74
NAD'83 GEO.	LAT-(N) 39.830329	LONG-(W) 80.626984
NAD'83 UTM (M)	N. 4,408,992.23	E. 531,919.24

LANDING POINT

NAD'83 S.P.C.(FT)	N. 484,730.5	E. 1,648,771.2
NAD'83 GEO.	LAT-(N) 39.825268	LONG-(W) 80.638419
NAD'83 UTM (M)	N. 4,408,426.5	E. 530,943.0

BOTTOM HOLE

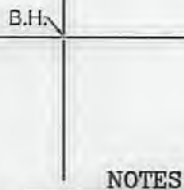
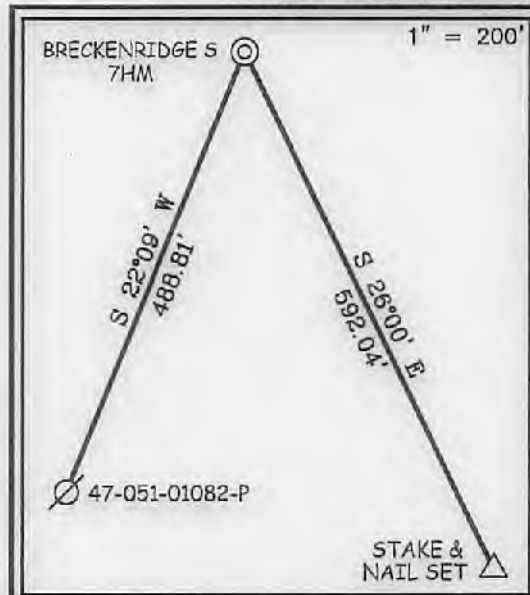
NAD'83 S.P.C.(FT)	N. 474,730.8	E. 1,654,392.7
NAD'83 GEO.	LAT-(N) 39.798011	LONG-(W) 80.617998
NAD'83 UTM (M)	N. 4,405,408.6	E. 532,703.5

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

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	CNX LAND, LLC	9-3-11	1.00
G	RAYMOND DEWAINE DOBBS	9-3-12	66.843
H	XCL PROCESSING OPERATING LLC	9-3-13	28.00
I	RAYMOND DEWAINE DOBBS, ET AL	9-3-14	81.331
J	XCL PROCESSING OPERATING LLC	9-3-13.1	10.00
K	ANNA D. MORRIS	7-1-1	179.00
L	NANCY L. PARSONS - LIFE	7-1-7	40.86
M	NICHOLAS J. EVANS	7-1-5.2	22.42
N	JAMES TIMOTHY HUGGS, ET AL	7-1-5	116.915
O	KAREN S. EVANS & JUDY K. MATTHEWS	7-7-1	124.12

MAP/PARCEL	ADJOINING SURFACE OWNER LIST	ACRES
3-19-81	XCL PROCESSING OPERATING LLC	26.52
3-19-82	XCL PROCESSING OPERATING LLC	14.89
7-1-7.1	NANCY L. PARSONS	0.50
7-7-2	KAREN S. EVANS & JUDY KAY MATTHEWS	24.50
7-7-3	CNX LAND, LLC	12.00
7-7-8.1	KENNETH WAYNE STEELE TRUST	79.03
7-8-13	BLAINE E. STERN, JR.	104.92
9-3-12.4	CNX LAND, LLC	0.149
9-3-15	RAYMOND DEWAINE DOBBS, ET AL	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 & TOPO MARK SCALE IS 1"=2000'



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5034
1413 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3932
254 East Beckley Bypass | Beckley, WV 25801 | 304.258.5296
slswv.com

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

P.S. 677 *Gregory A. Smith*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
DATE OCTOBER 13, 20 21
REVISED _____, 20 ____
OPERATORS WELL NO. BRECKENRIDGE S-7HM
API WELL NO. 47 - 051 - 02428
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 9026P7HM.dwg
BRECKENRIDGE S-7HM REV5
HORIZONTAL & VERTICAL CONTROL DETERMINED BY: DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

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



WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___ IF "GAS" PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
LOCATION: GROUND = 1,382.00' 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 01/21/2022
PROPOSED WORK: LEASE NO. SEE WW-6A1
DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___
PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION MARCELLUS
ESTIMATED DEPTH TVD: 7,095' / TMD: 20,088'

WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DARREN BROWN - CT CORPORATION
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 FORT WORTH, TX 76107 ADDRESS 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
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*See attached pages

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

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

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

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

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

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*31241	3-19-76	A	JAMES R WAYT	TRANS ENERGY INC AND REPUBLIC PARTNERS VI LP	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 American Shale Development Inc: 27/172	American Shale Development Inc to Republic Partners VIII: 31/482	Republic Partners VII LP, Republic Partners VII LLC, Republic Operating LLC to EQT Production Company: 37/25	EQT Production Company to TH Exploration LLC: 48/21
10*31242	3-19-76	A	EVELYN L BUTLER	TRANS ENERGY INC AND REPUBLIC PARTNERS VI LP	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 American Shale Development Inc: 27/172	American Shale Development Inc to Republic Partners VIII: 31/482	Republic Partners VII LP, Republic Partners VII LLC, Republic Operating LLC to EQT Production Company: 37/25	EQT Production Company to TH Exploration LLC: 48/21
10*38613	3-19-74	B	KATHERINE ZOOG OLIVER	GREAT LAKES ENERGY PARTNERS LLC	1/8*	663 449	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	SWN Exchange Titleholder LLC merged with and into SWN Production Company LLC: CB 19/624	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/604	SWN Production Company LLC to TH Exploration LLC: 49/635
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	American Petroleum Partners Operating LLC to TH Exploration LLC: 43/503
10*29085	3-19-78	C	LUIJAN 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	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	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 Partners VII LP, Republic Partners VII LLC, Republic Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 44/489	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 Partners VII LP, Republic Partners VII LLC, Republic Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 44/489	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 Partners VII LP, Republic Partners VII LLC, Republic Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 44/489	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 Partners VII LP, Republic Partners VII LLC, Republic Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 44/489	SWN Production Company LLC to TH Exploration LLC: 49/120
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 Partners VII LP, Republic Partners VII LLC, Republic Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 44/489	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 Partners VII LP, Republic Partners VII LLC, Republic Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 44/489	SWN Production Company LLC to TH Exploration LLC: 49/120
10*38527	3-19-78	C	DEENA I 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 Partners VII LP, Republic Partners VII LLC, Republic Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 44/489	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 Partners VII LP, Republic Partners VII LLC, Republic Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 44/489	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 Partners VII LP, Republic Partners VII LLC, Republic Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 44/489	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 Partners VII LP, Republic Partners VII LLC, Republic Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 44/489	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 Partners VII LP, Republic Partners VII LLC, Republic Operating LLC to EQT Production Company: 37/25	Equinor USA Onshore Properties Inc to TH Exploration LLC: 44/489	SWN Production Company LLC to TH Exploration LLC: 49/120

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 Office of Oil and Gas
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 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*21323	9-3-14	I	TODD SCHERICH AND WANDA D SCHERICH	TH EXPLORATION LLC	1/8*	946 324	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*22723	9-3-14	I	LINDA SUE BENNETT AND THOMAS BENNETT	TH EXPLORATION LLC	1/8*	968 276	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*22769	9-3-14	I	NANCY JO FEHN	TH EXPLORATION LLC	1/8*	968 274	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*22770	9-3-14	I	REBECCA LYNN RITZ AND THOMAS A RITZ	TH EXPLORATION LLC	1/8*	968 272	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
10*22822	9-3-14	I	DARLA J KLUKAS	TH EXPLORATION LLC	1/8*	974 182	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*22824	9-3-14	I	PEGGY ANNETTE GARDNER & ROBERT W GARDNER	TH EXPLORATION LLC	1/8*	974 180	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*23227	9-3-14	I	ROGER F CROSS	TH EXPLORATION LLC	1/8*	984 478	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*24396	9-3-14	I	ELEANOR CHAMBERS	TH EXPLORATION LLC	1/8*	1023 166	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*26711	9-3-14	I	CNK GAS COMPANY LLC	TH EXPLORATION LLC	1/8*	1074 593	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*28446	9-3-14	I	TIMOTHY R LINKOUS	TH EXPLORATION LLC	1/8*	1072 375	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*28700	9-3-14	I	ARTHUR AND VERA WORKMAN IRREVOCABLE TRUST	TH EXPLORATION LLC	1/8*	1077 41	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*28854	9-3-14	I	CHARLES HAWKINS AND CONSTANCE HAWKINS	TH EXPLORATION LLC	1/8*	1077 258	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*28949	9-3-14	I	SAMUEL W PHIPPS AND ALLISON M PHIPPS	TH EXPLORATION LLC	1/8*	1078 447	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*25188	9-3-13.1	J	ALBRIGHT	TH EXPLORATION LLC	1/8*	1029 505	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*28463	9-3-13.1	J	TIMOTHY R LINKOUS	TH EXPLORATION LLC	1/8*	1073 356	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*28700	9-3-13.1	J	ARTHUR AND VERA WORKMAN IRREVOCABLE TRUST	TH EXPLORATION LLC	1/8*	1077 41	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*28854	9-3-13.1	J	CHARLES HAWKINS AND CONSTANCE HAWKINS	TH EXPLORATION LLC	1/8*	1077 258	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*28949	9-3-13.1	J	SAMUEL W PHIPPS AND ALLISON M PHIPPS	TH EXPLORATION LLC	1/8*	1078 447	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*39627	7-1-1	K	ANNA D MORRIS	TH EXPLORATION LLC	1/8*	1125 543	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*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
10*26711	7-1-5.2	M	CNK GAS COMPANY LLC	TH EXPLORATION LLC	1/8*	1074 593	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*31110	7-1-5	N	CNK GAS COMPANY LLC	TH EXPLORATION LLC	1/8*	1058 606	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*25527	7-7-1	O	JUDY K MATTHEWS	PIKEWOOD ENERGY CORPORATION	1/8*	945 103	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Pikewood Energy Corporation to American Petroleum Partners Operating LLC: 41/192
10*25530	7-7-1	O	KAREN S WHETZEL	PIKEWOOD ENERGY CORPORATION	1/8*	945 99	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Pikewood Energy Corporation to American Petroleum Partners Operating LLC: 41/192

RECEIVED
 Office of Oil and Gas
 DEC 14 2021
 WV Department of
 Environmental Protection

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, LLC, 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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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 October 18, 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 15, 2021 (the "*Acreage Trade Agreement*").

**ARTICLE I
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 and Exhibit A-1 (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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COPY

STATE OF WEST VIRGINIA §
§
COUNTY OF MARSHALL §

Marshall County
Jan Pest, Clerk
Instrument 1453305
04/24/2019 @ 11:51:22 AM
ASSIGNMENTS
Book 43 @ Page 503
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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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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December 13, 2021

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

RE: Breckenridge S-7HM

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-7HM 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,

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

Amy L. Morris
Permitting Specialist – Appalachia Region

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

Date of Notice Certification: 12/03/2021

API No. 47- 051 - _____
Operator's Well No. Breckenridge S-7HM
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>531,919.23</u>
County:	<u>Marshall</u>		Northing:	<u>4,408,992.21</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.

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: *PLEASE CHECK ALL THAT APPLY		OOG OFFICE USE ONLY
<input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED		<input type="checkbox"/> RECEIVED/ NOT REQUIRED
<input checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED		<input type="checkbox"/> RECEIVED
<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 <input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)		<input type="checkbox"/> RECEIVED/ NOT REQUIRED
<input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION	RECEIVED Office of Oil and Gas DEC 14 2021 WV Department of Environmental Protection	<input type="checkbox"/> RECEIVED
<input checked="" type="checkbox"/> 5. PUBLIC NOTICE		<input type="checkbox"/> RECEIVED
<input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION		<input type="checkbox"/> RECEIVED

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.

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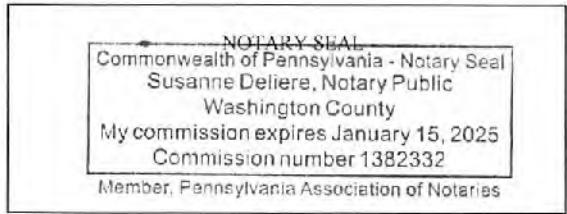
4705102428

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: Tug Hill Operating, LLC
By: Amy L. Morris *Amy L. Morris*
Its: Permitting Specialist - Appalachia Region
Telephone: 724-749-8388

Address: 380 Southpointe Boulevard, Plaza II, Suite 200
Canonsburg, PA 15317
Facsimile: 724-338-2030
Email: amorris@tug-hillop.com



Subscribed and sworn before me this 2nd day of December 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 depprivacyofficer@wv.gov.

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**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: 12/3/2021 **Date Permit Application Filed:** 12/6/2021

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
 Name: _____
 Address: _____

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

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. & Arianna 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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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 37th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Location Restrictions

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

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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

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. 47-051 - 02428
OPERATOR WELL NO. Breckenridge S-7HM
Well Pad Name: Breckenridge

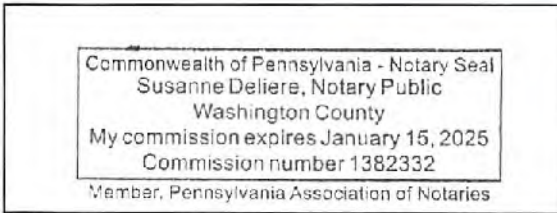
Notice is hereby given by:

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

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 deprivacyofficer@wv.gov.



Subscribed and sworn before me this 2nd day of December 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 – 7HM
District: Cameron
State: WV

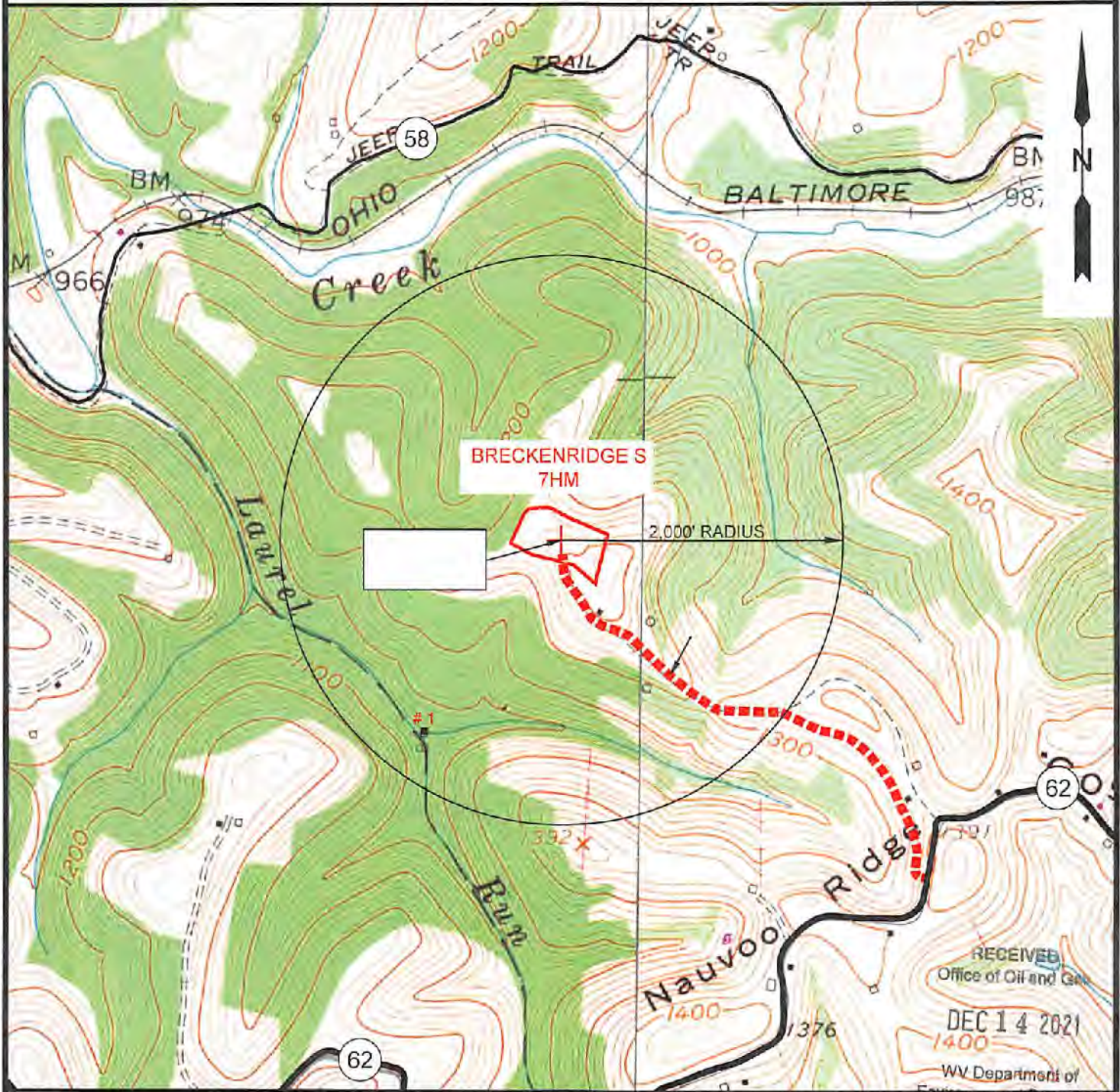
There is one (1) residence, no business or commercial sites, no churches, no schools or no emergency facilities within two-thousand feet (2,000') of the above referenced well location.

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

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PROPOSED BRECKENRIDGE S - 7HM



BRECKENRIDGE S
7HM

2,000' RADIUS

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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 26031 | 504.462.5524
 1812 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
 254 East Beckley Bypass | Beckley, WV 25801 | 304.255.8296
 slswv.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	CAMERON	380 SOUTHPOINTE BLVD	
DRAWN BY		DATE	SCALE
K.G.M.		09/23/2021	1" = 1000'



TUG HILL
OPERATING

01/21/2022

WW-6A3
(1/12)Operator Well No. Breckenridge S-7HM

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: 3820 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

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; -80.62685846</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: 724-749-8386
 Email: amorris@tug-hill-op.com

Address: 360 Southpointe Boulevard, Plaza II, Suite 200
Canonsburg, PA 15317
 Facsimile: 724-338-2020

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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.

01/21/2022

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 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: 12/03/2021 Date Permit Application Filed: 12/06/2021

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

CERTIFIED MAIL RETURN RECEIPT REQUESTED HAND 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: West Virginia UTM NAD 83 Easting: 531,919.23
County: Marshall Northing: 4,408,992.21
District: Cameron Public Road Access: CR 62
Quadrangle: Glen Easton 7.5' Generally used farm name: CNX Land, LLC
Watershed: Grace Creek (Huc 10) & Laurel Run

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-hillco.com

Address: 360 Southpointe Boulevard, Plaza II, Suite 200
Canonsburg, PA 15317
Facsimile: 724-338-2030

Oil and Gas Privacy Notice:

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Additional Notice for WW-6A5

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

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways

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

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

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

August 31, 2021

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-7HM Well Site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #04-2020-0398 which has been 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 STATEWIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated October 1, 2018. This letter is valid for permitting purposes for one year from the date of this letter.

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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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

Breckenridge Coal Exhibit



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