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west virginia department of environmental protection

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

Harold D. Ward, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Friday, January 07, 2022  
WELL WORK PERMIT  
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC  
380 SOUTHPOINTE BOLEVARD, PLAZA II  
SUITE 200  
CANONSBURG, PA 15371

Re: Permit approval for WILLETT S-7HM  
47-051-02421

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

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

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

James A. Martin  
Chief

Operator's Well Number: WILLETT S-7HM  
Farm Name: CNX LAND, LLC  
U.S. WELL NUMBER: 47-051-02421  
Horizontal 6A New Drill  
Date Issued: 01/07/2022

## 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

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

API Number: \_\_\_\_\_

## PERMIT CONDITIONS

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

01/07/2022

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 Meade Glen Easton 7.5'  
Operator ID County District Quadrangle

2) Operator's Well Number: Willett S-7HM Well Pad Name: Willett

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

4) Elevation, current ground: 1,310.03' Elevation, proposed post-construction: 1,310.03'

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

(b) If Gas Shallow  Deep \_\_\_\_\_  
Horizontal

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):

Marcellus is the target formation at a depth of 6,843' - 6,895, thickness of 52' and anticipated pressure of approx. 3800 psi.

8) Proposed Total Vertical Depth: 6,995' RECEIVED  
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9) Formation at Total Vertical Depth: Onondaga DEC 06 2021

10) Proposed Total Measured Depth: 19,827' WV Department of  
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11) Proposed Horizontal Leg Length: 11,451.98'

12) Approximate Fresh Water Strata Depths: 70; 992'

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

14) Approximate Saltwater Depths: 1,464'

15) Approximate Coal Seam Depths: Sewickley Coal - 888' and Pittsburgh Coal - 986'

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

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

(a) If Yes, provide Mine Info: Name: Marshall County Coal Resources, Inc./Marshall County Mine  
Depth: 986' TVD and 324' subsea level  
Seam: Pittsburgh  
Owner: Marshall County Coal Resources, Inc.

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#	1,100'	1,100' ✓	1114^3(CTS)
Intermediate	9 5/8"	NEW	J55	36#	2,968'	2,968' ✓	984^3(CTS)
Production	5 1/2"	NEW	CYPH110	20#	19,827'	19,827' ✓	4649^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#		7,773' ✓	
Liners							

*B.S. 10-14-21 ✓ - WWS 1/3/22*

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							

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PACKERS

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

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#.

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21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 15.60 acres

22) Area to be disturbed for well pad only, less access road (acres): 5.44 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

\*Note: Attach additional sheets as needed.

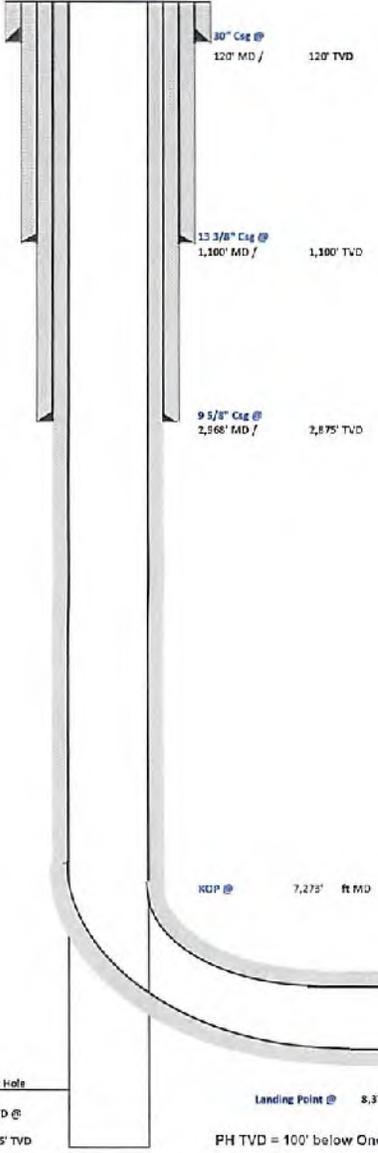


WELL NAME:	Willett 5-7HM		
STATE:	WV	COUNTY:	Marshall
DISTRICT:	Meade		
DF Elev:	1,310'	GL Elev:	1,310'
TD:	19,827'		
TH Latitude:	39.82307141		
TH Longitude:	-80.65618411		
BH Latitude:	39.796554		
BH Longitude:	-80.622584		

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	592
Sewickley Coal	888
Pittsburgh Coal	986
Big Lime	2102
Weir	2523
Berea	2720
Gordon	2972
Rhinestreet	6132
Genesee/Burkett	6690
Tully	6723
Hamilton	6753
Marcelus	6843
Landing Depth	6918
Onondaga	6895
Pilot Hole Depth	6995

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'	8W	BW	Surface
Surface	17.5	13 3/8	1,100'	1,100'	54.5	J55	Surface
Intermediate 1	12 1/4	9 5/8	2,968'	2,875'	36	J55	Surface
Production	8 7/8 x 8 3/4	5 1/2	19,827'	7,118'	20	CYHP110	Surface

	CEMENT SUMMARY			DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,128	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	968	A	15	Air	1 Centralizer every other ft
Production	4,649	A	14.5	Air / SOBMM	1 every other joint in lateral; 1 per joint in curve; 1 every other ft to s/c



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Pilot Hole  
PH TD @  
6,995' TVD

Landing Point @ 8,377' MD / 6,918' TVD  
PH TVD = 100' below Onondaga Top

Lateral TD @ 19,827' R MD  
7,118' ft TVD



**Tug Hill Operating, LLC Casing and Cement Program**

**Willett 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"	1,100'	CTS
Intermediate	9 5/8"	J55	12 1/4"	2,968'	CTS
Production	5 1/2"	CYHP110	8 7/8 x 8 3/4"	19,827'	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=1.19

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

Production: 50:50 Poz: Premium NE-1 + .1% bwoc ASA-301 + 60lb/sk ASCA-1 + .35% bwoc BA-10A + .25% bwoc MPA-170, 44 lb sack + .5% bwoc R-3 + .75 gals/100sk FP-13L – Production Cement mixed at 14.5 ppg, Y = 1.19

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Well: Willett S-07 HM (slot E)  
 Site: Willett  
 Project: Marshall County, West Virginia  
 Design: rev2  
 Rig:

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	
2	1301.00	0.00	0.00	1301.00	0.00	0.00	0.00	0.000	0.00	KOP Begin 2°/100' build
3	3117.48	35.33	76.95	2958.18	125.75	542.47	2.00	76.949	291.12	Begin 35.33° tangent
4	7272.96	35.33	76.95	6345.63	681.58	2940.70	0.00	0.000	1678.14	Begin 8°/100' build/turn
5	7744.35	50.00	113.88	6654.42	639.25	3248.09	6.00	76.264	1824.09	Begin 10°/100' build/turn
6	8377.39	89.00	149.46	6918.16	242.34	3657.63	8.00	48.798	2394.25	Begin 89.00° lateral
7	19827.31	89.00	149.46	7118.00	-9617.77	9474.76	0.00	0.000	13500.84	PBHL/TD 19827.31 MD 7118.00 TVD

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Willett S-07HM LP r1	6908.00	890.94	3274.02	14483384.05	1740224.79	39.82546300	-80.64451100
- plan misses target center by 323.74ft at 7800.00ft MD (6729.07 TVD, 620.15 N, 3287.21 E)							
Willett S-07HM PBHL r1	7118.00	-9617.77	9474.76	14452875.35	1746425.52	39.79655400	-80.62258400
- plan hits target center							



Azimuths to Grid North  
 True North: -0.22°  
 Magnetic North: -8.92°  
 Magnetic Field  
 Strength: 51741.8nT  
 Dip Angle: 66.54°  
 Date: 8/19/2021  
 Model: IGRF2020

Geodetic System: Universal Transverse Mercator (US Survey Feet)  
 Datum: NAD83 West Virginia - HARN  
 Ellipsoid: GRS '960  
 Zone: Zone 17N (84 W to 76 W)  
 System Datum: Mean Sea Level  
 Depth Reference: GL @ 1310.00ft

Northing	Easting	Latitude	Longitude
14462493.10	1736950.78	39.82307141	-80.65618411

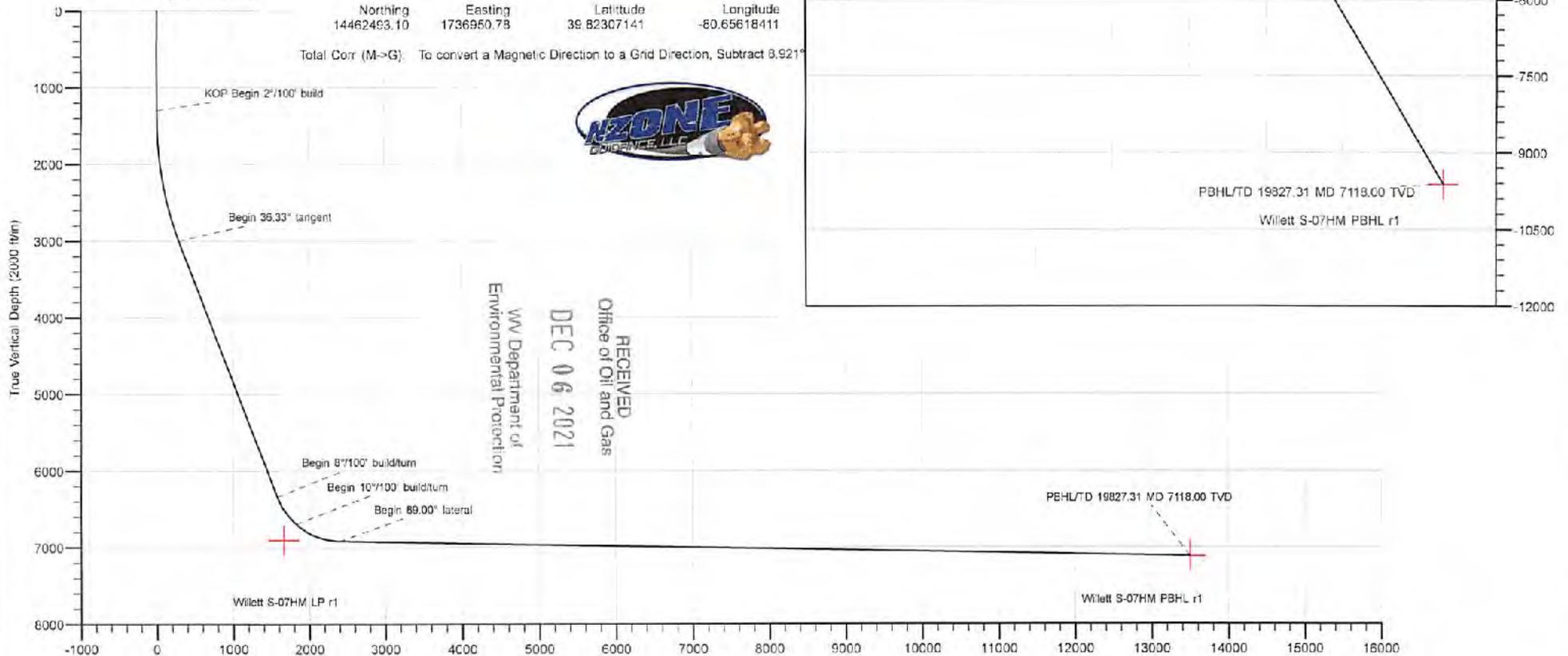
Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.921°



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South (-)/North(+) (2000 ft/in)



Planning Report - Geographic

Database:	DB_Dec2220_v16	Local Co-ordinate Reference:	Well Willett S-07 HM (slot E)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1310.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1310.00ft
Site:	Willett	North Reference:	Grid
Well:	Willett S-07 HM (slot E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

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

Site	Willett				
Site Position:		Northing:	14,462,447.53 usft	Latitude:	39.82294609
From:	Lat/Long	Easting:	1,736,965.80 usft	Longitude:	-80.65613125
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "		

Well	Willett S-07 HM (slot E)					
Well Position	+N/-S	0.00 ft	Northing:	14,462,493.11 usft	Latitude:	39.82307141
	+E/-W	0.00 ft	Easting:	1,736,950.78 usft	Longitude:	-80.65618411
Position Uncertainty	0.00 ft	Wellhead Elevation:	ft	Ground Level:	1,310.00 ft	
Grid Convergence:						

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	8/19/2021	-8.701	66.542	51,741.82481411

Design	rev2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	135.43

Plan Survey Tool Program	Date				
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	19,827.31 rev2 (Original Hole)			

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Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	
1,301.00	0.00	0.00	1,301.00	0.00	0.00	0.00	0.00	0.00	0.000	
3,117.48	36.33	76.95	2,998.18	125.75	542.47	2.00	2.00	0.00	76.949	
7,272.96	36.33	76.95	6,345.93	681.68	2,940.70	0.00	0.00	0.00	0.000	
7,744.35	50.00	113.88	6,694.42	639.25	3,248.09	6.00	2.90	7.83	76.264	
8,377.39	89.00	149.46	6,918.16	242.34	3,657.63	8.00	6.16	5.62	48.788	
19,827.31	89.00	149.46	7,118.00	-9,617.77	9,474.76	0.00	0.00	0.00	0.000	Willett S-07HM PBHL

<b>Database:</b>	DB_Dec2220_v16	<b>Local Co-ordinate Reference:</b>	Well Willett S-07 HM (slot E)
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL @ 1310.00ft
<b>Project:</b>	Marshall County, West Virginia	<b>MD Reference:</b>	GL @ 1310.00ft
<b>Site:</b>	Willett	<b>North Reference:</b>	Grid
<b>Well:</b>	Willett S-07 HM (slot E)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev2		

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	14,462,493.11	1,736,950.78	39.82307141	-80.65618411	
100.00	0.00	0.00	100.00	0.00	0.00	14,462,493.11	1,736,950.78	39.82307141	-80.65618411	
200.00	0.00	0.00	200.00	0.00	0.00	14,462,493.11	1,736,950.78	39.82307141	-80.65618411	
300.00	0.00	0.00	300.00	0.00	0.00	14,462,493.11	1,736,950.78	39.82307141	-80.65618411	
400.00	0.00	0.00	400.00	0.00	0.00	14,462,493.11	1,736,950.78	39.82307141	-80.65618411	
500.00	0.00	0.00	500.00	0.00	0.00	14,462,493.11	1,736,950.78	39.82307141	-80.65618411	
600.00	0.00	0.00	600.00	0.00	0.00	14,462,493.11	1,736,950.78	39.82307141	-80.65618411	
700.00	0.00	0.00	700.00	0.00	0.00	14,462,493.11	1,736,950.78	39.82307141	-80.65618411	
800.00	0.00	0.00	800.00	0.00	0.00	14,462,493.11	1,736,950.78	39.82307141	-80.65618411	
900.00	0.00	0.00	900.00	0.00	0.00	14,462,493.11	1,736,950.78	39.82307141	-80.65618411	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,462,493.11	1,736,950.78	39.82307141	-80.65618411	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,462,493.11	1,736,950.78	39.82307141	-80.65618411	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,462,493.11	1,736,950.78	39.82307141	-80.65618411	
1,301.00	0.00	0.00	1,301.00	0.00	0.00	14,462,493.11	1,736,950.78	39.82307141	-80.65618411	
<b>KOP Begin 2°/100' build</b>										
1,400.00	1.98	76.95	1,399.98	0.39	1.67	14,462,493.49	1,736,952.45	39.82307246	-80.65617817	
1,500.00	3.98	76.95	1,499.84	1.56	6.73	14,462,494.67	1,736,957.51	39.82307563	-80.65616012	
1,600.00	5.98	76.95	1,599.46	3.52	15.19	14,462,496.63	1,736,965.97	39.82308092	-80.65612997	
1,700.00	7.98	76.95	1,698.71	6.28	27.02	14,462,499.37	1,736,977.81	39.82308933	-80.65608778	
1,800.00	9.98	76.95	1,797.48	9.79	42.23	14,462,502.89	1,736,993.01	39.82309785	-80.65603357	
1,900.00	11.98	76.95	1,895.64	14.09	60.78	14,462,507.20	1,737,011.56	39.82310346	-80.65596744	
2,000.00	13.98	76.95	1,993.08	19.16	82.66	14,462,512.27	1,737,033.44	39.82312316	-80.65586944	
2,100.00	15.98	76.95	2,089.68	25.00	107.84	14,462,518.10	1,737,058.62	39.82313892	-80.65579968	
2,200.00	17.98	76.95	2,185.32	31.59	138.29	14,462,524.70	1,737,087.07	39.82315673	-80.65569828	
2,300.00	19.98	76.95	2,279.88	38.94	167.97	14,462,532.04	1,737,116.75	39.82317657	-80.65558534	
2,400.00	21.98	76.95	2,373.24	47.02	202.85	14,462,540.13	1,737,153.63	39.82319840	-80.65546101	
2,500.00	23.98	76.95	2,465.30	55.84	240.88	14,462,548.94	1,737,191.66	39.82322221	-80.65532544	
2,600.00	25.98	76.95	2,555.94	65.37	282.02	14,462,558.48	1,737,232.80	39.82324796	-80.65517890	
2,700.00	27.98	76.95	2,645.05	75.62	328.21	14,462,568.72	1,737,276.99	39.82327563	-80.65502126	
2,800.00	29.98	76.95	2,732.53	86.56	373.41	14,462,579.66	1,737,324.19	39.82330517	-80.65485302	
2,900.00	31.98	76.95	2,818.26	98.18	423.55	14,462,591.29	1,737,374.33	39.82333856	-80.65467427	
3,000.00	33.98	76.95	2,902.14	110.47	476.58	14,462,603.58	1,737,427.36	39.82336975	-80.65448525	
3,100.00	35.98	76.95	2,984.07	123.42	532.42	14,462,616.52	1,737,483.20	39.82340471	-80.65428618	
3,117.48	36.33	76.95	2,988.18	125.75	542.47	14,462,618.85	1,737,493.25	39.82341100	-80.65425037	
<b>Begin 36.33° tangent</b>										
3,200.00	36.33	76.95	3,064.67	136.79	590.09	14,462,629.89	1,737,540.87	39.82344081	-80.65408080	
3,300.00	36.33	76.95	3,145.23	150.17	647.80	14,462,643.27	1,737,598.58	39.82347894	-80.65387487	
3,400.00	36.33	76.95	3,225.79	163.54	705.52	14,462,656.65	1,737,656.30	39.82351307	-80.65366914	
3,500.00	36.33	76.95	3,306.35	176.92	763.23	14,462,670.03	1,737,714.01	39.82354919	-80.65346340	
3,600.00	36.33	76.95	3,386.91	190.30	820.94	14,462,683.40	1,737,771.72	39.82358532	-80.65325767	
3,700.00	36.33	76.95	3,467.48	203.68	878.65	14,462,696.78	1,737,829.43	39.82362144	-80.65305194	
3,800.00	36.33	76.95	3,548.04	217.06	936.37	14,462,710.16	1,737,887.15	39.82365757	-80.65284621	
3,900.00	36.33	76.95	3,628.60	230.43	994.08	14,462,723.54	1,737,944.86	39.82369369	-80.65264048	
4,000.00	36.33	76.95	3,709.16	243.81	1,051.79	14,462,736.92	1,738,002.57	39.82372982	-80.65243475	
4,100.00	36.33	76.95	3,789.73	257.19	1,109.50	14,462,750.30	1,738,060.28	39.82376594	-80.65222901	
4,200.00	36.33	76.95	3,870.29	270.57	1,167.22	14,462,763.67	1,738,118.00	39.82380206	-80.65202328	
4,300.00	36.33	76.95	3,950.85	283.95	1,224.93	14,462,777.05	1,738,175.71	39.82383818	-80.65181755	
4,400.00	36.33	76.95	4,031.41	297.33	1,282.64	14,462,790.43	1,738,233.42	39.82387431	-80.65161181	
4,500.00	36.33	76.95	4,111.98	310.70	1,340.36	14,462,803.81	1,738,291.13	39.82391043	-80.65140608	
4,600.00	36.33	76.95	4,192.54	324.08	1,398.07	14,462,817.19	1,738,348.85	39.82394655	-80.65120035	
4,700.00	36.33	76.95	4,273.10	337.46	1,455.78	14,462,830.56	1,738,406.56	39.82398267	-80.65099461	
4,800.00	36.33	76.95	4,353.66	350.84	1,513.49	14,462,843.94	1,738,464.27	39.82401879	-80.65078888	
4,900.00	36.33	76.95	4,434.22	364.22	1,571.21	14,462,857.32	1,738,521.98	39.82405491	-80.65058315	
5,000.00	36.33	76.95	4,514.79	377.59	1,628.92	14,462,870.70	1,738,579.70	39.82409103	-80.65037741	



Planning Report - Geographic

Database:	DB_Dec2220_v16	Local Co-ordinate Reference:	Well Willett S-07 HM (slot E)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1310.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1310.00ft
Site:	Willett	North Reference:	Grid
Well:	Willett S-07 HM (slot E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
5,100.00	36.33	76.95	4,595.35	390.97	1,686.63	14,462,884.03	1,738,637.41	39.82412715	-80.65017168	
5,200.00	36.33	76.95	4,675.91	404.35	1,744.34	14,462,897.46	1,738,695.12	39.82416327	-80.64996594	
5,300.00	36.33	76.95	4,756.47	417.73	1,802.06	14,462,910.83	1,738,752.83	39.82419939	-80.64976021	
5,400.00	36.33	76.95	4,837.04	431.11	1,859.77	14,462,924.21	1,738,810.55	39.82423551	-80.64955447	
5,500.00	36.33	76.95	4,917.60	444.49	1,917.48	14,462,937.59	1,738,868.26	39.82427163	-80.64934874	
5,600.00	36.33	76.95	4,998.16	457.86	1,975.19	14,462,950.97	1,738,925.97	39.82430775	-80.64914300	
5,700.00	36.33	76.95	5,078.72	471.24	2,032.91	14,462,964.35	1,738,983.68	39.82434387	-80.64893727	
5,800.00	36.33	76.95	5,159.28	484.62	2,090.62	14,462,977.72	1,739,041.40	39.82437998	-80.64873153	
5,900.00	36.33	76.95	5,239.85	498.00	2,148.33	14,462,991.10	1,739,099.11	39.82441610	-80.64852579	
6,000.00	36.33	76.95	5,320.41	511.38	2,206.04	14,463,004.48	1,739,156.82	39.82445222	-80.64832006	
6,100.00	36.33	76.95	5,400.97	524.75	2,263.76	14,463,017.86	1,739,214.53	39.82448833	-80.64811432	
6,200.00	36.33	76.95	5,481.53	538.13	2,321.47	14,463,031.24	1,739,272.25	39.82452445	-80.64790858	
6,300.00	36.33	76.95	5,562.10	551.51	2,379.18	14,463,044.62	1,739,329.96	39.82456056	-80.64770285	
6,400.00	36.33	76.95	5,642.66	564.89	2,436.89	14,463,057.99	1,739,387.67	39.82459668	-80.64749711	
6,500.00	36.33	76.95	5,723.22	578.27	2,494.61	14,463,071.37	1,739,445.38	39.82463279	-80.64729137	
6,600.00	36.33	76.95	5,803.78	591.65	2,552.32	14,463,084.75	1,739,503.10	39.82466891	-80.64708563	
6,700.00	36.33	76.95	5,884.35	605.02	2,610.03	14,463,098.13	1,739,560.81	39.82470502	-80.64687990	
6,800.00	36.33	76.95	5,964.91	618.40	2,667.75	14,463,111.51	1,739,618.52	39.82474114	-80.64667416	
6,900.00	36.33	76.95	6,045.47	631.78	2,725.46	14,463,124.88	1,739,676.23	39.82477725	-80.64646842	
7,000.00	36.33	76.95	6,126.03	645.16	2,783.17	14,463,138.26	1,739,733.95	39.82481336	-80.64626268	
7,100.00	36.33	76.95	6,206.59	658.54	2,840.88	14,463,151.64	1,739,791.66	39.82484947	-80.64605694	
7,200.00	36.33	76.95	6,287.16	671.91	2,898.60	14,463,165.02	1,739,849.37	39.82488559	-80.64585120	
7,272.96	36.33	76.95	6,345.93	681.68	2,940.70	14,463,174.78	1,739,891.48	39.82491193	-80.64570110	
<b>Begin 8°/100' build/turn</b>										
7,300.00	36.74	79.58	6,367.66	684.95	2,956.46	14,463,178.05	1,739,907.24	39.82492075	-80.64564492	
7,350.00	37.66	84.31	6,407.50	689.17	2,986.38	14,463,182.27	1,739,937.15	39.82493201	-80.64553832	
7,400.00	38.75	88.83	6,446.79	691.00	3,017.23	14,463,184.10	1,739,968.00	39.82493671	-80.64542841	
7,450.00	40.01	93.12	6,485.44	690.45	3,048.93	14,463,183.55	1,739,999.71	39.82493484	-80.64531550	
7,500.00	41.42	97.18	6,523.35	687.50	3,081.40	14,463,180.81	1,740,032.18	39.82492641	-80.64519990	
7,550.00	42.97	101.01	6,560.39	682.18	3,114.55	14,463,175.28	1,740,065.32	39.82491143	-80.64508192	
7,600.00	44.64	104.61	6,596.48	674.49	3,148.26	14,463,167.60	1,740,099.05	39.82489995	-80.64496189	
7,650.00	46.41	108.01	6,631.52	664.46	3,182.50	14,463,157.57	1,740,133.28	39.82488203	-80.64484014	
7,700.00	48.27	111.20	6,665.40	652.11	3,217.12	14,463,145.22	1,740,167.90	39.82487274	-80.64471700	
7,744.35	50.00	113.88	6,694.42	639.25	3,248.09	14,463,132.35	1,740,198.87	39.82479208	-80.64460690	
<b>Begin 10°/100' build/turn</b>										
7,750.00	50.30	114.32	6,698.04	637.48	3,252.05	14,463,130.58	1,740,202.83	39.82478716	-80.64459281	
7,800.00	53.01	118.07	6,729.07	620.15	3,287.21	14,463,113.26	1,740,237.99	39.82473920	-80.64446783	
7,850.00	55.83	121.56	6,758.16	599.92	3,322.47	14,463,093.02	1,740,273.25	39.82468325	-80.64434254	
7,900.00	58.74	124.82	6,785.19	576.88	3,357.66	14,463,069.98	1,740,308.43	39.82461960	-80.64421755	
7,950.00	61.73	127.88	6,810.01	551.15	3,392.59	14,463,044.25	1,740,343.37	39.82454855	-80.64409348	
8,000.00	64.79	130.77	6,832.50	522.84	3,427.12	14,463,015.95	1,740,377.89	39.82447044	-80.64397092	
8,050.00	67.90	133.52	6,852.57	492.11	3,461.06	14,462,985.21	1,740,411.83	39.82438567	-80.64385046	
8,100.00	71.05	136.15	6,870.10	459.09	3,494.24	14,462,952.20	1,740,445.02	39.82429463	-80.64373275	
8,150.00	74.24	138.68	6,885.01	423.95	3,526.52	14,462,917.06	1,740,477.30	39.82419779	-80.64361828	
8,200.00	77.45	141.14	6,897.24	386.87	3,557.73	14,462,879.97	1,740,508.51	39.82409559	-80.64350765	
8,250.00	80.69	143.53	6,906.72	348.01	3,587.72	14,462,841.12	1,740,538.50	39.82398856	-80.64340140	
8,300.00	83.95	145.88	6,913.40	307.58	3,616.34	14,462,800.68	1,740,567.12	39.82387720	-80.64330003	
8,350.00	87.21	148.20	6,917.26	265.76	3,643.46	14,462,758.86	1,740,594.24	39.82376206	-80.64320404	
8,377.39	89.00	149.46	6,918.16	242.34	3,657.63	14,462,735.44	1,740,608.40	39.82369759	-80.64315392	
<b>Begin 89.00° lateral</b>										
8,400.00	89.00	149.46	6,918.56	222.86	3,669.12	14,462,715.97	1,740,619.89	39.82364399	-80.64311328	
8,500.00	89.00	149.46	6,920.30	136.75	3,719.92	14,462,629.85	1,740,670.70	39.82340694	-80.64293356	
8,600.00	89.00	149.46	6,922.05	50.63	3,770.73	14,462,543.74	1,740,721.50	39.82316989	-80.64275384	
8,700.00	89.00	149.46	6,923.79	-35.48	3,821.53	14,462,457.62	1,740,772.31	39.82293284	-80.64257412	



Planning Report - Geographic

Database:	DB_Dec2220_v16	Local Co-ordinate Reference:	Well Willett S-07 HM (slot E)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1310.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1310.00ft
Site:	Willett	North Reference:	Grid
Well:	Willett S-07 HM (slot E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

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	89.00	149.46	6,925.54	-121.60	3,872.34	14,462,371.51	1,740,823.11	39.82269580	-80.64239440	
8,900.00	89.00	149.46	6,927.28	-207.71	3,923.14	14,462,285.39	1,740,873.82	39.82245675	-80.64221469	
9,000.00	89.00	149.46	6,929.03	-293.83	3,973.95	14,462,199.28	1,740,924.72	39.82222170	-80.64203497	
9,100.00	89.00	149.46	6,930.77	-379.94	4,024.75	14,462,113.16	1,740,975.52	39.82198485	-80.64185526	
9,200.00	89.00	149.46	6,932.52	-466.06	4,075.56	14,462,027.05	1,741,026.33	39.82174780	-80.64167555	
9,300.00	89.00	149.46	6,934.26	-552.17	4,126.36	14,461,940.93	1,741,077.13	39.82151055	-80.64149564	
9,400.00	89.00	149.46	6,936.01	-638.29	4,177.17	14,461,854.82	1,741,127.94	39.82127350	-80.64131613	
9,500.00	89.00	149.46	6,937.75	-724.40	4,227.97	14,461,768.71	1,741,178.74	39.82103645	-80.64113642	
9,600.00	89.00	149.46	6,939.50	-810.52	4,278.78	14,461,682.59	1,741,229.55	39.82079940	-80.64095671	
9,700.00	89.00	149.46	6,941.24	-896.63	4,329.58	14,461,596.48	1,741,280.35	39.82056235	-80.64077701	
9,800.00	89.00	149.46	6,942.99	-982.75	4,380.39	14,461,510.38	1,741,331.16	39.82032530	-80.64059730	
9,900.00	89.00	149.46	6,944.74	-1,068.86	4,431.19	14,461,424.25	1,741,381.96	39.82008824	-80.64041760	
10,000.00	89.00	149.46	6,946.48	-1,154.98	4,482.00	14,461,338.13	1,741,432.77	39.81985119	-80.64023790	
10,100.00	89.00	149.46	6,948.23	-1,241.09	4,532.80	14,461,252.02	1,741,483.57	39.81961414	-80.64005820	
10,200.00	89.00	149.46	6,949.97	-1,327.21	4,583.61	14,461,165.90	1,741,534.38	39.81937709	-80.63987850	
10,300.00	89.00	149.46	6,951.72	-1,413.32	4,634.41	14,461,079.79	1,741,585.18	39.81914004	-80.63969880	
10,400.00	89.00	149.46	6,953.46	-1,499.44	4,685.22	14,460,993.67	1,741,635.99	39.81890298	-80.63951910	
10,500.00	89.00	149.46	6,955.21	-1,585.55	4,736.02	14,460,907.56	1,741,686.79	39.81866593	-80.63933940	
10,600.00	89.00	149.46	6,956.95	-1,671.67	4,786.83	14,460,821.44	1,741,737.60	39.81842888	-80.63915971	
10,700.00	89.00	149.46	6,958.70	-1,757.78	4,837.63	14,460,735.33	1,741,788.40	39.81819182	-80.63898002	
10,800.00	89.00	149.46	6,960.44	-1,843.90	4,888.44	14,460,649.21	1,741,839.21	39.81795477	-80.63880032	
10,900.00	89.00	149.46	6,962.19	-1,930.01	4,939.24	14,460,563.10	1,741,890.01	39.81771771	-80.63862063	
11,000.00	89.00	149.46	6,963.93	-2,016.13	4,990.05	14,460,476.98	1,741,940.82	39.81748066	-80.63844094	
11,100.00	89.00	149.46	6,965.68	-2,102.24	5,040.85	14,460,390.87	1,741,991.62	39.81724360	-80.63826125	
11,200.00	89.00	149.46	6,967.42	-2,188.36	5,091.66	14,460,304.75	1,742,042.43	39.81700655	-80.63808157	
11,300.00	89.00	149.46	6,969.17	-2,274.47	5,142.46	14,460,218.64	1,742,093.23	39.81676949	-80.63790186	
11,400.00	89.00	149.46	6,970.92	-2,360.59	5,193.27	14,460,132.52	1,742,144.04	39.81653244	-80.63772219	
11,500.00	89.00	149.46	6,972.66	-2,446.70	5,244.07	14,460,046.41	1,742,194.84	39.81629538	-80.63754251	
11,600.00	89.00	149.46	6,974.41	-2,532.82	5,294.88	14,459,960.29	1,742,245.65	39.81605833	-80.63736283	
11,700.00	89.00	149.46	6,976.15	-2,618.93	5,345.68	14,459,874.18	1,742,296.45	39.81582127	-80.63718315	
11,800.00	89.00	149.46	6,977.90	-2,705.05	5,396.49	14,459,788.06	1,742,347.26	39.81558421	-80.63700347	
11,900.00	89.00	149.46	6,979.64	-2,791.16	5,447.29	14,459,701.95	1,742,398.06	39.81534716	-80.63682379	
12,000.00	89.00	149.46	6,981.39	-2,877.28	5,498.10	14,459,615.83	1,742,448.87	39.81511010	-80.63664411	
12,100.00	89.00	149.46	6,983.13	-2,963.39	5,548.90	14,459,529.72	1,742,499.67	39.81487304	-80.63646443	
12,200.00	89.00	149.46	6,984.88	-3,049.51	5,599.71	14,459,443.60	1,742,550.48	39.81463598	-80.63628476	
12,300.00	89.00	149.46	6,986.62	-3,135.62	5,650.51	14,459,357.49	1,742,601.28	39.81439892	-80.63610508	
12,400.00	89.00	149.46	6,988.37	-3,221.74	5,701.32	14,459,271.37	1,742,652.09	39.81416187	-80.63592541	
12,500.00	89.00	149.46	6,990.11	-3,307.85	5,752.12	14,459,185.26	1,742,702.89	39.81392481	-80.63574574	
12,600.00	89.00	149.46	6,991.86	-3,393.97	5,802.93	14,459,099.14	1,742,753.70	39.81368775	-80.63556607	
12,700.00	89.00	149.46	6,993.60	-3,480.08	5,853.73	14,459,013.03	1,742,804.50	39.81345069	-80.63538640	
12,800.00	89.00	149.46	6,995.35	-3,566.20	5,904.54	14,458,926.91	1,742,855.31	39.81321363	-80.63520673	
12,900.00	89.00	149.46	6,997.10	-3,652.31	5,955.34	14,458,840.80	1,742,906.11	39.81297657	-80.63502707	
13,000.00	89.00	149.46	6,998.84	-3,738.43	6,006.15	14,458,754.68	1,742,956.92	39.81273951	-80.63484740	
13,100.00	89.00	149.46	7,000.59	-3,824.54	6,056.95	14,458,668.57	1,743,007.72	39.81250245	-80.63466774	
13,200.00	89.00	149.46	7,002.33	-3,910.66	6,107.76	14,458,582.45	1,743,058.52	39.81226539	-80.63448807	
13,300.00	89.00	149.46	7,004.08	-3,996.77	6,158.56	14,458,496.34	1,743,109.33	39.81202833	-80.63430841	
13,400.00	89.00	149.46	7,005.82	-4,082.89	6,209.37	14,458,410.22	1,743,160.13	39.81179126	-80.63412875	
13,500.00	89.00	149.46	7,007.57	-4,169.01	6,260.17	14,458,324.11	1,743,210.94	39.81155420	-80.63394909	
13,600.00	89.00	149.46	7,009.31	-4,255.12	6,310.98	14,458,237.99	1,743,261.74	39.81131714	-80.63376944	
13,700.00	89.00	149.46	7,011.05	-4,341.24	6,361.78	14,458,151.88	1,743,312.55	39.81108008	-80.63358978	
13,800.00	89.00	149.46	7,012.80	-4,427.35	6,412.59	14,458,065.76	1,743,363.35	39.81084302	-80.63341012	
13,900.00	89.00	149.46	7,014.55	-4,513.47	6,463.39	14,457,979.65	1,743,414.16	39.81060595	-80.63323047	
14,000.00	89.00	149.46	7,016.29	-4,599.58	6,514.20	14,457,893.53	1,743,464.96	39.81036889	-80.63305082	
14,100.00	89.00	149.46	7,018.04	-4,685.70	6,565.00	14,457,807.42	1,743,515.77	39.81013183	-80.63287116	
14,200.00	89.00	149.46	7,019.78	-4,771.81	6,615.81	14,457,721.30	1,743,566.57	39.80989476	-80.63269151	



Planning Report - Geographic

Database:	DB_Dec2220_v18	Local Co-ordinate Reference:	Well Willett S-07 HM (slot E)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1310.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1310.00ft
Site:	Willett	North Reference:	Grid
Well:	Willett S-07 HM (slot E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

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	89.00	149.46	7,021.53	-4,857.93	6,666.61	14,457,635.19	1,743,617.38	39.80955770	-80.63251186	
14,400.00	89.00	149.46	7,023.28	-4,944.04	6,717.42	14,457,549.07	1,743,668.18	39.80942063	-80.63233222	
14,500.00	89.00	149.46	7,025.02	-5,030.16	6,768.22	14,457,462.96	1,743,718.99	39.80918357	-80.63215257	
14,600.00	89.00	149.46	7,026.77	-5,116.27	6,819.03	14,457,376.84	1,743,769.79	39.80894651	-80.63197292	
14,700.00	89.00	149.46	7,028.51	-5,202.39	6,869.83	14,457,290.73	1,743,820.60	39.80870944	-80.63179328	
14,800.00	89.00	149.46	7,030.26	-5,288.50	6,920.64	14,457,204.61	1,743,871.40	39.80847238	-80.63161364	
14,900.00	89.00	149.46	7,032.00	-5,374.62	6,971.44	14,457,118.50	1,743,922.21	39.80823531	-80.63143399	
15,000.00	89.00	149.46	7,033.75	-5,460.73	7,022.25	14,457,032.38	1,743,973.01	39.80799824	-80.63125435	
15,100.00	89.00	149.46	7,035.49	-5,546.85	7,073.05	14,456,946.27	1,744,023.82	39.80776118	-80.63107471	
15,200.00	89.00	149.46	7,037.24	-5,632.96	7,123.86	14,456,860.15	1,744,074.62	39.80752411	-80.63089506	
15,300.00	89.00	149.46	7,038.98	-5,719.08	7,174.66	14,456,774.04	1,744,125.43	39.80728704	-80.63071544	
15,400.00	89.00	149.46	7,040.73	-5,805.19	7,225.47	14,456,687.93	1,744,176.23	39.80704998	-80.63053580	
15,500.00	89.00	149.46	7,042.47	-5,891.31	7,276.27	14,456,601.81	1,744,227.04	39.80681291	-80.63035617	
15,600.00	89.00	149.46	7,044.22	-5,977.42	7,327.07	14,456,515.70	1,744,277.84	39.80657584	-80.63017653	
15,700.00	89.00	149.46	7,045.96	-6,063.54	7,377.88	14,456,429.58	1,744,328.65	39.80633877	-80.62999690	
15,800.00	89.00	149.46	7,047.71	-6,149.65	7,428.68	14,456,343.47	1,744,379.45	39.80610171	-80.62981727	
15,900.00	89.00	149.46	7,049.46	-6,235.77	7,479.49	14,456,257.35	1,744,430.26	39.80586464	-80.62963764	
16,000.00	89.00	149.46	7,051.20	-6,321.88	7,530.29	14,456,171.24	1,744,481.06	39.80562757	-80.62945801	
16,100.00	89.00	149.46	7,052.95	-6,408.00	7,581.10	14,456,085.12	1,744,531.87	39.80539050	-80.62927839	
16,200.00	89.00	149.46	7,054.69	-6,494.11	7,631.90	14,455,999.01	1,744,582.67	39.80515343	-80.62909876	
16,300.00	89.00	149.46	7,056.44	-6,580.23	7,682.71	14,455,912.89	1,744,633.48	39.80491636	-80.62891914	
16,400.00	89.00	149.46	7,058.18	-6,666.34	7,733.51	14,455,826.78	1,744,684.28	39.80467929	-80.62873951	
16,500.00	89.00	149.46	7,059.93	-6,752.46	7,784.32	14,455,740.66	1,744,735.09	39.80444222	-80.62855989	
16,600.00	89.00	149.46	7,061.67	-6,838.57	7,835.12	14,455,654.55	1,744,785.89	39.80420515	-80.62838027	
16,700.00	89.00	149.46	7,063.42	-6,924.69	7,885.93	14,455,568.43	1,744,836.70	39.80396808	-80.62820065	
16,800.00	89.00	149.46	7,065.16	-7,010.80	7,936.73	14,455,482.32	1,744,887.50	39.80373101	-80.62802103	
16,900.00	89.00	149.46	7,066.91	-7,096.92	7,987.54	14,455,396.20	1,744,938.31	39.80349394	-80.62784141	
17,000.00	89.00	149.46	7,068.65	-7,183.03	8,038.34	14,455,310.09	1,744,989.11	39.80325687	-80.62766178	
17,100.00	89.00	149.46	7,070.40	-7,269.15	8,089.15	14,455,223.97	1,745,039.92	39.80301979	-80.62748218	
17,200.00	89.00	149.46	7,072.14	-7,355.26	8,139.95	14,455,137.86	1,745,090.72	39.80278272	-80.62730257	
17,300.00	89.00	149.46	7,073.89	-7,441.38	8,190.76	14,455,051.74	1,745,141.52	39.80254565	-80.62712296	
17,400.00	89.00	149.46	7,075.64	-7,527.49	8,241.56	14,454,965.63	1,745,192.33	39.80230858	-80.62694334	
17,500.00	89.00	149.46	7,077.38	-7,613.61	8,292.37	14,454,879.51	1,745,243.13	39.80207150	-80.62676373	
17,600.00	89.00	149.46	7,079.13	-7,699.72	8,343.17	14,454,793.40	1,745,293.94	39.80183443	-80.62658413	
17,700.00	89.00	149.46	7,080.87	-7,785.84	8,393.98	14,454,707.28	1,745,344.74	39.80159736	-80.62640452	
17,800.00	89.00	149.46	7,082.62	-7,871.95	8,444.78	14,454,621.17	1,745,395.55	39.80136028	-80.62622491	
17,900.00	89.00	149.46	7,084.36	-7,958.07	8,495.59	14,454,535.06	1,745,446.35	39.80112321	-80.62604531	
18,000.00	89.00	149.46	7,086.11	-8,044.18	8,546.39	14,454,448.94	1,745,497.16	39.80088614	-80.62586570	
18,100.00	89.00	149.46	7,087.85	-8,130.30	8,597.20	14,454,362.82	1,745,547.96	39.80064906	-80.62568610	
18,200.00	89.00	149.46	7,089.60	-8,216.41	8,648.00	14,454,276.71	1,745,598.77	39.80041199	-80.62550650	
18,300.00	89.00	149.46	7,091.34	-8,302.53	8,698.81	14,454,190.59	1,745,649.57	39.80017491	-80.62532690	
18,400.00	89.00	149.46	7,093.09	-8,388.64	8,749.61	14,454,104.48	1,745,700.38	39.79993784	-80.62514730	
18,500.00	89.00	149.46	7,094.83	-8,474.76	8,800.42	14,454,018.36	1,745,751.18	39.79970076	-80.62496770	
18,600.00	89.00	149.46	7,096.58	-8,560.87	8,851.22	14,453,932.25	1,745,801.99	39.79946368	-80.62478811	
18,700.00	89.00	149.46	7,098.32	-8,646.99	8,902.03	14,453,846.13	1,745,852.79	39.79922661	-80.62460851	
18,800.00	89.00	149.46	7,100.07	-8,733.10	8,952.83	14,453,760.02	1,745,903.60	39.79898953	-80.62442892	
18,900.00	89.00	149.46	7,101.82	-8,819.22	9,003.64	14,453,673.90	1,745,954.40	39.79875245	-80.62424932	
19,000.00	89.00	149.46	7,103.56	-8,905.33	9,054.44	14,453,587.79	1,746,005.21	39.79851538	-80.62406973	
19,100.00	89.00	149.46	7,105.31	-8,991.45	9,105.25	14,453,501.67	1,746,056.01	39.79827830	-80.62389014	
19,200.00	89.00	149.46	7,107.05	-9,077.57	9,156.05	14,453,415.56	1,746,106.82	39.79804122	-80.62371055	
19,300.00	89.00	149.46	7,108.80	-9,163.68	9,206.86	14,453,329.44	1,746,157.62	39.79780414	-80.62353096	
19,400.00	89.00	149.46	7,110.54	-9,249.80	9,257.66	14,453,243.33	1,746,208.43	39.79756706	-80.62335138	
19,500.00	89.00	149.46	7,112.29	-9,335.91	9,308.47	14,453,157.21	1,746,259.23	39.79732999	-80.62317179	
19,600.00	89.00	149.46	7,114.03	-9,422.03	9,359.27	14,453,071.10	1,746,310.04	39.79709291	-80.62299221	
19,700.00	89.00	149.46	7,115.78	-9,508.14	9,410.08	14,452,984.98	1,746,360.84	39.79685583	-80.62281263	

Database:	DB_Dec2220_v16	Local Co-ordinate Reference:	Well Willett S-07 HM (slot E)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1310.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1310.00ft
Site:	Willett	North Reference:	Grid
Well:	Willett S-07 HM (slot E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

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	89.00	149.46	7,117.52	-9,594.26	9,460.86	14,452,898.87	1,746,411.65	39.79661875	-80.62263304
19,827.31	89.00	149.46	7,118.00	-9,617.77	9,474.76	14,452,875.35	1,746,425.52	39.79655400	-80.62258400
PBHL/TD 19827.31 MD 7118.00 TVD									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Willett S-07HM LP r1 - hit/miss target - Shape - Point	0.00	0.00	6,906.00	890.94	3,274.02	14,463,384.05	1,740,224.79	39.82548300	-80.64451100
- plan misses target center by 323.74ft at 7800.00ft MD (5729.07 TVD, 820.15 N, 3287.21 E)									
Willett S-07HM PBHL r1 - plan hits target center - Point	0.00	0.01	7,118.00	-9,617.77	9,474.76	14,452,875.35	1,746,425.52	39.79655400	-80.62258400

Casing Points						
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")		
19,827.31	7,118.00	20" Casing	20	24		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,301.00	1,301.00	0.00	0.00	KOP Begin 2°/100' build
3,117.48	2,998.18	125.75	542.47	Begin 38.33° tangent
7,272.96	6,345.93	681.68	2,940.70	Begin 8°/100' build/turn
7,744.35	6,694.42	639.25	3,248.09	Begin 10°/100' build/turn
8,377.39	6,918.16	242.34	3,657.63	Begin 89.00° lateral
19,827.31	7,118.00	-9,617.77	9,474.76	PBHL/TD 19827.31 MD 7118.00 TVD

**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](mailto:apicard@dpslandservices.com), DPS GIS (08/25/2021) 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

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## 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

**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
4705102255	Tug Hill Operating, LLC	6870' TVD (proposed)	Marcellus (proposed)	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.
4705100619	CNX Gas Co. LLC (North)	3025' 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 10/4/2005.
4705100935	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 7/7/2004.
4705100955	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 9/23/2005.

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
4705170632 (reassigned to 4705100955)	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.	API # 4705170632 reassigned to 4705100955 (see above row). Well was plugged 9/23/2005.
4705100958	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 11/15/2005.
4705100617	CNX Gas Co. LLC (North)	3015' 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 10/15/2004.
4705100633	CNX Gas Co. LLC (North)	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 7/14/2005.
4705100879	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 11/18/2002.

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
4705100919	Consolidation Coal Co.	2914' 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 6/25/2004.
4705130127 (reassigned to 4705100919)	Consolidation Coal Co.	2914' TVD	Gordon	unknown	No, the well is not deep enough to be within the expected fracture propagation from a Marcellus stimulation. Well is plugged.	API # 4705130127 reassigned to 4705100919 (see above row). Well was plugged 6/25/2004.

WV Geological & Economic Survey

**Well: County = 51 Permit = 02255**

Report Time: Monday, August 30, 2021 9:22:18 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705102255	Marshall	2255	Meade	Glen Easton	Cameron	39.822712	-80.656398	529405.5	4408136.8

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
4705102255	-/-		Dvtd Orgnl Loc Permitted	CNX Land LLC	21V		Willett		Appalachian Basin Minerals LP et al	Tug Hill Operating, LLC	6870	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
4705102255	-/-	-/-	1315	Ground Level															

WV Geological & Economic Survey

Well: County = 51 Permit = 00619

Report Time: Monday, August 30, 2021 10:17:12 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_16	LAT_DD	LON_DD	UTME	UTMN
4705100619	Marshall	619	Liberty	Glen Easton	Cameron	39.809196	-80.633641	531359.2	4406644.4

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM
4705100619	6/18/1905	Original Loc	Completed	John Chapman	2					South Penn Oil (S. Penn Nat. Gas)			
4705100619	10/4/2005	Plugging	Completed	Joseph B & Judith Patrello			M-333			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
4705100619	6/18/1905	4/19/1905	1290	Topo	Estimation	Cameron-Garner	Gordon	Gordon	unclassified	unclassified	Oil	unknown	Shot	3025		3025
4705100619	10/4/2005	9/8/2005	1285	Ground	Level	Cameron-Garner			unclassified	unclassified	not available	unknown	unknown			

Comment: 10/4/2005 elevation estimated from topo.

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
4705100619	6/18/1905	Pay	Oil	Vertical	3008	Gordon	3021	Gordon	0	0			

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4705100619	Original Loc	Pittsburgh coal	Well Record	1034	Reasonable	7	Reasonable	1240	Ground Level

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

Plugging Information:

API	PLG_DT	DEPTH_PBT
4705100619	10/4/2005	0

There is no Sample data for this well

WV Geological & Economic Survey.

Well: County = 51 Permit = 00935

Report Time: Monday, August 30, 2021 10:37:31 AM

Well Reassignment Information: Reassigned From

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	70633	51	935

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705100935	Marshall	935	Liberty	Glen Easton	Cameron	39.812076	-80.634769	531261.3	4406963.6

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
4705100935	7/7/2004	Plugging	Completed	Carroll/A Morris		M-174			Consolidation Coal Co	Consolidation Coal Co.			
4705100935	-/-	unknown	Prpty Map	Phillip M Conner						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_AF
4705100935	7/7/2004	6/21/2004	1185	Ground Level														
4705100935	-/-	-/-						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
4705100935	7/7/2004	0

There is no Sample data for this well

WV Geological &amp; Economic Survey

Well: County = 51 Permit = 00955

Report Time: Monday, August 30, 2021 10:37:59 AM

## Well Reassignment Information: Reassigned From

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	70632	51	955

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705100955	Marshall	955	Liberty	Glen Easton	Cameron	39.81048	-80.634017	531326.4	4406786.8

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_ES
4705100955	9/23/2005	Plugging	Completed	Joseph B & Judith M Patrello		M-176				Consolidation Coal Co			
4705100955	-/-	unknown	Prpty Map	John Chapman				993		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_AF
4705100955	9/23/2005	9/6/2005	1223	Ground Level				unclassified	unclassified	not available	unknown	UnFin/WIStm						
4705100955	-/-	-/-						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
4705100955	Original Loc	Pittsburgh coal	Well Record	967	Reasonable	6	Reasonable	1223	Ground Level

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

## Plugging Information:

API	PLG_DT	DEPTH_PBT
4705100955	9/23/2005	0

There is no Sample data for this well

WV Geological & Economic Survey

**Well: County = 51 Permit = 70632**

Report Time: Monday, August 30, 2021 10:38:19 AM

Well Reassignment Information: Reassigned To

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	70632	51	955

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705170632	Marshall	70632	Liberty	Glen Easton	Cameron	39.810501	-80.634017	531326.4	4496789.1

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
4705170632	-/-		unknown	Reassign						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	O_BEF	O_AF
4705170632	-/-	-/-																		

WV Geological &amp; Economic Survey:

Well: County = 51 Permit = 00958

Report Time: Monday, August 30, 2021 10:38:34 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705100958	Marshall	958	Liberty	Glen Easton	Cameron	39.810356	-80.631008	531584	4406774 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
4705100958	11/15/2005	Plugging	Completed	James & Linda Hubbs		M-325				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
4705100958	11/15/2005	10/28/2005	1272 Ground Level				unclassified	unclassified	not available	unknown	UnFinWIStm						

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
4705100958	Original Loc	Pittsburgh coal	Well Record	1031	Reasonable	5	Reasonable	1272 Ground Level

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

## Plugging Information:

API	PLG_DT	DEPTH_PBT
4705100958	11/15/2005	0

WV Geological & Economic Survey:

Well: County = 51 Permit = 00617

Report Time: Monday, August 30, 2021 10:38:48 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_OD	LON_OD	UTME	UTMN
4705100617	Marshall	617	Liberty	Glen Easton	Cameron	39.807021	-80.630444	531633.8	4406404.1

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
4705100617	2/1/1905	Original Loc	Completed	Allen-Wyble	2					South Penn Oil (S. Penn Nat. Gas)			
4705100617	10/15/2004	Plugging	Completed	J A Hubbs Estate		M-111	Wyble Allen			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
4705100617	2/1/1905	11/18/1904	1260	Topo Estimation	Cameron-Garner	Hampshire Grp	Gordon	unclassified	unclassified	Oil	unknown	Shot	3015	3015
4705100617	10/15/2004	9/21/2004	1277	Ground Level										

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
4705100617	2/1/1905	Pay	Oil	Vertical	2998	Gordon	3010	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
4705100617	Pennzoil Company	1981	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	Pennzoil Company	1982	5	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	Pennzoil Company	1983	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	Pennzoil Company	1984	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	Pennzoil Products Company	1983	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	Pennzoil Products Company	1984	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	Pennzoil Products Company	1985	182	0	182	0	0	0	0	0	0	0	0	0	0
4705100617	Pennzoil Products Company	1986	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	Pennzoil Products Company	1987	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	Pennzoil Products Company	1988	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	East Resources, Inc.	2000	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	East Resources, Inc.	2001	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	East Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	East Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	CNX Gas Co. LLC (North)	2003	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	CNX Gas Co. LLC (North)	2004	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	CNX Gas Co. LLC (North)	2005	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	CNX Gas Co. LLC (North)	2006	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	CNX Gas Co. LLC (North)	2007	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	CNX Gas Co. LLC (North)	2008	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	CNX Gas Co. LLC (North)	2009	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	CNX Gas Co. LLC (North)	2010	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	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
4705100617	Pennzoil Company	1981	46	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	Pennzoil Company	1982	20	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	Pennzoil Company	1983	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	Pennzoil Company	1984	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	Pennzoil Products Company	1993	178	75	25	0	0	0	0	0	29	17	20	3	9
4705100617	Pennzoil Products Company	1994	155	9	10	9	15	19	21	13	14	10	11	14	10
4705100617	Pennzoil Products Company	1995	115	9	6	12	18	17	13	5	12	12	3	0	10
4705100617	Pennzoil Products Company	1996	141	11	10	11	4	13	10	16	13	13	17	9	14
4705100617	Pennzoil Products Company	1997	168	18	15	21	17	16	15	7	11	16	12	9	11
4705100617	Pennzoil Products Company	1998	23	7	10	6	0	0	0	0	0	0	0	0	0
4705100617	Pennzoil Products Company	1999	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	East Resources, Inc.	2000	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	East Resources, Inc.	2001	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	East Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	CNX Gas Co. LLC (North)	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	CNX Gas Co. LLC (North)	2003	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	CNX Gas Co. LLC (North)	2004	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	CNX Gas Co. LLC (North)	2005	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	CNX Gas Co. LLC (North)	2006	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	CNX Gas Co. LLC (North)	2007	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	CNX Gas Co. LLC (North)	2008	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	CNX Gas Co. LLC (North)	2009	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	CNX Gas Co. LLC (North)	2010	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100617	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

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
4705100617	10/15/2004	0

WV Geological & Economic Survey:

Well: County = 51 Permit = 00633

Report Time: Monday, August 30, 2021 10:38

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_16	LAT_DD	LONG_DD	UTME	UTMN
4705100633	Marshall	633	Liberty	Glen Easton	Cameron	39.805571	-80.630444	531634.5	4406243.2

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
4705100633	7/14/2005	Plugging	Completed	Consol Coal Co			M-323			Consolidation Coal Co.		
4705100633	--	Original Loc	Completed	J W Rickey	1					Pennzoil 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
4705100633	7/14/2005	8/27/2005	1169	Ground Level	Unnamed	undetermined unit	undetermined unit	unclassified	unclassified	not available	unknown	unknown			
4705100633	--	--						unclassified	unclassified	not available	unknown	unknown			0

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
4705100633	Pennzoil Company	1981	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	Pennzoil Company	1982	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	Pennzoil Company	1983	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	Pennzoil Company	1984	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	Pennzoil Products Company	1998	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	Pennzoil Products Company	1999	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	East Resources, Inc.	2000	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	East Resources, Inc.	2001	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	CNX Gas Co. LLC (North)	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	East Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	CNX Gas Co. LLC (North)	2003	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	CNX Gas Co. LLC (North)	2004	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	CNX Gas Co. LLC (North)	2005	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	CNX Gas Co. LLC (North)	2006	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	CNX Gas Co. LLC (North)	2007	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	CNX Gas Co. LLC (North)	2008	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	CNX Gas Co. LLC (North)	2009	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	CNX Gas Co. LLC (North)	2010	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	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
4705100633	Pennzoil Company	1981	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	Pennzoil Company	1982	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	Pennzoil Company	1983	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	Pennzoil Company	1984	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	Pennzoil Products Company	1998	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	Pennzoil Products Company	1999	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	East Resources, Inc.	2000	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	East Resources, Inc.	2001	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	CNX Gas Co. LLC (North)	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	East Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	CNX Gas Co. LLC (North)	2003	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	CNX Gas Co. LLC (North)	2004	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	CNX Gas Co. LLC (North)	2005	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	CNX Gas Co. LLC (North)	2006	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	CNX Gas Co. LLC (North)	2007	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	CNX Gas Co. LLC (North)	2008	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	CNX Gas Co. LLC (North)	2009	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	CNX Gas Co. LLC (North)	2010	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100633	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
4705100633	Original Loc	Pittsburgh coal	Well Record	831	Reasonable	6	Reasonable		Ground Level

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

Plugging Information:

API	PLG_DT	DEPTH_PBT
4705100633	7/14/2005	0

There is no Sample data for this well

WV Geological & Economic Survey

Well: County = 51 Permit = 00879

Report Time: Monday, August 30, 2021 10:39:58 AM

Well Reassignment Information: Reassigned From

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	70628	51	879

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705100879	Marshall	879	Liberty	Glen Easton	Cameron	39.803396	-80.626496	531973.5	4406003.2

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
4705100879	11/18/2002	Plugging	Completed	James A Hubbs Estate			M-327		Consolidation Coal Co	Consolidation Coal Co.			
4705100879	-/-	Original Loc	Prpty Map	Wylie Allen						----- 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_A
4705100879	11/18/2002	11/10/2002	1227 Ground Level				unclassified	unclassified	not available	unknown	unknown						
4705100879	-/-	-/-					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
4705100879	11/18/2002	0

There is no Sample data for this well

WV Geological &amp; Economic Survey:

Well: County = 51 Permit = 00919

Report Time: Monday, August 30, 2021 10:40:17 AM

## Well Reassignment Information: Reassigned From

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	30127	51	919

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LOW_DD	UTME	UTMN
4705100919	Marshall	919	Liberty	Glen Easton	Cameron	39.801511	-80.625368	532070 9	4405794 4

There is no Bottom Hole Location data for this well

## Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PRC
4705100919	10/22/1913	Original Loc	Completed	Chas E Carrigan et al		2	John Wilson	66322	Chas E Carrigan et al	South Penn Oil (S. Penn Nat. Gas)		
4705100919	6/25/2004	Plugging	Completed	Shirley M & George A & Paul L Burris		M-351			Consolidation Coal Co	Consolidation Coal Co.		

## Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF
4705100919	10/22/1913	5/12/1913	1171	Ground Level	Cameron-Gamer	Gordon	Gordon	unclassified	unclassified	Oil	Cable Tool	Shot	2914		2914		0
4705100919	6/25/2004	6/15/2004	1164	Ground Level													

## 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
4705100919	10/22/1913	Show	Oil	Vertical		Gordon	2892	Gordon	0	0			
4705100919	10/22/1913	Pay	Oil	Vertical		Gordon	2914	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
4705100919	-/-/1940	0
4705100919	6/25/2004	0

There is no Sample data for this well

WV Geological & Economic Survey

Well: County = 51 Permit = 30127

Report Time: Monday, August 30, 2021 10:40:37 AM

Well Reassignment Information: Reassigned To

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	30127	51	919

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
4705130127	Marshall	30127	Liberty	Glen Easton	Cameron	39.801511	-80.625368	532070.9	4405794.4

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705130127	-/-		unknown	Reassign						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_BEF	O_AF
4705130127	-/-	-/-																		

There is no Pay data for this well

There is no Production Gas data for this well

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

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

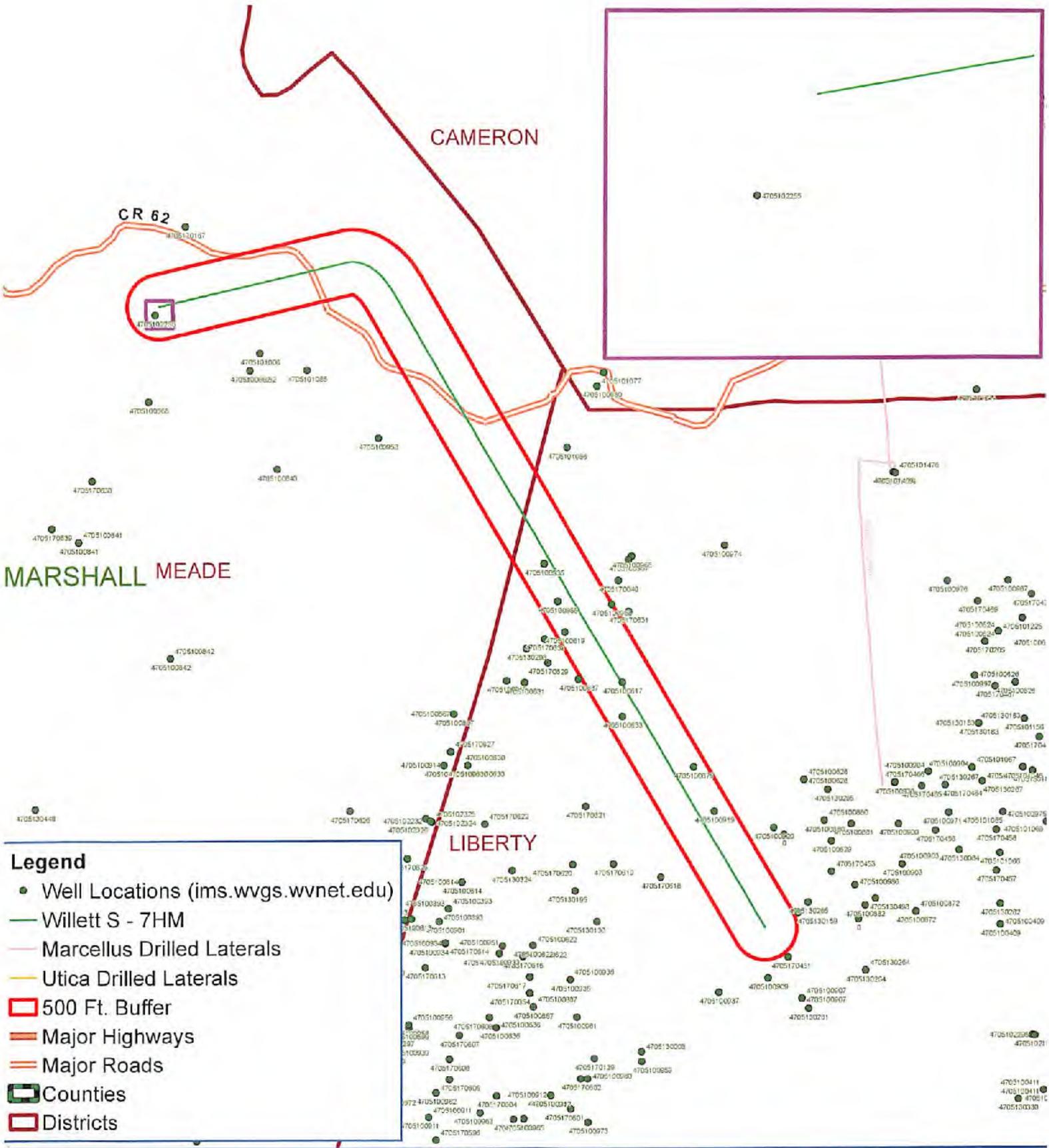
There is no Production Water data for this well

There is no Stratigraphy data for this well

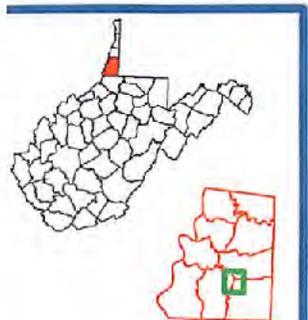
There is no Wireline (E-Log) data for this well

There is no Plugging data for this well

There is no Sample data for this well



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



# Willett S - 7HM Meade District Marshall County, WV



Map Prepared by:

01/07/2022

Map Created: August 26, 2021

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

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 staging fresh and produced water for frac

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 / WV0106163) and Westmoreland Sanitary Landfill LLC (SAN14Ub / PA DEP ECP1396426), Chestnut Valley Landfill (100419)

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

RECEIVED  
Office of Oil and Gas  
DEC 06 2021

WV Department of Environmental Protection

Subscribed and sworn before me this 23rd day of November, 2021

Susanne Deliere  
Notary Public

My commission expires 1/15/2025

Commonwealth of Pennsylvania - Notary Seal  
Susanne Deliere, Notary Public  
Washington County  
My commission expires January 15, 2025  
Commission Number 2022332  
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: Bang Stiles

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

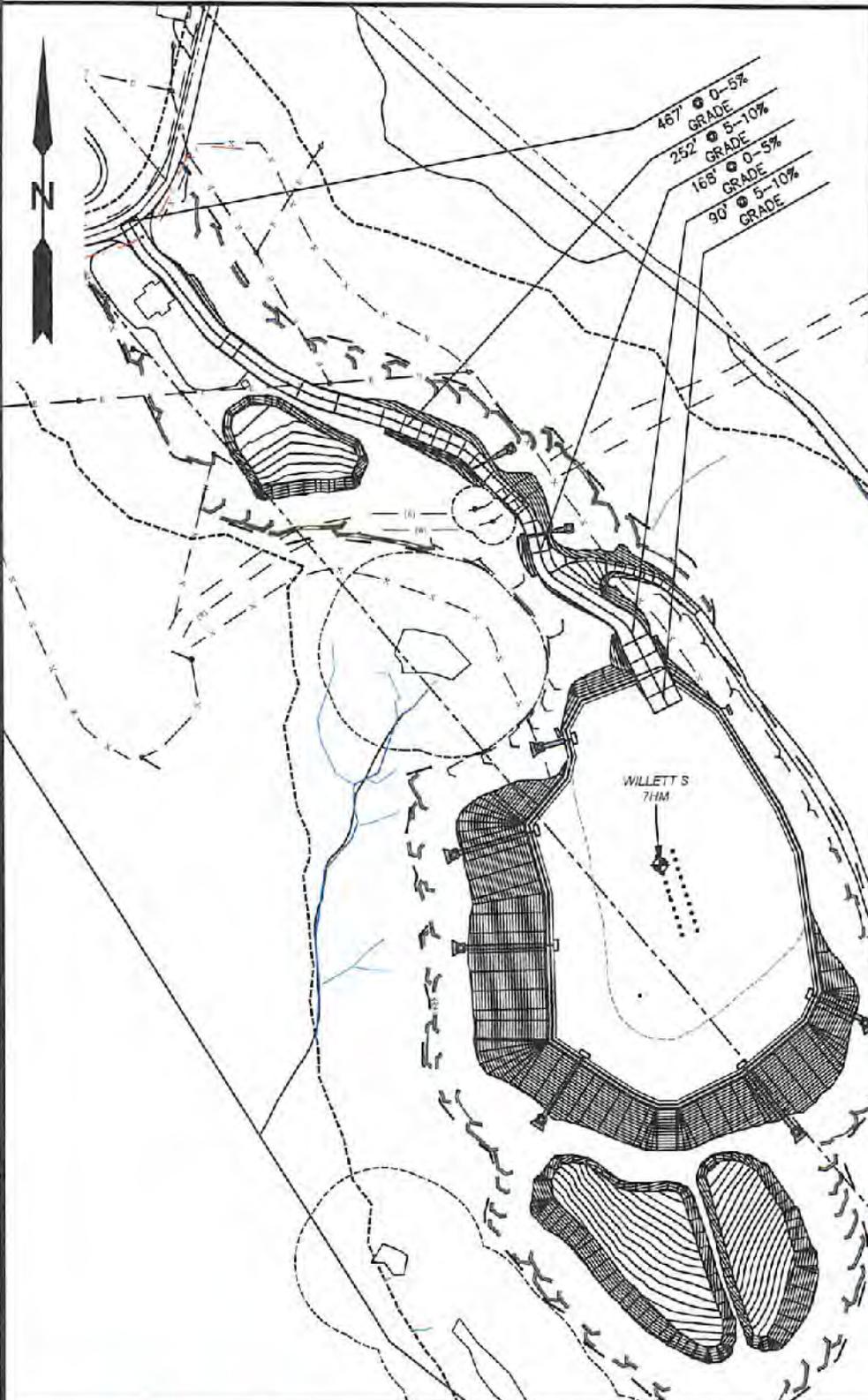
Title: Oil and Gas Inspector

Date: 10-14-21

Field Reviewed?  Yes  No

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Environmental Protection  
01/07/2022

# PROPOSED WILLETT 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 E.V.P.'s 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 WILLETT NITE PLAN PREPARED BY KELLEY SURVEYING, FOR COMPLETE CONSTRUCTION & EROSION AND SEDIMENT CONTROL DETAILS.

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DEC 06 2021  
WV Department of  
Environmental Protection



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634  
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952  
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5295  
slswv.com

TOPO SECTION:

GLEN EASTON 7.5'  
COUNTY: MARSHALL  
DISTRICT: MEADE

OPERATOR:

PREPARED FOR:  
TUG HILL OPERATING, LLC  
380 SOUTHPOINTE BLVD  
SUITE 200  
CANONSBURG, PA 15317

DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8939	09/14/21	NONE



**TUG HILL**  
OPERATING

01/07/2022



**TUG HILL**  
**OPERATING**

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

**Well Name: Willett S-7HM**

**Pad Name: Willett Pad**

**County: Marshall**

**UTM (meters), NAD83, Zone 17**

**Northing: 4,408,176.65**

**Easting: 529,423.65**

*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)**

**24-HOUR EMERGENCY PHONE NUMBER**

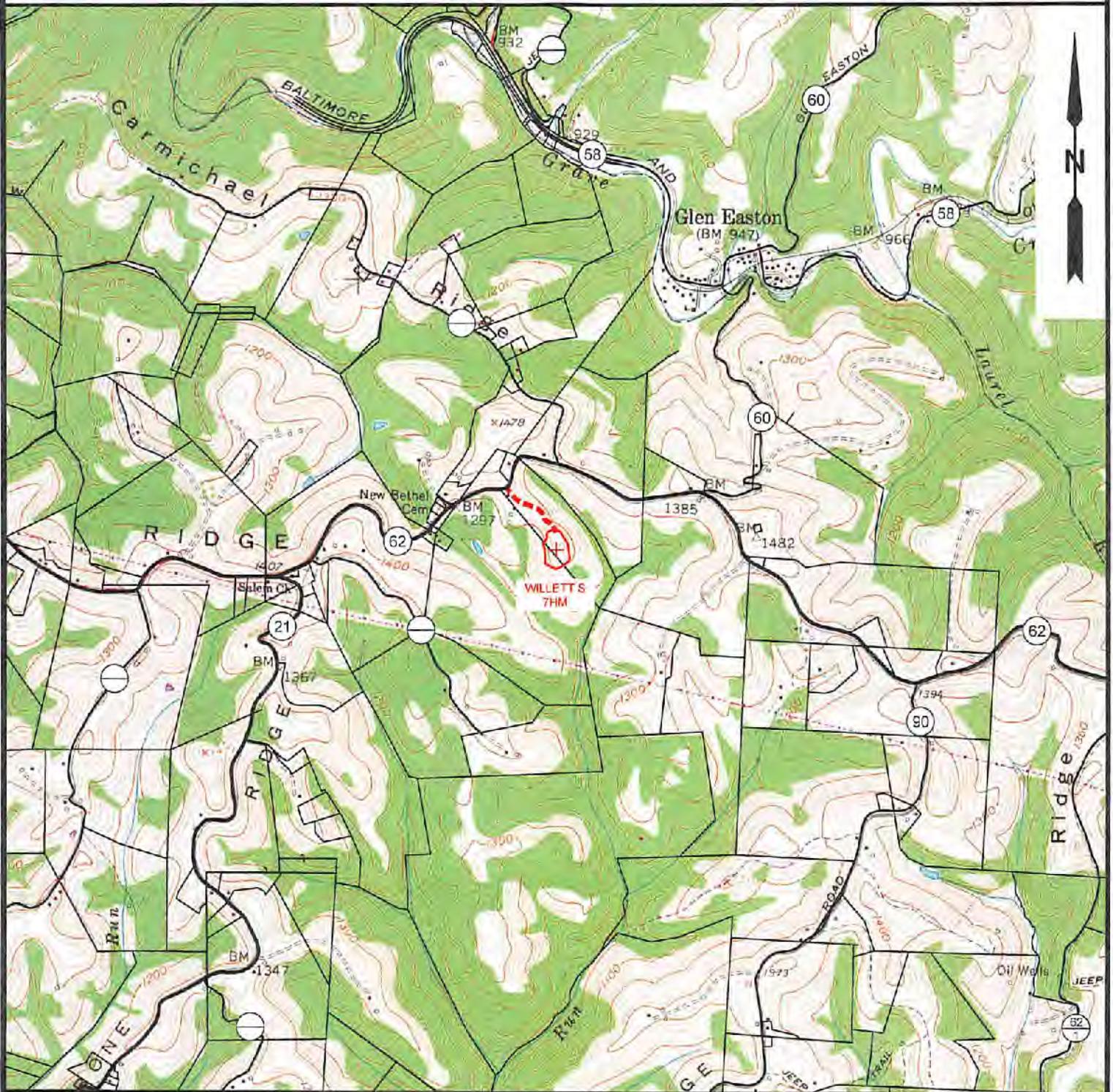
**(800) 921-9745**

RECEIVED  
Office of Oil and Gas

DEC 06 2021

WV Department of  
Environmental Protection  
**01/07/2022**

# PROPOSED WILLETT S - 7HM



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

LAT: 39.829865  
LON: -80.573724  
LOCATED: N 84°36'39" E AT 23,313.72' FROM THE CENTER OF WILLETT S WELL PAD LOCATION.



12 Vanhora Drive | P.O. Box 180 | Glenville, WV 26351 | 304.462.5634  
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952  
254 East Beckley Bypass | Beckley, WV 26801 | 304.255.5295  
s|sw.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8939	09/14/2021	1" = 2000'



**TUG HILL**  
OPERATING

01/07/2022

11,029' B.H.

8,758' T.H.

**WILLETT S LEASE  
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. 493,994.24	E. 1,643,771.81
NAD'83 GEO.	LAT-(N) 39.823071	LONG-(W) 80.656184
NAD'83 UTM (M)	N. 4,408,176.71	E. 529,423.68
<b>LANDING POINT</b>		
NAD'83 S.P.C.(FT)	N. 484,175.5	E. 1,647,434.2
NAD'83 GEO.	LAT-(N) 39.823698	LONG-(W) 80.643154
NAD'83 UTM (M)	N. 4,408,250.6	E. 530,538.5
<b>BOTTOM HOLE</b>		
NAD'83 S.P.C.(FT)	N. 474,216.2	E. 1,653,087.6
NAD'83 GEO.	LAT-(N) 39.798554	LONG-(W) 80.622584
NAD'83 UTM (M)	N. 4,405,245.2	E. 532,311.6

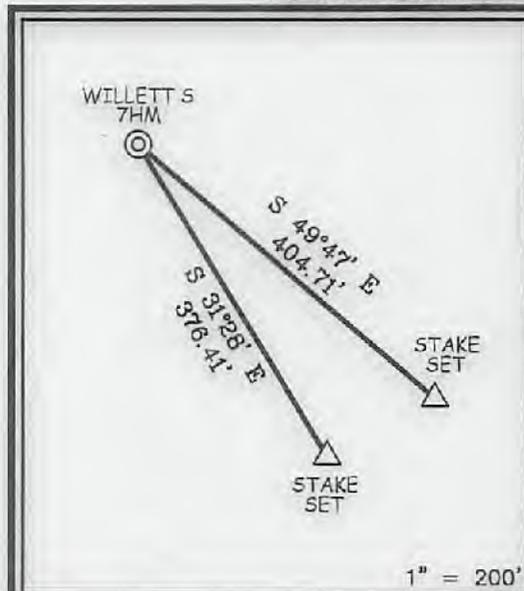
T.H. LONGITUDE 80°37'30"  
B.H. LONGITUDE 80°35'00"



MAP/PARCEL	ADJOINING SURFACE OWNER LIST	ACRES
3-19-77	SONJA J. STROPE	46.783
3-18-78	CNX LAND, LLC	30.927
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	0.5
7-1-19	JEAN JAMISON	51.89
7-7-2	KAREN S. EVANS & JUDY KAY MATTHEWS	24.50
7-7-8.1	KENNETH WAYNE STEBLE TRUST	79.03
9-3-13	XCL PROCESSING OPERATING LLC	28.00
9-3-13.1	XCL PROCESSING OPERATING LLC	10.00
9-3-15.1	MARSHALL COUNTY PUBLIC SERVICE DISTRICT #4	0.2296
9-3-17.1	BRIAN & LEAH KESTNER	11.8
9-8-5.2	AMY EVANS & KAREN WHETZAL	4.586
9-8-6.1	KAYLA E. BRATTON	1.423
9-9-7.1	RAYMOND DEWAINE DOBBS, ET AL.	9.00
9-9-7.2	XCL PROCESSING OPERATING LLC	3.907
9-9-7.3	JEFFREY B. THOMAS	1.297
9-9-8.1	DIANA MAE PIATT	2.253
9-9-8.2	VINCENT PATRELLO	0.723
9-9-9	VINCENT P. PATRELLO	1.076

TAG	SURFACE OWNER	PARCEL	ACRES
A	CNX LAND, LLC	9-8-6	27.596
B	CNX LAND, LLC	9-3-17	65.86
C	LARRY S. NEELY - LIFE	9-8-7.1	76.005
D	RAYMOND DEWAINE DOBBS, ET AL.	9-3-15	70.7424
E	RAYMOND DEWAINE DOBBS, ET AL.	9-3-14	81.331
F	JEFFREY B. THOMAS	9-3-14.2	2.83
G	JEFFREY B. THOMAS	9-9-7.3	1.297
H	JAMES R. THOMAS, ET UX	9-9-7	60.796
I	JAMES D. BLAKE, ET AL	9-9-8	52.144
J	ANNA D. MORRIS - TOD	7-1-1	179.00
K	JOSEPH B. & JUDITH PATRELLO	9-9-9.1	140.924
L	KAREN S. EVANS & JUDY KAY MATTHEWS	7-1-5	116.915
M	CNX LAND, LLC	7-1-4	52.00
N	GEO A. BURRIS	7-8-14	95.44
O	KAREN S. EVANS & JUDY KAY MATTHEWS	7-7-1	124.12

**REFERENCES**



B.H.

**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 Vanorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634  
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952  
254 East Dackley Bypass | Beckley, WV 25801 | 304.255.5296  
slsw.com

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

P.S. Gregory A. Smith  
677



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS  
DATE SEPTEMBER 8, 2021  
REVISED \_\_\_\_\_, 20\_\_\_\_  
OPERATORS WELL NO. WILLETT S 7HM  
API WELL NO. 47-051-02421  
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8939P7HM.dwg  
WILLETT S 7HM-REV2  
HORIZONTAL & VERTICAL SCALE 1" = 2000'  
CONTROL DETERMINED BY: DGPS (SURVEY GRADE TIE TO CORS NETWORK)

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

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

LOCATION: ELEVATION 1,310.03' WATERSHED TRIBUTARY OF UPPER BOWMAN RUN  
DISTRICT MEADE COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'

SURFACE OWNER CNX LAND LLC ACREAGE 27.596±  
ROYALTY OWNER APPALACHIAN BASIN MINERALS, LP, ET AL ACREAGE 01/07/2022

PROPOSED WORK: LEASE NO. SEE WW-6A1  
DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION  PLUG AND ABANDON  CLEAN OUT AND REPLUG  OTHER

PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_ TARGET FORMATION MARCELLUS  
ESTIMATED DEPTH TVD: 6,995' / TMD: 19,827'

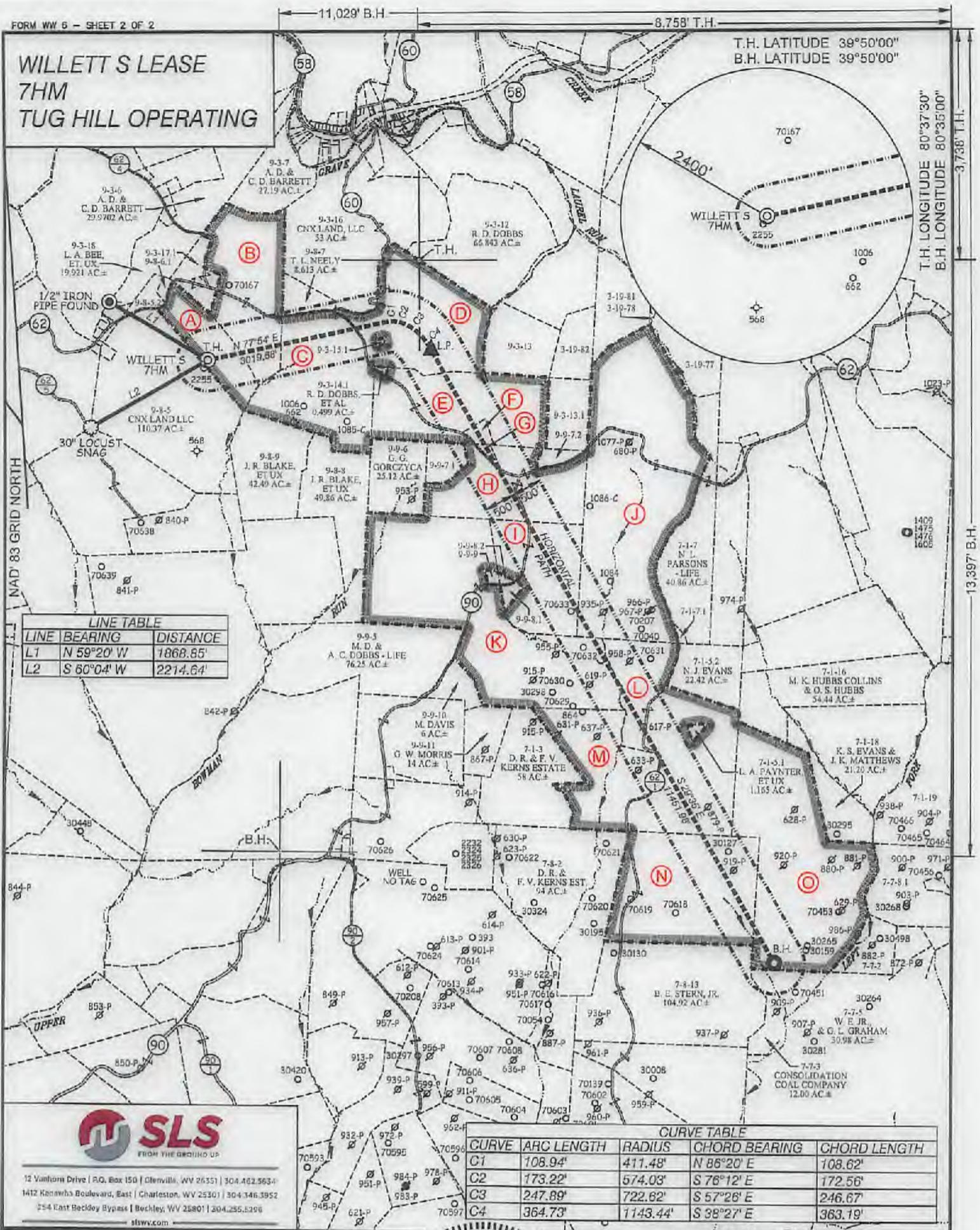
WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DARREN BROWN - CT CORPORATION  
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5098 WASHINGTON ST. W, STE 407  
FORT WORTH, TX 76107 CHARLESTON, WV 25313-1561

COUNTY NAME PERMIT

**WILLETT S LEASE  
7HM  
TUG HILL OPERATING**

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

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



LINE	BEARING	DISTANCE
L1	N 59°20' W	1868.85'
L2	S 60°04' W	2214.64'

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	108.94'	411.48'	N 86°20' E	108.62'
C2	173.22'	574.03'	S 76°12' E	172.56'
C3	247.89'	722.62'	S 57°26' E	246.67'
C4	364.73'	1143.44'	S 38°27' E	363.19'



12 Vanders Drive | P.O. Box 150 | Clarksburg, WV 26301 | 304.462.9634  
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952  
254 East Beckley Bypass | Beckley, WV 26801 | 204.255.5206  
slswv.com



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

P.S. 677 *Gregory A. Smith*

**LEGEND**

- LEASE LINE
- SURFACE LINE
- WELL LATERAL
- OFFSET LINE
- TIE LINE
- CREEK
- ROAD
- COUNTY ROUTE
- PROPOSED WELL
- EXISTING WELL
- PERMITTED WELL
- TAX MAP-PARCEL
- SURFACE OWNER (SEE TABLE)
- LEASE # (SEE WW-6A1)

SCALE 1" = 2000' FILE NO. 8939P7HM.dwg  
WILLETT S 7HM-REV2  
DATE SEPTEMBER 8, 20 21  
REVISED \_\_\_\_\_, 20 \_\_\_\_  
OPERATORS WELL NO. WILLETT S 7HM  
API WELL NO. 47 - 051 - 02421  
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 FORT WORTH, TX 76107 ADDRESS 5098 WASHINGTON ST. W, STE 407 CHARLESTON, WV 25313-1551

COUNTY NAME PERMIT

WW-6A1  
(5/13)

Operator's Well No. Willett S-7HM

**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 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
10*21602	9-8-6	A	CAROL STACY SAUNDERS	TH EXPLORATION LLC	1/8+	959	289	N/A	N/A	N/A	N/A	N/A	N/A
10*21604	9-8-6	A	WILLIAM EDWARD STACY AND JACQUELINE L STACY	TH EXPLORATION LLC	1/8+	958	428	N/A	N/A	N/A	N/A	N/A	N/A
10*22616	9-8-6	A	JAMES YOHO AND SANDRA YOHO	TH EXPLORATION LLC	1/8+	968	281	N/A	N/A	N/A	N/A	N/A	N/A
10*22618	9-8-6	A	DANIEL YOHO	TH EXPLORATION LLC	1/8+	966	636	N/A	N/A	N/A	N/A	N/A	N/A
10*22721	9-8-6	A	WINIFRED G TURNER	TH EXPLORATION LLC	1/8+	988	134	N/A	N/A	N/A	N/A	N/A	N/A
10*22796	9-8-6	A	MARLENE YOHO	TH EXPLORATION LLC	1/8+	972	87	N/A	N/A	N/A	N/A	N/A	N/A
10*22880	9-8-6	A	GREGORY K GLOVER	TH EXPLORATION LLC	1/8+	977	85	N/A	N/A	N/A	N/A	N/A	N/A
10*22881	9-8-6	A	MARLIS GLOVER	TH EXPLORATION LLC	1/8+	977	87	N/A	N/A	N/A	N/A	N/A	N/A
10*23033	9-8-6	A	MAXINE BEYSER	TH EXPLORATION LLC	1/8+	977	346	N/A	N/A	N/A	N/A	N/A	N/A
10*23034	9-8-6	A	NINA L KOVACS	TH EXPLORATION LLC	1/8+	977	348	N/A	N/A	N/A	N/A	N/A	N/A
10*23107	9-8-6	A	JOEL DAMON GLOVER	TH EXPLORATION LLC	1/8+	983	620	N/A	N/A	N/A	N/A	N/A	N/A
10*23141	9-8-6	A	DEBORAH A LOMBARDO	TH EXPLORATION LLC	1/8+	984	7	N/A	N/A	N/A	N/A	N/A	N/A
10*23142	9-8-6	A	KIMBERLY S GLOVER	TH EXPLORATION LLC	1/8+	984	5	N/A	N/A	N/A	N/A	N/A	N/A
10*23161	9-8-6	A	KATHLEEN J GLOVER	TH EXPLORATION LLC	1/8+	983	618	N/A	N/A	N/A	N/A	N/A	N/A
10*23162	9-8-6	A	AARON BOYLES AND TRACI BOYLES	TH EXPLORATION LLC	1/8+	983	622	N/A	N/A	N/A	N/A	N/A	N/A
10*23163	9-8-6	A	EDWIN WOOLLEY AND DEBORAH L WOOLLEY	TH EXPLORATION LLC	1/8+	983	571	N/A	N/A	N/A	N/A	N/A	N/A
10*23176	9-8-6	A	CAROL M YOHO	TH EXPLORATION LLC	1/8+	984	9	N/A	N/A	N/A	N/A	N/A	N/A
10*23181	9-8-6	A	MICHAEL L GREENWOOD AND PEGGY ANNE GREENWOOD	TH EXPLORATION LLC	1/8+	983	627	N/A	N/A	N/A	N/A	N/A	N/A
10*23192	9-8-6	A	JEFFREY C YOHO	TH EXPLORATION LLC	1/8+	984	472	N/A	N/A	N/A	N/A	N/A	N/A
10*23313	9-8-6	A	DIANE DEVAULT	TH EXPLORATION LLC	1/8+	988	136	N/A	N/A	N/A	N/A	N/A	N/A
10*23419	9-8-6	A	GARY MCPHERON AND SHELLEY ANN MCPHERON	TH EXPLORATION LLC	1/8+	988	492	N/A	N/A	N/A	N/A	N/A	N/A
10*23420	9-8-6	A	SALLY LEE ORTIZ RIVERA	TH EXPLORATION LLC	1/8+	988	490	N/A	N/A	N/A	N/A	N/A	N/A
10*23739	9-8-6	A	APPALACHIAN BASIN MINERALS LP	TH EXPLORATION LLC	1/8+	1011	538	N/A	N/A	N/A	N/A	N/A	N/A
10*23740	9-8-6	A	PENNMARC RESOURCES II LP	TH EXPLORATION LLC	1/8+	1011	532	N/A	N/A	N/A	N/A	N/A	N/A
10*23741	9-8-6	A	MCCROW ENERGY PARTNERS II LLC	TH EXPLORATION LLC	1/8+	1011	515	N/A	N/A	N/A	N/A	N/A	N/A
10*23742	9-8-6	A	PURPLEBURGH VENTURES, LLC	TH EXPLORATION LLC	1/8+	1011	536	N/A	N/A	N/A	N/A	N/A	N/A
10*23743	9-8-6	A	WILDES MINERAL INTERESTS LLC	TH EXPLORATION LLC	1/8+	1011	534	N/A	N/A	N/A	N/A	N/A	N/A
10*23749	9-8-6	A	MARCELLUS TX MINERAL PRTR NR LTD	TH EXPLORATION LLC	1/8+	1012	193	N/A	N/A	N/A	N/A	N/A	N/A
10*24781	9-8-6	A	DENISE MARIE ROGERS AND GEORGE M ROGERS	TH EXPLORATION LLC	1/8+	1027	578	N/A	N/A	N/A	N/A	N/A	N/A
10*24782	9-8-6	A	RICHARD A HEUSER	TH EXPLORATION LLC	1/8+	1027	572	N/A	N/A	N/A	N/A	N/A	N/A
10*24783	9-8-6	A	BRUCE W JOHNSON AND TERRI L JOHNSON	TH EXPLORATION LLC	1/8+	1027	569	N/A	N/A	N/A	N/A	N/A	N/A
10*25224	9-8-6	A	MAUREEN WILSON	TH EXPLORATION LLC	1/8+	1030	141	N/A	N/A	N/A	N/A	N/A	N/A
10*25701	9-8-6	A	TIMOTHY KRUS AND BARBARA KRUS	TH EXPLORATION LLC	1/8+	1034	239	N/A	N/A	N/A	N/A	N/A	N/A
10*25716	9-8-6	A	RUSSELL BREDBENNER	TH EXPLORATION LLC	1/8+	1035	23	N/A	N/A	N/A	N/A	N/A	N/A
10*26631	9-8-6	A	JOSEPH R ZBOZHEN	TH EXPLORATION LLC	1/8+	1039	322	N/A	N/A	N/A	N/A	N/A	N/A
10*27106	9-8-6	A	JASMINE LEIGH HALL PENA C/O ROBERT HALL	TH EXPLORATION LLC	1/8+	1050	217	N/A	N/A	N/A	N/A	N/A	N/A
10*27229	9-8-6	A	KENNETH ANDERSON BY DAVID C WHITE, SP COMM	TH EXPLORATION LLC	1/8+	1068	311	N/A	N/A	N/A	N/A	N/A	N/A
10*28092	9-8-6	A	WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS	TH EXPLORATION LLC	1/8+	1073	370	N/A	N/A	N/A	N/A	N/A	N/A
10*28647	9-8-6	A	BRYAN S LEHNER	TH EXPLORATION LLC	1/8+	1076	65	N/A	N/A	N/A	N/A	N/A	N/A
10*29613	9-8-6	A	JANE D BEARDEN AND WILLIAM L BEARDEN	TH EXPLORATION LLC	1/8+	1096	374	N/A	N/A	N/A	N/A	N/A	N/A
10*29615	9-8-6	A	UNKNOWN HEIRS AND ASSIGNS OF LAWRENCE B OSTREY	TH EXPLORATION LLC	1/8+	1096	343	N/A	N/A	N/A	N/A	N/A	N/A
10*29621	9-8-6	A	BRADLEY B LEHNER	TH EXPLORATION LLC	1/8+	1096	362	N/A	N/A	N/A	N/A	N/A	N/A
10*29623	9-8-6	A	RACHAEL MARIA MCLARDY	TH EXPLORATION LLC	1/8+	1096	356	N/A	N/A	N/A	N/A	N/A	N/A
10*29625	9-8-6	A	HARRY ALBERT RICHARDSON	TH EXPLORATION LLC	1/8+	1096	368	N/A	N/A	N/A	N/A	N/A	N/A
10*29627	9-8-6	A	JANET M SMITH	TH EXPLORATION LLC	1/8+	1096	350	N/A	N/A	N/A	N/A	N/A	N/A
10*29629	9-8-6	A	UNKNOWN INTEREST OWNERS OF THE BERNARD E KURLICH FAMILY TRUST	TH EXPLORATION LLC	1/8+	1096	335	N/A	N/A	N/A	N/A	N/A	N/A
10*29631	9-8-6	A	UNKNOWN INTEREST OWNERS OF THE ROBERT WISE LIVING TRUST	TH EXPLORATION LLC	1/8+	1096	327	N/A	N/A	N/A	N/A	N/A	N/A
10*31002	9-8-6	A	MARK F HEUSER	CHEVRON USA INC	1/8+	791	247	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31005	9-8-6	A	GARY KEITH BERGER	CHEVRON USA INC	1/8+	793	358	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31006	9-8-6	A	TERRY WITHEROW AND JAY WITHEROW	CHEVRON USA INC	1/8+	793	375	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31007	9-8-6	A	CAROL D ELMORE	CHEVRON USA INC	1/8+	793	383	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31008	9-8-6	A	NORMA V PRATICO	CHEVRON USA INC	1/8+	794	532	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31009	9-8-6	A	MARGARET LEE HALL	CHEVRON USA INC	1/8+	795	414	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593

Lease ID	TMP	Tag	Grantor, Lessor, Etc	Grantee, Lessee, ETC.	Royalty	Dead Book/Page		Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	
10*31010	9-8-6	A	JULIANNE ERDOS	CHEVRON USA INC	1/8+	795	57	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31011	9-8-6	A	MARVIN C WILSON	CHEVRON USA INC	1/8+	795	350	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31012	9-8-6	A	JAMES P OVIES	CHEVRON USA INC	1/8+	797	368	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31013	9-8-6	A	BERTHA LYNN KLUIG	CHEVRON USA INC	1/8+	797	548	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31014	9-8-6	A	CHERYL FOX BRAUCH	CHEVRON USA INC	1/8+	800	489	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31015	9-8-6	A	CAROL FOX VALLANDINGHAM	CHEVRON USA INC	1/8+	800	564	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31016	9-8-6	A	JESSICA M CHAVEZ	CHEVRON USA INC	1/8+	804	393	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31017	9-8-6	A	PHILIP A WILSON	CHEVRON USA INC	1/8+	805	421	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31018	9-8-6	A	JUANITA S HATCH LIVING TRUST DTD 2/16/1998	CHEVRON USA INC	1/8+	831	438	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31019	9-8-6	A	EDWARD F WILSON	CHEVRON USA INC	1/8+	813	564	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31020	9-8-6	A	MATTHEW L GROSSAINT	CHEVRON USA INC	1/8+	818	6	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31021	9-8-6	A	TROY THOMAS WILSON	CHEVRON USA INC	1/8+	828	352	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31022	9-8-6	A	ELLA JEAN MCCARDLE	CHEVRON USA INC	1/8+	828	374	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31027	9-8-6	A	LOU ANN GROSSAINT	CHEVRON USA INC	1/8+	829	470	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31029	9-8-6	A	JESSE ALLEN WILSON	CHEVRON USA INC	1/8+	831	355	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31034	9-8-6	A	APRIL DAWN HOGAN	CHEVRON USA INC	1/8+	835	248	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31035	9-8-6	A	KIMBERLY SUE PIERSON	CHEVRON USA INC	1/8+	835	271	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31036	9-8-6	A	JOSEPH RICHARD FOX	CHEVRON USA INC	1/8+	800	546	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31043	9-8-6	A	DIANE M BAYLESS	CHEVRON USA INC	1/8+	798	97	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31044	9-8-6	A	DENNIS M WILSON	CHEVRON USA INC	1/8+	798	97	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31045	9-8-6	A	DAVID H WILSON	CHEVRON USA INC	1/8+	798	77	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31046	9-8-6	A	SANDRA JEAN WILSON	CHEVRON USA INC	1/8+	794	605	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593

Lease ID	TMP	Tag	Grantor, Lessor, Etc	Grantee, Lessee, ETC.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*31047	9-8-6	A	MARY CHRISTINE MCKENNA	CHEVRON USA INC	1/8+	795 49	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31048	9-8-6	A	LAURENCE E WILSON JR	CHEVRON USA INC	1/8+	800 154	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31049	9-8-6	A	ROBERT L ARCHER	CHEVRON USA INC	1/8+	803 45	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31050	9-8-6	A	KATHERINE JEAN CONNELLY	CHEVRON USA INC	1/8+	803 30	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31051	9-8-6	A	STEVEN M ARCHER	CHEVRON USA INC	1/8+	803 38	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31052	9-8-6	A	WILLIAM R WISE	CHEVRON USA INC	1/8+	805 407	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*21602	9-3-17	B	CAROL STACY SAUNDERS	TH EXPLORATION LLC	1/8+	959 289	N/A	N/A	N/A	N/A	N/A	N/A
10*21604	9-3-17	B	WILLIAM EDWARD STACY AND JACQUELINE L STACY	TH EXPLORATION LLC	1/8+	958 428	N/A	N/A	N/A	N/A	N/A	N/A
10*22616	9-3-17	B	JAMES YOHO AND SANDRA YOHO	TH EXPLORATION LLC	1/8+	968 281	N/A	N/A	N/A	N/A	N/A	N/A
10*22618	9-3-17	B	DANIEL YOHO	TH EXPLORATION LLC	1/8+	966 635	N/A	N/A	N/A	N/A	N/A	N/A
10*22721	9-3-17	B	WINIFRED G TURNER	TH EXPLORATION LLC	1/8+	988 134	N/A	N/A	N/A	N/A	N/A	N/A
10*22796	9-3-17	B	MARLENE YOHO	TH EXPLORATION LLC	1/8+	972 87	N/A	N/A	N/A	N/A	N/A	N/A
10*22880	9-3-17	B	GREGORY K GLOVER	TH EXPLORATION LLC	1/8+	977 85	N/A	N/A	N/A	N/A	N/A	N/A
10*22881	9-3-17	B	MARLIS GLOVER	TH EXPLORATION LLC	1/8+	977 87	N/A	N/A	N/A	N/A	N/A	N/A
10*23033	9-3-17	B	MAXINE BEYSER	TH EXPLORATION LLC	1/8+	977 346	N/A	N/A	N/A	N/A	N/A	N/A
10*23034	9-3-17	B	NINA L KOVACS	TH EXPLORATION LLC	1/8+	977 348	N/A	N/A	N/A	N/A	N/A	N/A
10*23107	9-3-17	B	JOEL DAMON GLOVER	TH EXPLORATION LLC	1/8+	983 620	N/A	N/A	N/A	N/A	N/A	N/A
10*23141	9-3-17	B	DEBORAH A LOMBARDO	TH EXPLORATION LLC	1/8+	984 7	N/A	N/A	N/A	N/A	N/A	N/A
10*23142	9-3-17	B	KIMBERLY S GLOVER	TH EXPLORATION LLC	1/8+	984 5	N/A	N/A	N/A	N/A	N/A	N/A
10*23161	9-3-17	B	KATHLEEN J GLOVER	TH EXPLORATION LLC	1/8+	983 618	N/A	N/A	N/A	N/A	N/A	N/A
10*23162	9-3-17	B	AARON BOYLES AND TRACI BOYLES	TH EXPLORATION LLC	1/8+	983 622	N/A	N/A	N/A	N/A	N/A	N/A
10*23163	9-3-17	B	EDWIN WOOLLEY AND DEBORAH L WOOLLEY	TH EXPLORATION LLC	1/8+	983 571	N/A	N/A	N/A	N/A	N/A	N/A
10*23176	9-3-17	B	CAROL M YOHO	TH EXPLORATION LLC	1/8+	984 9	N/A	N/A	N/A	N/A	N/A	N/A
10*23181	9-3-17	B	MICHAEL L GREENWOOD AND PEGGY ANNE GREENWOOD	TH EXPLORATION LLC	1/8+	983 627	N/A	N/A	N/A	N/A	N/A	N/A
10*23192	9-3-17	B	JEFFREY C YOHO	TH EXPLORATION LLC	1/8+	984 472	N/A	N/A	N/A	N/A	N/A	N/A
10*23313	9-3-17	B	DIANE DEVAULT	TH EXPLORATION LLC	1/8+	988 136	N/A	N/A	N/A	N/A	N/A	N/A
10*23419	9-3-17	B	GARY MCPHERON AND SHELLEY ANN MCPHERON	TH EXPLORATION LLC	1/8+	988 492	N/A	N/A	N/A	N/A	N/A	N/A
10*23420	9-3-17	B	SALLY LEE ORTIZ RIVERA	TH EXPLORATION LLC	1/8+	988 490	N/A	N/A	N/A	N/A	N/A	N/A
10*23739	9-3-17	B	APPALACHIAN BASIN MINERALS LP	TH EXPLORATION LLC	1/8+	1011 538	N/A	N/A	N/A	N/A	N/A	N/A
10*23740	9-3-17	B	PENNMARC RESOURCES II LP	TH EXPLORATION LLC	1/8+	1011 532	N/A	N/A	N/A	N/A	N/A	N/A
10*23741	9-3-17	B	MCCROW ENERGY PARTNERS II LLC	TH EXPLORATION LLC	1/8+	1011 515	N/A	N/A	N/A	N/A	N/A	N/A
10*23742	9-3-17	B	PURPLEBURGH VENTURES, LLC	TH EXPLORATION LLC	1/8+	1011 536	N/A	N/A	N/A	N/A	N/A	N/A
10*23743	9-3-17	B	WILDES MINERAL INTERESTS LLC	TH EXPLORATION LLC	1/8+	1011 534	N/A	N/A	N/A	N/A	N/A	N/A
10*23749	9-3-17	B	MARCELLUS TX MINERAL PRTRN LTD	TH EXPLORATION LLC	1/8+	1012 193	N/A	N/A	N/A	N/A	N/A	N/A
10*24781	9-3-17	B	DENISE MARIE ROGERS AND GEORGE M ROGERS	TH EXPLORATION LLC	1/8+	1027 578	N/A	N/A	N/A	N/A	N/A	N/A
10*24782	9-3-17	B	RICHARD A HEUSER	TH EXPLORATION LLC	1/8+	1027 572	N/A	N/A	N/A	N/A	N/A	N/A
10*24783	9-3-17	B	BRUCE W JOHNSON AND TERRI L JOHNSON	TH EXPLORATION LLC	1/8+	1027 569	N/A	N/A	N/A	N/A	N/A	N/A
10*25224	9-3-17	B	MAUREEN WILSON	TH EXPLORATION LLC	1/8+	1030 141	N/A	N/A	N/A	N/A	N/A	N/A
10*25701	9-3-17	B	TIMOTHY KRUS AND BARBARA KRUS	TH EXPLORATION LLC	1/8+	1034 239	N/A	N/A	N/A	N/A	N/A	N/A
10*25716	9-3-17	B	RUSSELL BREDENNER	TH EXPLORATION LLC	1/8+	1035 23	N/A	N/A	N/A	N/A	N/A	N/A
10*26631	9-3-17	B	JOSEPH R ZBOZIEN	TH EXPLORATION LLC	1/8+	1039 322	N/A	N/A	N/A	N/A	N/A	N/A
10*27106	9-3-17	B	JASMINE LEIGH HALL PENA C/O ROBERT HALL	TH EXPLORATION LLC	1/8+	1050 217	N/A	N/A	N/A	N/A	N/A	N/A
10*27229	9-3-17	B	KENNETH ANDERSON BY DAVID C WHITE, SP COMM	TH EXPLORATION LLC	1/8+	1068 311	N/A	N/A	N/A	N/A	N/A	N/A
10*28092	9-3-17	B	WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS	TH EXPLORATION LLC	1/8+	1073 370	N/A	N/A	N/A	N/A	N/A	N/A
10*28647	9-3-17	B	BRYAN S LEHNER	TH EXPLORATION LLC	1/8+	1076 65	N/A	N/A	N/A	N/A	N/A	N/A
10*29613	9-3-17	B	JANE D BEARDEN AND WILLIAM L BEARDEN	TH EXPLORATION LLC	1/8+	1096 374	N/A	N/A	N/A	N/A	N/A	N/A
10*29615	9-3-17	B	UNKNOWN HEIRS AND ASSIGNS OF LAWRENCE B OSTREY	TH EXPLORATION LLC	1/8+	1096 343	N/A	N/A	N/A	N/A	N/A	N/A
10*29621	9-3-17	B	BRADLEY D LEHNER	TH EXPLORATION LLC	1/8+	1096 362	N/A	N/A	N/A	N/A	N/A	N/A
10*29623	9-3-17	B	RACHAEL MARIA MCLARDY	TH EXPLORATION LLC	1/8+	1096 356	N/A	N/A	N/A	N/A	N/A	N/A
10*29625	9-3-17	B	HARRY ALBERT RICHARDSON	TH EXPLORATION LLC	1/8+	1096 368	N/A	N/A	N/A	N/A	N/A	N/A
10*29627	9-3-17	B	JANET M SMITH	TH EXPLORATION LLC	1/8+	1096 350	N/A	N/A	N/A	N/A	N/A	N/A
10*29629	9-3-17	B	UNKNOWN INTEREST OWNERS OF THE BERNARD E KURLICH FAMILY TRUST	TH EXPLORATION LLC	1/8+	1096 335	N/A	N/A	N/A	N/A	N/A	N/A
10*29631	9-3-17	B	UNKNOWN INTEREST OWNERS OF THE ROBERT WISE LIVING TRUST	TH EXPLORATION LLC	1/8+	1096 327	N/A	N/A	N/A	N/A	N/A	N/A

Lease ID	TMP	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, ETC.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*31002	9-3-17	B	MARK F HEUSER	CHEVRON USA INC	1/8+	791 247	N/A	N/A	N/A	N/A	N/A	N/A
10*31005	9-3-17	B	GARY KEITH BERGER	CHEVRON USA INC	1/8+	793 358	N/A	N/A	N/A	N/A	N/A	N/A
10*31006	9-3-17	B	TERRY WITHEROW AND JAY WITHEROW	CHEVRON USA INC	1/8+	793 375	N/A	N/A	N/A	N/A	N/A	N/A
10*31007	9-3-17	B	CARDL D ELMORE	CHEVRON USA INC	1/8+	793 383	N/A	N/A	N/A	N/A	N/A	N/A
10*31008	9-3-17	B	NORMA V PRATICO	CHEVRON USA INC	1/8+	794 532	N/A	N/A	N/A	N/A	N/A	N/A
10*31009	9-3-17	B	MARGARET LEE HALL	CHEVRON USA INC	1/8+	795 414	N/A	N/A	N/A	N/A	N/A	N/A
10*31010	9-3-17	B	JULIANNE ERDOS	CHEVRON USA INC	1/8+	795 57	N/A	N/A	N/A	N/A	N/A	N/A
10*31011	9-3-17	B	MARVIN C WILSON	CHEVRON USA INC	1/8+	795 350	N/A	N/A	N/A	N/A	N/A	N/A
10*31012	9-3-17	B	JAMES P OVIES	CHEVRON USA INC	1/8+	797 368	N/A	N/A	N/A	N/A	N/A	N/A
10*31013	9-3-17	B	BERTHA LYNN KLUG	CHEVRON USA INC	1/8+	797 548	N/A	N/A	N/A	N/A	N/A	N/A
10*31014	9-3-17	B	CHERYL FOX BRAUCH	CHEVRON USA INC	1/8+	800 489	N/A	N/A	N/A	N/A	N/A	N/A
10*31015	9-3-17	B	CAROL FOX VALLANDINGHAM	CHEVRON USA INC	1/8+	800 564	N/A	N/A	N/A	N/A	N/A	N/A
10*31016	9-3-17	B	JESSICA M CHAVEZ	CHEVRON USA INC	1/8+	804 393	N/A	N/A	N/A	N/A	N/A	N/A
10*31017	9-3-17	B	PHILIP A WILSON	CHEVRON USA INC	1/8+	805 421	N/A	N/A	N/A	N/A	N/A	N/A
10*31018	9-3-17	B	JUANITA S HATCH LIVING TRUST DTD 2/16/1998	CHEVRON USA INC	1/8+	831 438	N/A	N/A	N/A	N/A	N/A	N/A
10*31019	9-3-17	B	EDWARD F WILSON	CHEVRON USA INC	1/8+	813 564	N/A	N/A	N/A	N/A	N/A	N/A
10*31020	9-3-17	B	MATTHEW L GROSSAINT	CHEVRON USA INC	1/8+	818 6	N/A	N/A	N/A	N/A	N/A	N/A
10*31021	9-3-17	B	TROY THOMAS WILSON	CHEVRON USA INC	1/8+	828 352	N/A	N/A	N/A	N/A	N/A	N/A
10*31022	9-3-17	B	ELLA JEAN MCCARDLE	CHEVRON USA INC	1/8+	828 374	N/A	N/A	N/A	N/A	N/A	N/A
10*31027	9-3-17	B	LOU ANN GROSSAINT	CHEVRON USA INC	1/8+	829 470	N/A	N/A	N/A	N/A	N/A	N/A
10*31029	9-3-17	B	JESSE ALLEN WILSON	CHEVRON USA INC	1/8+	831 355	N/A	N/A	N/A	N/A	N/A	N/A
10*31034	9-3-17	B	APRIL DAWN HOGAN	CHEVRON USA INC	1/8+	835 248	N/A	N/A	N/A	N/A	N/A	N/A

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10*31035	9-3-17	B	KIMBERLY SUE PIERSON	CHEVRON USA INC	1/8+	835 271	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593	
10*31036	9-3-17	B	JOSEPH RICHARD FOX	CHEVRON USA INC	1/8+	800 546	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593	
10*31043	9-3-17	B	DIANE M BAYLESS	CHEVRON USA INC	1/8+	798 97	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593	
10*31044	9-3-17	B	DENNIS M WILSON	CHEVRON USA INC	1/8+	798 97	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593	
10*31045	9-3-17	B	DAVID H WILSON	CHEVRON USA INC	1/8+	798 77	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593	
10*31046	9-3-17	B	SANDRA JEAN WILSON	CHEVRON USA INC	1/8+	794 605	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593	
10*31047	9-3-17	B	MARY CHRISTINE MCKENNA	CHEVRON USA INC	1/8+	795 49	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593	
10*31048	9-3-17	B	LAURENCE E WILSON JR	CHEVRON USA INC	1/8+	800 154	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593	
10*31049	9-3-17	B	ROBERT L ARCHER	CHEVRON USA INC	1/8+	803 45	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593	
10*31050	9-3-17	B	KATHERINE JEAN CONNELLY	CHEVRON USA INC	1/8+	803 30	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593	
10*31051	9-3-17	B	STEVEN M ARCHER	CHEVRON USA INC	1/8+	803 38	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593	
10*31052	9-3-17	B	WILLIAM R WISE	CHEVRON USA INC	1/8+	805 407	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593	
10*28092	9-8-7.1	C	WV DEPT OF TRANSPORTATION DIV OF HIGHWAYS	TH EXPLORATION LLC	1/8+	1073 370	N/A	N/A	N/A	N/A	N/A	N/A	
10*28808	9-8-7.1	C	HOLLY MARIE EBERSOLE	TH EXPLORATION LLC	1/8+	1078 47	N/A	N/A	N/A	N/A	N/A	N/A	
10*38639	9-3-15	D	RAYMOND D DOBBS	CHESAPEAKE APPALACHIA LLC	1/8+	677 229	Chesapeake Appalachia LLC to Statoilhydro USA Onshore Properties Inc: 21/565	Chesapeake Appalachia LLC to SWN Production Company LLC: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Title LLC merged with and into SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc changed its name to Equinor USA Onshore Properties Inc: 2/427	SWN Production Company LLC to TH Exploration LLC: 49/635	Equinor USA Onshore Properties Inc to TH Exploration LLC: 49/615
10*19737	9-3-14	E	ALICE BUZZARD	TH EXPLORATION LLC	1/8+	948 195	N/A	N/A	N/A	N/A	N/A	N/A	
10*19738	9-3-14	E	JAMES R BLAIR	TH EXPLORATION LLC	1/8+	946 318	N/A	N/A	N/A	N/A	N/A	N/A	
10*19739	9-3-14	E	ROBERT C BLAKE AND LYN BLAKE	TH EXPLORATION LLC	1/8+	946 313	N/A	N/A	N/A	N/A	N/A	N/A	
10*19740	9-3-14	E	TERRY L BLAKE	TH EXPLORATION LLC	1/8+	946 311	N/A	N/A	N/A	N/A	N/A	N/A	
10*19741	9-3-14	E	JOHN PURDY AND BRENDA S PURDY	TH EXPLORATION LLC	1/8+	946 308	N/A	N/A	N/A	N/A	N/A	N/A	
10*19742	9-3-14	E	CAROLE J WOOD	TH EXPLORATION LLC	1/8+	946 316	N/A	N/A	N/A	N/A	N/A	N/A	
10*19922	9-3-14	E	MARLENE GARIN	TH EXPLORATION LLC	1/8+	946 320	N/A	N/A	N/A	N/A	N/A	N/A	
10*19924	9-3-14	E	CHARLES W DOBBS AND JUDITH M DOBBS	TH EXPLORATION LLC	1/8+	946 322	N/A	N/A	N/A	N/A	N/A	N/A	
10*19991	9-3-14	E	BRADLEY S SCHERICH AND LEIGH SCHERICH	TH EXPLORATION LLC	1/8+	948 192	N/A	N/A	N/A	N/A	N/A	N/A	
10*19992	9-3-14	E	GARY F BLAKE AND DORIS E BLAKE	TH EXPLORATION LLC	1/8+	948 197	N/A	N/A	N/A	N/A	N/A	N/A	
10*21323	9-3-14	E	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	
10*22723	9-3-14	E	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	
10*22769	9-3-14	E	NANCY JO FENN	TH EXPLORATION LLC	1/8+	968 274	N/A	N/A	N/A	N/A	N/A	N/A	
10*22770	9-3-14	E	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	
10*22822	9-3-14	E	DARLA J KLUKAS	TH EXPLORATION LLC	1/8+	974 182	N/A	N/A	N/A	N/A	N/A	N/A	
10*22824	9-3-14	E	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	
10*23227	9-3-14	E	ROGER F CROSS	TH EXPLORATION LLC	1/8+	984 478	N/A	N/A	N/A	N/A	N/A	N/A	
10*24396	9-3-14	E	ELEANOR CHAMBERS	TH EXPLORATION LLC	1/8+	1023 166	N/A	N/A	N/A	N/A	N/A	N/A	
10*26711	9-3-14	E	CNX GAS COMPANY LLC	TH EXPLORATION LLC	1/8+	1074 593	N/A	N/A	N/A	N/A	N/A	N/A	
10*28446	9-3-14	E	TIMOTHY R LUNKOUS	TH EXPLORATION LLC	1/8+	1072 375	N/A	N/A	N/A	N/A	N/A	N/A	
10*28700	9-3-14	E	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	
10*28854	9-3-14	E	CHARLES HAWKINS AND CONSTANCE HAWKINS	TH EXPLORATION LLC	1/8+	1077 258	N/A	N/A	N/A	N/A	N/A	N/A	
10*28949	9-3-14	E	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	
10*19922	9-3-14.2	F	MARLENE GARIN	TH EXPLORATION LLC	1/8+	946 320	N/A	N/A	N/A	N/A	N/A	N/A	

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10*19991	9-3-14.2	F	BRADLEY S SCHERICH AND LEIGH SCHERICH	TH EXPLORATION LLC	1/8+	948	192	N/A	N/A	N/A	N/A	N/A	N/A
10*21323	9-3-14.2	F	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
10*21792	9-3-14.2	F	ALICE BUZZARD	TH EXPLORATION LLC	1/8+	959	263	N/A	N/A	N/A	N/A	N/A	N/A
10*21793	9-3-14.2	F	CHARLES W DOBBS AND JUDITH M DOBBS	TH EXPLORATION LLC	1/8+	958	430	N/A	N/A	N/A	N/A	N/A	N/A
10*21795	9-3-14.2	F	JOHN PURDY AND BRENDA S PURDY	TH EXPLORATION LLC	1/8+	959	266	N/A	N/A	N/A	N/A	N/A	N/A
10*21801	9-3-14.2	F	CAROLE J WOOD	TH EXPLORATION LLC	1/8+	959	270	N/A	N/A	N/A	N/A	N/A	N/A
10*21802	9-3-14.2	F	TERRY L BLAKE	TH EXPLORATION LLC	1/8+	959	277	N/A	N/A	N/A	N/A	N/A	N/A
10*21803	9-3-14.2	F	ROBERT C BLAKE AND LYN BLAKE	TH EXPLORATION LLC	1/8+	959	273	N/A	N/A	N/A	N/A	N/A	N/A
10*21805	9-3-14.2	F	JAMES R BLAIR	TH EXPLORATION LLC	1/8+	959	280	N/A	N/A	N/A	N/A	N/A	N/A
10*21895	9-3-14.2	F	GARY F BLAKE AND DORIS E BLAKE	TH EXPLORATION LLC	1/8+	960	351	N/A	N/A	N/A	N/A	N/A	N/A
10*22723	9-3-14.2	F	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
10*22769	9-3-14.2	F	NANCY JO FENN	TH EXPLORATION LLC	1/8+	968	274	N/A	N/A	N/A	N/A	N/A	N/A
10*22770	9-3-14.2	F	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
10*22822	9-3-14.2	F	DARLA J KLJUKAS	TH EXPLORATION LLC	1/8+	974	182	N/A	N/A	N/A	N/A	N/A	N/A
10*22824	9-3-14.2	F	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
10*23227	9-3-14.2	F	ROGER F CROSS	TH EXPLORATION LLC	1/8+	984	478	N/A	N/A	N/A	N/A	N/A	N/A
10*24396	9-3-14.2	F	ELEANOR CHAMBERS	TH EXPLORATION LLC	1/8+	1023	166	N/A	N/A	N/A	N/A	N/A	N/A
10*26711	9-3-14.2	F	CNX GAS COMPANY LLC	TH EXPLORATION LLC	1/8+	1074	593	N/A	N/A	N/A	N/A	N/A	N/A
10*28446	9-3-14.2	F	TIMOTHY R LUNKOUS	TH EXPLORATION LLC	1/8+	1072	375	N/A	N/A	N/A	N/A	N/A	N/A
10*28700	9-3-14.2	F	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
10*28854	9-3-14.2	F	CHARLES HAWKINS AND CONSTANCE HAWKINS	TH EXPLORATION LLC	1/8+	1077	258	N/A	N/A	N/A	N/A	N/A	N/A
10*28949	9-3-14.2	F	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
10*21244	9-9-7.3	G	JEFFREY B THOMAS AND ASHLEY N THOMAS	TH EXPLORATION LLC	1/8+	988	471	N/A	N/A	N/A	N/A	N/A	N/A
10*26738	9-9-7	H	JAMES R THOMAS & DEBORAH L THOMAS	TH EXPLORATION LLC	1/8+	1041	153	N/A	N/A	N/A	N/A	N/A	N/A
10*39474	9-9-8	I	SHERMAN E KNOX SR AND AMARYLUSS J KNOX	TH EXPLORATION LLC	1/8+	1120	493	N/A	N/A	N/A	N/A	N/A	N/A
10*39627	7-1-1	J	ANNA D MORRIS	TH EXPLORATION LLC	1/8+	1125	543	N/A	N/A	N/A	N/A	N/A	N/A
10*22615	9-9-9.1	K	DAVID D MURRAY AND MARY ANN MURRAY	TH EXPLORATION LLC	1/8+	965	591	N/A	N/A	N/A	N/A	N/A	N/A
10*22745	9-9-9.1	K	BONNIE J JENKINS	TH EXPLORATION LLC	1/8+	968	288	N/A	N/A	N/A	N/A	N/A	N/A
10*23314	9-9-9.1	K	CYNTHIA WATSON	TH EXPLORATION LLC	1/8+	988	499	N/A	N/A	N/A	N/A	N/A	N/A
10*23353	9-9-9.1	K	SHARON E MCDONALD AND HAROLD S MCDONALD	TH EXPLORATION LLC	1/8+	988	495	N/A	N/A	N/A	N/A	N/A	N/A
10*25718	9-9-9.1	K	KATHLEEN JEANNE B JENKINS	TH EXPLORATION LLC	1/8+	1035	13	N/A	N/A	N/A	N/A	N/A	N/A
10*25719	9-9-9.1	K	NICHOLE M JENKINS	TH EXPLORATION LLC	1/8+	1035	17	N/A	N/A	N/A	N/A	N/A	N/A
10*26494	9-9-9.1	K	JOHN P JENKINS	TH EXPLORATION LLC	1/8+	1037	434	N/A	N/A	N/A	N/A	N/A	N/A
10*29231	9-9-9.1	K	COLE DALE GRIMM	TH EXPLORATION LLC	1/8+	1078	45	N/A	N/A	N/A	N/A	N/A	N/A
10*29244	9-9-9.1	K	SHARON ANN PETERSON	TH EXPLORATION LLC	1/8+	1086	501	N/A	N/A	N/A	N/A	N/A	N/A
10*29833	9-9-9.1	K	SKYPOINT RESOURCES LLC	TH EXPLORATION LLC	1/8+	1103	556	N/A	N/A	N/A	N/A	N/A	N/A
10*31023	9-9-9.1	K	LUANN N HIMMELFARB	CHEVRON USA INC	1/8+	828	403	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31024	9-9-9.1	K	DOUGLAS A WAYSON	CHEVRON USA INC	1/8+	828	610	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31025	9-9-9.1	K	DAWNETTA MARIE WAYSON	CHEVRON USA INC	1/8+	828	616	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31026	9-9-9.1	K	DONALD CARMICHAEL	CHEVRON USA INC	1/8+	829	225	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31028	9-9-9.1	K	DAVID W CHAPMAN	CHEVRON USA INC	1/8+	829	470	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31030	9-9-9.1	K	ROBERT BRANDT WAYSON	CHEVRON USA INC	1/8+	831	362	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31031	9-9-9.1	K	GREGORY L CHAPMAN	CHEVRON USA INC	1/8+	831	490	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31032	9-9-9.1	K	SARAH LEONA MCGLONE	CHEVRON USA INC	1/8+	831	537	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31033	9-9-9.1	K	JUDITH ELLEN DOTY	CHEVRON USA INC	1/8+	834	426	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31037	9-9-9.1	K	LINDA S COLEMAN	CHEVRON USA INC	1/8+	836	319	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593

Lease ID	TMP	Tag	Grantor, Lessor, Etc	Grantee, Lessee, ETC.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*31038	9-9-9.1	K	MARGARET ANN JONES	CHEVRON USA INC	1/8+	837 364	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/893
10*31039	9-9-9.1	K	PATRICK P TRUEX	CHEVRON USA INC	1/8+	847 514	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/893
10*31040	9-9-9.1	K	JOSEPH B PATRELLO AND JUDITH M PATRELLO	CHEVRON USA INC	1/8+	848 472	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/893
10*31042	9-9-9.1	K	DANIEL W CHAPMAN	CHEVRON USA INC	1/8+	915 564	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/893
10*31110	7-1-5	L	CNX GAS COMPANY LLC	TH EXPLORATION LLC	1/8+	1098 608	N/A	N/A	N/A	N/A	N/A	N/A
10*17969	7-1-4	M	BOUNTY MINERALS LLC	TH EXPLORATION LLC	1/8+	928 424	N/A	N/A	N/A	N/A	N/A	N/A
10*24225	7-1-4	M	CHESTNUT HOLDINGS INC	TH EXPLORATION LLC	1/8+	1025 140	N/A	N/A	N/A	N/A	N/A	N/A
10*28328	7-1-4	M	UNKNOWN HEIRS OF JOSEPH HITE BILLES AND THE BLODWIN H COURTNEY REVOCABLE TRUST	TH EXPLORATION LLC	1/8+	1068 130	N/A	N/A	N/A	N/A	N/A	N/A
10*28629	7-1-4	M	UNKNOWN INTEREST OWNERS OF THE NANCY BROWN HEREFORD REVOCABLE LIVING TRUST	TH EXPLORATION LLC	1/8+	1072 404	N/A	N/A	N/A	N/A	N/A	N/A
10*28897	7-1-4	M	PAIGE FRANCIS	TH EXPLORATION LLC	1/8+	1076 310	N/A	N/A	N/A	N/A	N/A	N/A
10*28928	7-1-4	M	SUSAN SHRIVER	TH EXPLORATION LLC	1/8+	1077 10	N/A	N/A	N/A	N/A	N/A	N/A
10*28172	7-1-4	M	BETTY L BROWN GORDON	TH EXPLORATION LLC	1/8+	1067 394	N/A	N/A	N/A	N/A	N/A	N/A
10*19490	7-1-4	M	BRIAN C LUTZ AND SARA M. LUTZ	TH EXPLORATION LLC	1/8+	943 19	N/A	N/A	N/A	N/A	N/A	N/A
10*27091	7-1-4	M	BRIDGETTE BLAYKE JONES	TH EXPLORATION LLC	1/8+	1050 204	N/A	N/A	N/A	N/A	N/A	N/A
10*26691	7-1-4	M	DANIEL C. SHOTT	TH EXPLORATION LLC	1/8+	1041 218	N/A	N/A	N/A	N/A	N/A	N/A
10*26971	7-1-4	M	GRACE R. SHOTT NKA GRACE R. SHOTT-CLARDY	TH EXPLORATION LLC	1/8+	1046 194	N/A	N/A	N/A	N/A	N/A	N/A
10*27090	7-1-4	M	HUGH SHOTT, AKA HUGH I. SHOTT II	TH EXPLORATION LLC	1/8+	1053 9	N/A	N/A	N/A	N/A	N/A	N/A
10*27092	7-1-4	M	JAMES H. SHOTT III	TH EXPLORATION LLC	1/8+	1050 201	N/A	N/A	N/A	N/A	N/A	N/A
10*21448	7-1-4	M	JAMES L. BLAKE	TH EXPLORATION LLC	1/8+	957 264	N/A	N/A	N/A	N/A	N/A	N/A
10*19744	7-1-4	M	JILL L. HENNER AND ALEXANDER O. BARRETT, JR.	TH EXPLORATION LLC	1/8+	944 635	N/A	N/A	N/A	N/A	N/A	N/A
10*19705	7-1-4	M	LOIS J. ELIAS AND LOUIS J. ELIAS, JR.	TH EXPLORATION LLC	1/8+	944 633	N/A	N/A	N/A	N/A	N/A	N/A
10*26562	7-1-4	M	MARTHA SUE FORBES	TH EXPLORATION LLC	1/8+	1038 510	N/A	N/A	N/A	N/A	N/A	N/A
10*26632	7-1-4	M	MORGAN GIBSON	TH EXPLORATION LLC	1/8+	1039 319	N/A	N/A	N/A	N/A	N/A	N/A
10*26563	7-1-4	M	SCOTT SHOTT	TH EXPLORATION LLC	1/8+	1038 513	N/A	N/A	N/A	N/A	N/A	N/A
10*30043	7-1-4	M	STONE HILL MINERALS HOLDINGS, LLC	TH EXPLORATION LLC	1/8+	1098 366	N/A	N/A	N/A	N/A	N/A	N/A
10*26970	7-1-4	M	THE ESTATE OF JOHN C. SHOTT	TH EXPLORATION LLC	1/8+	1046 190	N/A	N/A	N/A	N/A	N/A	N/A
10*26636	7-1-4	M	THOMAS SHOTT	TH EXPLORATION LLC	1/8+	1039 316	N/A	N/A	N/A	N/A	N/A	N/A
10*25508	7-8-14	N	THE AMY M TOUPS FAMILY TRUST OF 2013 DATED JUNE 14, 2013	FOSSIL CREEK OHIO, LLC	1/8+	827 119	N/A	N/A	N/A	N/A	N/A	Fossil Creek Ohio LLC to Gulfport Energy Corporation: 32/337 Gulfport Energy Corporation and Fossil Creek Ohio LLC to American Petroleum Partners Operating LLC: 36/588 American Petroleum Partners Operating LLC to TH Exploration LLC: 43/515
10*25509	7-8-14	N	ELIZABETH A PADDEN	FOSSIL CREEK OHIO, LLC	1/8+	827 123	N/A	N/A	N/A	N/A	N/A	Fossil Creek Ohio LLC to Gulfport Energy Corporation: 32/337 Gulfport Energy Corporation and Fossil Creek Ohio LLC to American Petroleum Partners Operating LLC: 36/588 American Petroleum Partners Operating LLC to TH Exploration LLC: 43/515
10*25510	7-8-14	N	JOHN M PADDEN	FOSSIL CREEK OHIO, LLC	1/8+	827 121	N/A	N/A	N/A	N/A	N/A	Fossil Creek Ohio LLC to Gulfport Energy Corporation: 32/337 Gulfport Energy Corporation and Fossil Creek Ohio LLC to American Petroleum Partners Operating LLC: 36/588 American Petroleum Partners Operating LLC to TH Exploration LLC: 43/515
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	Pikewood Energy Corporation to American Petroleum Partners Operating LLC: 41/192 American Petroleum Partners Operating LLC to TH Exploration LLC: 43/503
10*25530	7-7-1	O	KAREN S WHETZAL	PIKEWOOD ENERGY CORPORATION	1/8+	945 99	N/A	N/A	N/A	N/A	N/A	Pikewood Energy Corporation to American Petroleum Partners Operating LLC: 41/192 American Petroleum Partners Operating LLC to TH Exploration LLC: 43/503

STATE OF WEST VIRGINIA       §  
  §  
COUNTY OF MARSHALL       §

**ASSIGNMENT AND CONVEYANCE**

THIS ASSIGNMENT AND CONVEYANCE (the "Assignment") is made and entered into this 24<sup>th</sup> day of June 2020 (the "Effective Date"), by and between CHEVRON U.S.A. INC., a Pennsylvania corporation, with an address at 700 Cherrington Parkway, Coraopolis, PA 15108 (hereinafter "Assignor") and TH EXPLORATION II, LLC, a Texas limited liability company, with an address at 1320 S. University Drive, Suite 500, Fort Worth, TX 76107 (hereinafter "Assignee").

**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", attached hereto and made a part hereof (hereinafter the "Leases"), subject to any applicable overriding royalty interests and midstream obligations;

NOW, THEREFORE, for good and valuable consideration, 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. Payment. Within 15 days of execution of this Assignment by both parties, Assignee agrees to tender payment to Assignor in the amount and manner described in Exhibit "B".

3. No Warranty. The Assignment is made on an "as is, where is" basis without warranty of any kind and is subject to any existing liens, encumbrances or burdens, including specifically any overriding royalty interests or midstream dedications, attached to or affecting the Leases. Assignor makes no, and expressly disclaims any, representation or warranty to Assignee regarding the Leases or title thereto, whether express, statutory or implied, in fact, at law, common law, in equity or otherwise.

4. Existing Obligations. This Assignment is made subject to and Assignee agrees to accept and perform all obligations under any existing agreements that affect the Leases, including Assignor's remaining obligations under any gathering, processing or other midstream contracts as those contracts relate specifically to the Leases.

**ASSIGNMENT AND CONVEYANCE**

This Assignment and Conveyance (this "*Assignment*") is from EQUINOR USA ONSHORE PROPERTIES, INC., a Delaware corporation ("*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 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 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.**

STATE OF WEST VIRGINIA §  
§  
COUNTY OF MARSHALL §

**ASSIGNMENT AND CONVEYANCE**

THIS ASSIGNMENT AND CONVEYANCE (the "**Assignment**") is made and entered into this 23<sup>rd</sup> 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





December 2, 2021

WV Department of Environmental Protection  
Office of Oil & Gas  
601 57<sup>th</sup> Street, SE  
Charleston, WV 25304  
Attention: Charles T. Brewer

RE: Willett S-7HM

Subject: Marshall County Route 62/1 and Marshall County Route 60

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 62/1 and Marshall County Route 60 in the area reflected on the Willett S-7HM well plat. THO has conducted a full title search in the relevant Court House to confirm its ownership under said County Routes 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](mailto:amorris@tug-hilop.com).

Sincerely,

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

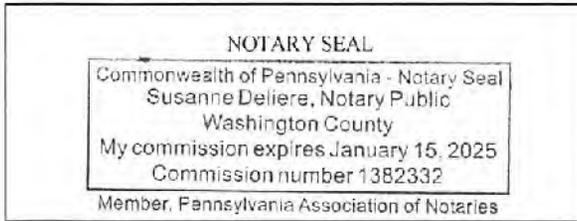
Amy Morris  
Permit Specialist – Appalachia Region  
Cell 304-376-0111  
Email: [amorris@tug-hilop.com](mailto:amorris@tug-hilop.com)



**Certification of Notice is hereby given:**

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

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



Subscribed and sworn before me this 23<sup>rd</sup> day of November, 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](mailto:depprivacyofficer@wv.gov).

**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:** 11/23/2021 **Date Permit Application Filed:** 11/24/2021

**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 Resources, LLC Attn: Casey Saunders  
Address: 1000 Consol Energy Drive  
1000 Consol Energy Drive

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

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

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

SURFACE OWNER(s) (Impoundments or Pits)

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

COAL OWNER OR LESSEE

Name: Consolidation Coal Company  
Address: 1000 Consol Energy Drive  
Canonsburg, PA 15317

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

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

Name: \*see attached  
Address: \_\_\_\_\_

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

\*Please attach additional forms if necessary

**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.e, 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 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://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

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 57<sup>th</sup> 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.**

01/07/2022

**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.

WW-6A  
(8-13)

API NO. 47- 051 -  
OPERATOR WELL NO. Willet S-7HM  
Well Pad Name: Willet

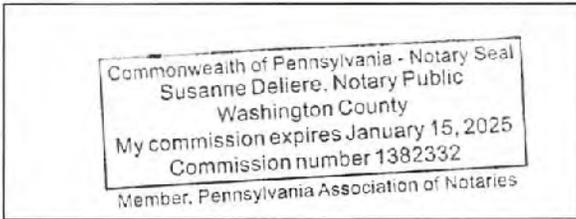
**Notice is hereby given by:**

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

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

**Oil and Gas Privacy Notice:**

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



Subscribed and sworn before me this 13<sup>th</sup> day of November 2021  
Susanne Deliere Notary Public  
My Commission Expires 1/15/2025

01/07/2022

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

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

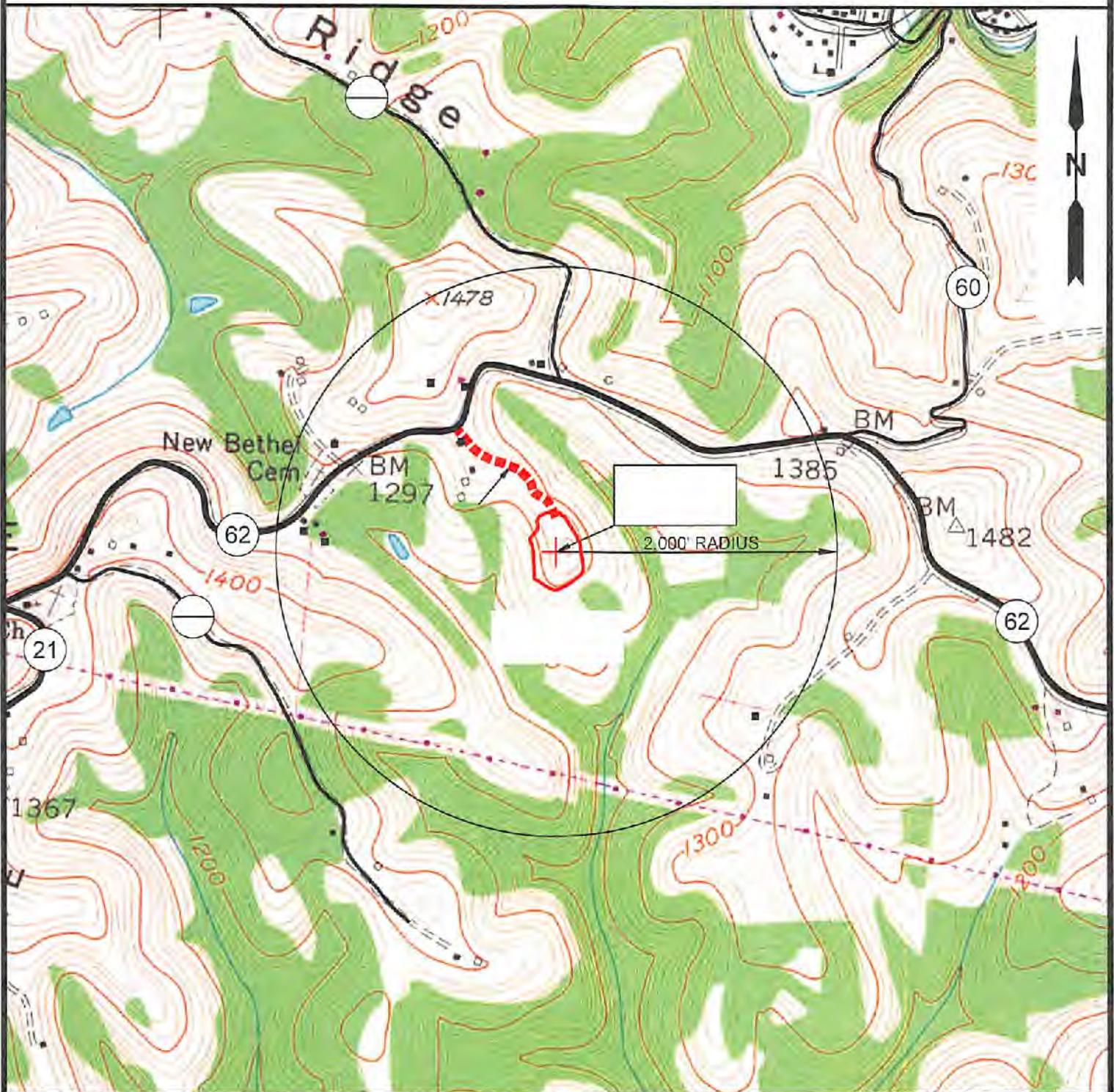
**Residences within Two-Thousand Feet (2,000')**

Well: Willett S – 7HM  
 District: Meade  
 State: WV

There are eight (8) residences, no business or commercial sites, no churches, no schools or emergency facilities within two-thousand feet (2,000') of the above referenced well location.

<b>Residence (#1)</b> TM 8 Pcl. 6 CNX Land, LLC <b>Phone:</b> None Found <b>Physical Address:</b> 819 New Bethel Rd Glen Easton, WV 26039 <b>Tax Address:</b> 1000 Consol Energy Dr. Canonsburg, PA 15317-6506	<b>Residence (#2)</b> TM 8 Pcl. 6.1 Kayla E. Bratton <b>Phone:</b> 304-845-8266 <b>Physical Address:</b> Kayla Bratton (Reverse Address) 860 New Bethel Rd Glen Easton, WV 26039 <b>Tax Address:</b> Same	<b>Residence (#3)</b> TM 8 Pcl. 5.2 Amy Evans & Karen Whetzal <b>Phone:</b> 304-686-2827; 304-843-0902 (Larry Conkle) <b>Physical Address:</b> Larry Conkle (Reverse Address) 756 New Bethel Rd Glen Easton, WV 26039 <b>Tax Address:</b> Same
<b>Residence (#4)</b> TM 3 Pcl. 17 CNX Land, LLC <b>Phone:</b> 304-845-0038 (Leah Kestner) <b>Physical Address:</b> Leah Kestner (Reverse Address) 40 Carmichael Ln Glen Easton, WV 26039 <b>Tax Address:</b> 1000 Consol Energy Dr. Canonsburg, PA 15317-6506	<b>Residence (#5)</b> TM 8 Pcl. 9 James Richard Blake, Et Ux <b>Phone:</b> None Found – Reverse Address <b>Physical Address:</b> 295 Homestead Ln. Glen Easton, WV 26039 <b>Tax Address:</b> Same	<b>Residence (#6)</b> TM 8 Pcl. 5.1 Raymond E. & Cindy L. White <b>Phone:</b> 304-845-4529 (Raymond White) <b>Physical Address:</b> Ruth Siburt (Reverse Address) 575 New Bethel Rd Glen Easton, WV 26039 <b>Tax Address:</b> 656 New Bethel Rd. Glen Easton, WV 26039
<b>Residence (#7)</b> TM 3 Pcl. 19 Raymond E. & Cindy L. White <b>Phone:</b> 304-845-4529 (Raymond White); 903-276-5846 (Gary Whitlatch) <b>Physical Address:</b> Gary Whitlatch (Reverse Address) 569 New Bethel Rd Glen Easton, WV 26039 <b>Tax Address:</b> 656 New Bethel Rd. Glen Easton, WV 26039	<b>Residence (#8)</b> TM 3 Pcl. 18.2 Raymond E. & Cindy L. White <b>Phone:</b> 304-845-4529; 304-843-5087 (Matthew Meyer) <b>Physical Address:</b> Matthew Meyer (Reverse Address) 692 New Bethel Rd Glen Easton, WV 26039 <b>Tax Address:</b> 656 New Bethel Rd Glen Easton, WV 26039	

# PROPOSED WILLETT S - 7HM



NOTE: THERE APPEARS TO BE EIGHT (8) POSSIBLE WATER SOURCES WITHIN 2,000'.



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26031 | 304.462.5634  
 1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952  
 254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296  
 slsvv.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8939	09/14/2021	1" = 1000'



**TUG HILL**  
OPERATING

01/07/2022

**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:** 6/4/2019      **Date of Planned Entry:** 6/11/2019

**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 Resources, LLC Attn: Casey Saunders  
 Address: 1000 Consol Energy Drive  
Canonsburg, PA 15317  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

COAL OWNER OR LESSEE  
 Name: Consolidation Coal Company  
 Address: 1000 Consol Energy Drive  
Canonsburg, PA 15317

MINERAL OWNER(s)  
 Name: Appalachian Basin Minerals, LP \*See attached list  
 Address: 8235 Douglas Avenue, Suite 815  
Dallas, TX 75225  
 \*please attach additional forms if necessary

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**DEC 06 2021**  
WV Department of  
Environmental Protection

**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>39.82306349; -80.65626349</u>
County: <u>Marshall</u>	Public Road Access: <u>New Bethel Road (County Route 62)</u>
District: <u>Meade</u>	Watershed: <u>Middle Fish Creek</u>
Quadrangle: <u>Glen Easton 7.5'</u>	Generally used farm name: <u>CNX Land Resources, 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 57<sup>th</sup> 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](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Notice is hereby given by:**

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

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

**Oil and Gas Privacy Notice:**

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

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**WW-6A3 Notice of Entry for Plat Survey****Willet Pad  
Additional Mineral Owners**

Carol Vallandingham  
2430 Venetian Way  
Burlington, KY 41005



Cheryl Brauch  
6670 Snead Ln.  
Florence, KY 41042

Teresa R. Fox  
106 Brookside Ave  
Ewing, NJ 08638

Juanita S. Hatch  
1437 North Overland Trails Dr.  
Washington, UT 84780

Bruce Johnson  
6272 Highland Meadows Dr  
Medina, OH 44256

Diane DeVault  
9315 Brandywine Rd  
Northfield, OH 44067

Bertha Lynn Klug  
47 Shutler Ln.  
Proctor, WV 26055

Marcellus TX Mineral Partners, Ltd.  
307 West 7th St, Ste 1110  
Fort Worth, TX 76102

McCrow Energy Partners II, LLC  
8235 Douglas Ave., Ste 815  
Dallas, TX 75225

Matthew Grossaint  
4820 132 Pl SE  
Mill Creek, WA 96012

Lou Ann Grossaint  
1920 S. Atlantic St  
Boise, ID 83705

Rachel Marie McLardy  
5808 Medusa St  
P.O. Box 931  
Sechelt, British Columbia, V0N 3A0

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PennMarc Resources II, LP  
2 East Market St., Ste 1  
Clearfield, PA 16830

Purpleburgh Ventures, LLC  
4675 Carfefree Trail  
Parker, CO 80134



Wildes Mineral Interests, LLC  
3517 Gillon Ave.  
Dallas, TX 75205

Phillip A. Wilson  
1715 Lancaster Dr  
Youngstown, OH 44511

Jessica M. Chavez  
5525 Alta Verde Cir  
Arlington, TX 76017

Edward F. Wilson  
2933 Hastings Dr  
Grand Prairie, TX 75052

Denise Marie Rogers  
9671 King Graves Rd NE  
Warren, OH 44484

Julianne Erdos  
119 Noran Cir  
Bedford, OH 44146

The Robert Wise Living Trust  
Trustee: Shirley Hagenbaugh  
529 Genoa Dr  
Kissimmee, FL 34759

Harry Albert Richardson  
19819 10th Ave NW  
Shoreline, WA 98177

Rev. Jane D. Bearden  
19106 Timothy's Manor Ct  
Parkton, MD 21120

Janet M. Smith  
122 Kandahar Dr  
East Aurora, NY 14052

Brad Lehner  
2570 Chasewood Ct  
Aurora, IL 60502

Bryan S. Lehner  
372 5th Ave Apt 4J  
New York, NY 10018

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Barbara Krus  
421 Fox Chapel Dr  
Lutherville Timonium, MD 21093

Maureen Wilson  
12 Juliet Ln Apt 102  
Nottingham, MD 21236

Russell Bredbenner  
965 Seybert St  
Hazelton, PA 18201



Joseph R. Zbozien  
704 Pontiac Ave  
Brooklyn, MD 21225

Jasmine Lee Hall Pena  
c/o Robert A Hall  
4400 Falls Rd  
Baltimore, MD 21211

William Edward Stacy  
116 Ocoee Falls Dr  
Chapel Hill, NC 27517

Carol Stacy Saunders  
4149 Andros Way  
Oceanside, CA 92056

Carol D. Elmore  
6461 Mesquite Dr  
Midlothian, TX 76065

James S. Wilson  
6306 Farley Dr  
San Diego, CA 92122

Margaret Lee Hall  
2910 Avenida De Autlan  
Camarillo, CA 93010

Marvin Wilson  
214 Saint Andrews Cir  
Oxford, MS 38655

James Ovies  
1204 5th St  
Moundsville, WV 26041

Rick Heuser  
162 Lawrence Lane  
Reynoldsburg, OH 43068

Mark Heuser  
209 Cherokee Ct  
Pickerington, OH 43147

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Cindy Lee Richmond  
157 Richmond Ln  
Glen Easton, WV 26039

Berger Boys, LLC  
1305 Center St  
Moundsville, WV 26041

Ella Jean McCardle  
348 Fairmont Ave  
Wheeling, WV 26003

Jesse Allen Wilson  
49 Forest Hill Dr  
Glen Dale, WV 26038

Troy Thomas Wilson  
49 Forest Hill Dr  
Glen Dale, WV 26038

April Dawn Hogan  
5032 Castleman Run Rd  
Bethany, WV 26032

Kimberly Sue Pierson  
30 Forest Hill Dr  
Glen Dale, WV 26038

Kenneth R. Anderson  
1706 N Washington Ave  
Springfield, MO 65803

Charles Pratico  
25 Hamilton Ave  
Princeton, NJ 08542

Marietta Agocs  
50 Orourke Dr Apt O  
Trenton, NJ 08691

Eileen Sennett  
10 Orchard Dr  
Chesterfield, NJ 08515

Patricia Cassidy  
46 Heather Narrows  
Toms River, NJ 08755

Sharon Bucci  
120 7th Ave  
Seaside Park, NJ 08752

Amy Pratico  
19 E Railroad Ave  
Jamesburg, NJ 08831

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Abigail Constance ✓  
612 East Rd  
Middletown, NJ 07748

Rachel Constance ✓  
36 Cherokee Ave  
Rockaway, NJ 07866

Lawrence Bernard Ostry Estate, by  
Rachael Marie McLardy as Trustee ✓  
5808 Medusa Street, PO Box 931  
Sechely, British Columbia, V0N 3A0

The Bernard E. Kurlich Family Trust ✓  
c/o Richard P. Martin Co. L.P.A.  
3603 Darrow Rd.  
Stow, OH 44224

Joseph Richard Fox ✓  
2116 Autumn Way  
Melbourne, FL 32935

Norma V. Pratico ✓  
821 River Road  
Yardley, PA 19067

James R. Blair  
1400 10<sup>th</sup> Street  
Moundsville, WV 26041

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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

September 3, 2021

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

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Office of Oil and Gas

DEC 06 2021

WV Department of  
Environmental Protection

Subject: DOH Permit for the Willett Pad, Marshall County /  
Willett S-7HM Well Site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2019-0352 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 0.80.

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



**PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION**

**Willett Wells**

<b>PRODUCT NAME:</b>	<b>CHEMICAL DESCRIPTION:</b>	<b>PRODUCT USE:</b>	<b>HAZARDOUS COMPONENT:</b>
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





WEST VIRGINIA COUNTY MAP



APPROVED WVDEP OOG 8/15/2019

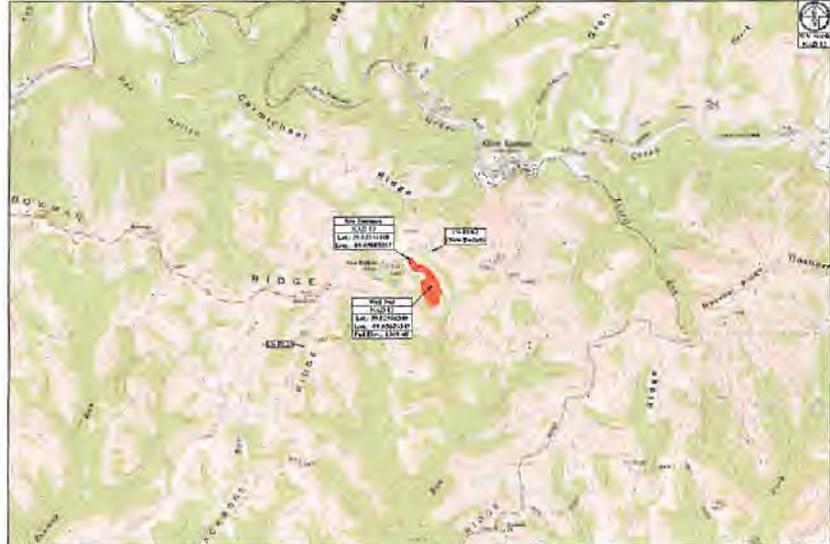
Willett Well Site Site Design, Construction Plan, & Erosion and Sediment Control Plans Tug Hill Operating Marshall County Meade District Latitude 39.82306349° Longitude -80.65626349° Middle Fish Creek Watershed

Pertinent Site Information Willett Well Site Emergency Number: 804-845-1970 Meade District, Marshall County, WV Watershed: Middle Fish Creek Watershed Tug Hill Contact Number: 3-817-613-1400

Table with 10 columns: Name, NAD 27 Easting, NAD 27 Northing, Elevation, Area, Volume, etc. for various site areas.

Exhibit A: Final Design: Issue for Permitting

Grid of coordinate points (Northing and Easting) for the site layout.



Tables for 'Atmos Band' (listing frequency and power), 'Disturbed Area' (listing various site areas), and 'Willett Well Site Quantities' (listing volume and length for various site features).

USGS 7.5 Quadrangle: Glen Crest Watershed: Middle Fish Creek

Tables for 'SME Location (NAD 27)' and 'SME Location (NAD 83)' showing coordinates for various site markers.

Project Contacts: Amanda White, Resource Director; Jeff Anderson, Project Manager; etc.



Table with 2 columns: Sheet and Description. Lists various site plan sheets and their descriptions.



Vertical text on the right margin: TUG HILL OPERATING, THIS DOCUMENT PREPARED FOR TUG HILL OPERATING, K&S CONSULTANTS, Willett Well Site Meade District Marshall County, WV, Date: 08/15/2019, Scale: As Shown, Licensed By: JCB, File No., Sheet 1 of 4.

