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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

Austin Caperton, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Thursday, March 5, 2020  
WELL WORK PERMIT  
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC  
380 SOUTHPOINTE BLVD

CANONSBURG, PA 15317

Re: Permit approval for KNOB CREEK S-16HU  
47-051-02290-00-00

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

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

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

James A. Martin  
Chief

Operator's Well Number: KNOB CREEK S-16HU  
Farm Name: DAVID LEE FRANKLIN  
U.S. WELL NUMBER: 47-051-02290-00-00  
Horizontal 6A New Drill  
Date Issued: 3/5/2020

# 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.

## 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).



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west virginia department of environmental protection

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Oil and Gas Conservation Commission  
601 57<sup>th</sup> Street SE, Charleston, WV 25304  
304-926-0499 Ext 1274

Randall M. Albert, Chairman  
dep.wv.gov

February 19, 2020

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

RE: Application for Deep Well Permit – API #47-051-02290

COMPANY: Tug Hill Operating, LLC

FARM: David Lee Franklin Knob Creek S-16HU


COUNTY: Marshall DISTRICT: Meade QUAD: Glen Easton

The deep well review of the application for the above company is **Approved to drill to Trenton for Point Pleasant completion. Pooling Docket No. 292-294.**

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

1. Comments to Notice of Deviation filed? No
2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners? Yes
3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells: \*\*yes; Docket 292-294 Exception Location Hearing
4. Provided a plat showing that the proposed location is a distance of 400+ feet from the nearest lease line or unit boundary and showing the following wells drilled to or capable of producing from the objective formation within 3,000 feet of the proposed location.

Sincerely,

  
Susan Rose  
Administrator

\*\*Heaven Hill 2-8HU 47-051-01912; Heaven Hill 2W-12HU 47-051-01952; Heaven Hill 2W-13HU 47-051-01957; Keith Stern N-13HU 47-051-02265; Keith Stern N-14HU 47-051-02252; Keith Stern N-15HU 47-051-02241; Keith Stern N-16HU 47-051-02242; Keith Stern S-19HU 47-051-02244; Keith Stern S-17HU 47-051-02266; Keith Stern S-18HU 47-051-02243; Knob Creek N-12HU 47-051-02268; Knob Creek N-11HU 47-051-02287; Knob Creek S-14HU 47-051-02288; Knob Creek S-15HU 47-051-02289; Knob Creek N-13HU 47-051-02269

4705102290

WW-6B  
(04/15)

API NO. 47-051 -  
OPERATOR WELL NO. Knob Creek S-16HU  
Well Pad Name: Knob Creek

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
WELL WORK PERMIT APPLICATION

*JL*  
*2/4/2020*

1) Well Operator: Tug Hill Operating, LLC      494510851      Marshall      Meade      Glen Easton 7.5'  
Operator ID      County      District      Quadrangle

2) Operator's Well Number: Knob Creek S-16HU      Well Pad Name: Knob Creek

3) Farm Name/Surface Owner: David Lee Franklin      Public Road Access: St. Joseph Road - CR 21

4) Elevation, current ground: 737'      Elevation, proposed post-construction: 737'

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

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

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Point Pleasant is the target formation at a depth of 11,070' - 11,201' - thickness of 131' and anticipated pressure of approx. 9500 psi.

8) Proposed Total Vertical Depth: 11,351'

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

10) Proposed Total Measured Depth: 20,709'

11) Proposed Horizontal Leg Length: 8,886.68'

12) Approximate Fresh Water Strata Depths: 70' ; 380'

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

14) Approximate Saltwater Depths: 1,740'

15) Approximate Coal Seam Depths: Sewickley Coal - 292' ; Pittsburgh Coal - 374'

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

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

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

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4705102290

API NO. 47- 051 -

OPERATOR WELL NO. Knob Creek S-16HU

Well Pad Name: Knob Creek

WW-6B  
(04/15)

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	20"	NEW	J55	106.5#	480'	480'	831 FT^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	2250'	2250'	1,592FT^3(CTS)
Intermediate	9 5/8"	NEW	HPP110	47#	10,107'	10,107'	3,277FT^3(CTS)
Production	5 1/2"	NEW	P110	23#	20,709'	20,709'	4,916FT^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		11,091'	
Liners							

*9/27/19*

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	20"	26"	.5	2,410	1,928	SEE # 24	1.2
Coal	13 3/8"	17 1/2"	.38	2,740	2,192	SEE #24	1.2
Intermediate	9 5/8"	12 1/4"	.472	10,730	6,968	SEE #24	1.99
Production	5 1/2"	8 1/2"	.415	16,510	10,864	SEE #24	1.18
Tubing	2 7/8"			11,624	11,385		
Liners							

PACKERS

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

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WW-6B  
(10/14)

API NO. 47-051-**4705102290**  
OPERATOR WELL NO. Knob Creek S-16HU  
Well Pad Name: Knob Creek

*Re*  
*2/4/2020*

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

Drill through the Point Pleasant and TD Pilot Hole 150' into the Trenton. Log vertical section and run a solid cement plug back to proposed KOP (10,591'). 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 20,212,500 lb proppant and 343,421 bbl of water. Max rate = 80 bpm; max psi = 12,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 12.93 acres

22) Area to be disturbed for well pad only, less access road (acres): 5.55 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 third joint. Production casing will have one centralizer every third joint in lateral, one centralizer every joint through curve, one centralizer every third joint to surface.

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

\*See Attachment

25) Proposed borehole conditioning procedures:

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

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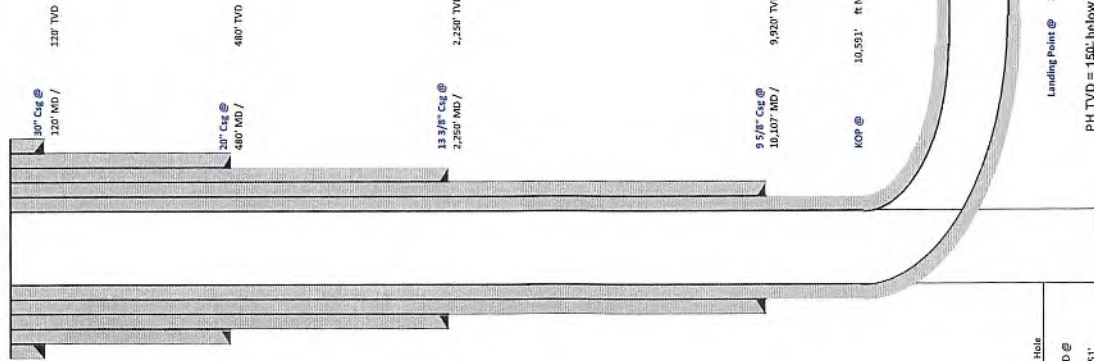
WV Department of  
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\*Note: Attach additional sheets as needed.

4705102290



WELL NAME: Knob Creek S-16HU COUNTY: Marshall  
 STATE: WV DISTRICT: Meade  
 DF Elev: 737' GL Elev: 737'  
 TD: 20,709'  
 TH Latitude: 39.77012366  
 TH Longitude: -80.70533874  
 BH Latitude: 39.748692  
 BH Longitude: -80.683119



Formation	Depth TVD
Deepest Fresh Water	380'
Sewaldsley Coal	292'
Pittsblough Coal	374'
Big Line	1,645'
Berea	2,145'
Tully	6,142'
Marcellus	6,346'
Onondaga	6,397'
Salina	7,914'
Lockport	8,065'
Utica	10,807'
Point Pleasant	11,870'
Landing Depth	11,120'
Trenton	11,201'
Pilot Hole TD	11,351'

Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	120'	120'	BW	BW	Surface
Surface	26	20	480'	480'	106.5	J55	Surface
Intermediate 1	17 1/2	13 3/8	2,250'	2,250'	54.5	J55	Surface
Intermediate 2	12 1/4	9 5/8	10,107'	9,920'	47	HPS110	Surface
Production	8 1/2	5 1/2	20,709'	11,275'	23	HPS110	Surface

CEMENT SUMMARY		DRILLING DETAILS	
Sacks	Class	Density	Fluid Type
338	A	15.6	Air
891	A	15.6	Air
1,736	A	15	Air
2,813	A	14.5	Air
4,339	A	15	Air / SCBM

Centralizer Notes:  
 None  
 3 Centralizers at equal distance  
 1 Centralizer every other ft  
 1 Centralizer every other ft  
 1 every other joint in lateral; 1 per joint in curve; 1 every other ft to 4K

*Handwritten signature*

Lateral TD @ 20,709' RMD  
 11,275' R.TVD

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 Landing Point @ 11,325' MD / 11,120' TVD  
 PH TVD = 150' below Trenton Top  
 11,351'



4705102290



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

**Knob Creek S-16HU**

**Casing**

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	20"	J55	26"	480'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	2,250'	CTS
Intermediate 2	9 5/8"	HPP110	12 1/4"	10,107'	CTS
Production	5 1/2"	HCP110	8 1/2"	20,709'	CTS

**Cement**

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

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

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

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

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## 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. IHS 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 Devin Ducoeur 724-705-0444, [dducoeur@dpslandservices.com](mailto:dducoeur@dpslandservices.com) DPS GIS (9/23/2019) to have him make maps of the wellbores with his information. DPS utilizes WVGES maps for their mapping seems it as the best publicly available. See attached map he provided.

#### Request maps for:

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

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

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

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4705102290

Permit well - Knob Creek S-16HU

Wells within 500' Buffer

Note: Well spots depicted on Area of Review map (page 3) 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
4705130257	Hope Natural Gas Company	2900' TVD	Gordon Sd	Unknown	No, the well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Well was plugged 1/17/1947
4705130405	Whilhelm & Jackson	Unknown	Unknown	Unknown	Unknown but unlikely. Appears to be an old shallow well, coal test bore hole or CBM well. Well has been plugged.	Well was plugged 12/4/1959
4705170029	South Penn Oil	2747' TVD	Gordon Sd	Unknown	No, the well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	State records are incomplete.
4705170283	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. Appears to be an old shallow well, coal test bore hole or CBM well.	State records are incomplete.
4705170284	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. Appears to be an old shallow well, coal test bore hole or CBM well.	State records are incomplete.
4705170742	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. Appears to be an old shallow well, coal test bore hole or CBM well.	State records are incomplete.
4705170751	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. Appears to be an old shallow well, coal test bore hole or CBM well.	State records are incomplete.
4705170752	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. Appears to be an old shallow well, coal test bore hole or CBM well.	State records are incomplete.
4705170753	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. Appears to be an old shallow well, coal test bore hole or CBM well.	State records are incomplete.
4705170754	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. Appears to be an old shallow well, coal test bore hole or CBM well.	State records are incomplete.
4705170755	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. Appears to be an old shallow well, coal test bore hole or CBM well.	State records are incomplete.
4705170756	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. Appears to be an old shallow well, coal test bore hole or CBM well.	State records are incomplete.

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Well: County = 51 Permit = 30257

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTM_E	UTM_N
470510227	Marshall	30027	00000	24	04	28.91108	76.26287	18274.4	442128.6

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_ID	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROG_VD	PROP_TRST_FM	TRM_EST_FM
470510227	18-004		Open	ConocoPhillips	1	001			Oil	ConocoPhillips			

Completion Information:

API	CMP_ID	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FHT	INITIAL_CLASS	FINAL_CLASS	TYPE	NO	CMP_MTHD	TWO	NEW_FTO	ROO	O_BEF	O_AFT	O_BEF	O_AFT	
470510227	18-004	04-11-03	1107	Shoreline	2000	2000	Unassessed	Unassessed	Oil	1	ConocoPhillips								

Pay/Show/Water Information:

API	CMP_ID	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOTTOM	FM_BOTTOM	O_BEF	O_AFT	O_BEF	O_AFT	WATER_QNTY
470510227	18-004	Prod	Oil	1	1107	2000	1107	2000					

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_BOTTOM	THICKNESS	THICKNESS_QUALITY	ELEV DATUM
470510227	Original Log	Unassessed	Oil	200	Reasonable	5	Reasonable	1107
470510227	Original Log	Unassessed	Oil	75	Reasonable	5	Reasonable	1107
470510227	Original Log	Unassessed	Oil	200	Reasonable	5	Reasonable	1107
470510227	Original Log	Unassessed	Oil	100	Reasonable	10	Reasonable	1107
470510227	Original Log	Unassessed	Oil	100	Reasonable	10	Reasonable	1107
470510227	Original Log	Unassessed	Oil	100	Reasonable	10	Reasonable	1107
470510227	Original Log	Unassessed	Oil	100	Reasonable	10	Reasonable	1107
470510227	Original Log	Unassessed	Oil	100	Reasonable	10	Reasonable	1107
470510227	Original Log	Unassessed	Oil	100	Reasonable	10	Reasonable	1107
470510227	Original Log	Unassessed	Oil	100	Reasonable	10	Reasonable	1107

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

Plugging Information:

API	FID	DEPTH_FHT
470510227	1171647	

There is no Sample data for this well

Search County: (051) Marshall  
 State Permit: 30405  
 Lease  
 Production  
 Plugging  
 Stratigraphy  
 Sample  
 Elim How Log  
 Get Data

Well: County = 51 Permit = 30405

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTM_E	UTM_N
470510410	Marshall	30405	00000	24	04	28.91108	76.26287	18274.4	442128.6

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_ID	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROG_VD	PROP_TRST_FM	TRM_EST_FM
470510410	18-103		Open	ConocoPhillips	1	001			Oil	ConocoPhillips			

Completion Information:

API	CMP_ID	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FHT	INITIAL_CLASS	FINAL_CLASS	TYPE	NO	CMP_MTHD	TWO	NEW_FTO	ROO	O_BEF	O_AFT	O_BEF	O_AFT	
470510410	18-103	04-11-03	1107	Shoreline	2000	2000	Unassessed	Unassessed	Oil	1	ConocoPhillips								

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	FID	DEPTH_FHT
470510410	1171647	

There is no Sample data for this well

Well: County = 51 Permit = 70029

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTM_E	UTM_N
470517029	Marshall	70029	00000	24	04	28.91108	76.26287	18274.4	442128.6

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_ID	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROG_VD	PROP_TRST_FM	TRM_EST_FM
470517029	18-103		Open	ConocoPhillips	1	001			Oil	ConocoPhillips			

Completion Information:

API	CMP_ID	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FHT	INITIAL_CLASS	FINAL_CLASS	TYPE	NO	CMP_MTHD	TWO	NEW_FTO	ROO	O_BEF	O_AFT	O_BEF	O_AFT	
470517029	18-103	04-11-03	1107	Shoreline	2000	2000	Unassessed	Unassessed	Oil	1	ConocoPhillips								

Pay/Show/Water Information:

API	CMP_ID	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOTTOM	FM_BOTTOM	O_BEF	O_AFT	O_BEF	O_AFT	WATER_QNTY
470517029	18-103	Prod	Oil	1	1107	2000	1107	2000					

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

Well: County = 51 Permit = 70283

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTM_E	UTM_N
470517083	Marshall	70283	00000	24	04	28.91108	76.26287	18274.4	442128.6

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_ID	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROG_VD	PROP_TRST_FM	TRM_EST_FM
470517083	18-103		Open	ConocoPhillips	1	001			Oil	ConocoPhillips			

Completion Information:

API	CMP_ID	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FHT	INITIAL_CLASS	FINAL_CLASS	TYPE	NO	CMP_MTHD	TWO	NEW_FTO	ROO	O_BEF	O_AFT	O_BEF	O_AFT	
470517083	18-103	04-11-03	1107	Shoreline	2000	2000	Unassessed	Unassessed	Oil	1	ConocoPhillips								

There is no Pay data for this well

There is no Production Gas data for this well

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

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

There is no Production Water data for this well

There is no Stratigraphy data for this well

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

There is no Plugging data for this well

There is no Sample data for this well

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4705102290

WV Geological & Economic Survey

Well: County = 51 Permit = 70284

Location Information View Map

WV COUNTY PERMIT NO DISTRICT QUAD 79 QUAD 19 TWP RD LONG RD UTM6 UTM6

There is no Bottom Hole Location data for this well

Owner Information: WVT CMP\_ID SUFFIX STATUS SURFACE\_OWNER WELL\_NUM CO\_NUM LEASE LEASE\_NUM MINERAL\_OWN OPERATOR\_AC COMPLETION PROF\_VO PROP\_TRPT\_FM TRM\_EST\_CR

Completion Information: WVT CMP\_ID SUFF\_ID ELEV DAYUM FIELD DEEPEST\_FM DEEPEST\_FM INTIAL\_CLASS FINAL\_CLASS TYPE NO CMP\_MIND TWD TWD NEW\_FTS ROD O\_BEF O\_AFT O\_BEF O\_AFT

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
There is no Production NGL data for this well
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

WV Geological & Economic Survey

Well: County = 51 Permit = 70742

Location Information View Map

WV COUNTY PERMIT NO DISTRICT QUAD 79 QUAD 19 TWP RD LONG RD UTM6 UTM6

There is no Bottom Hole Location data for this well

Owner Information: WVT CMP\_ID SUFFIX STATUS SURFACE\_OWNER WELL\_NUM CO\_NUM LEASE LEASE\_NUM MINERAL\_OWN OPERATOR\_AC COMPLETION PROF\_VO PROP\_TRPT\_FM TRM\_EST\_CR

Completion Information: WVT CMP\_ID SUFF\_ID ELEV DAYUM FIELD DEEPEST\_FM DEEPEST\_FM INTIAL\_CLASS FINAL\_CLASS TYPE NO CMP\_MIND TWD TWD NEW\_FTS ROD O\_BEF O\_AFT O\_BEF O\_AFT

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
There is no Production NGL data for this well
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

WV Geological & Economic Survey

Well: County = 51 Permit = 70751

Location Information View Map

WV COUNTY PERMIT NO DISTRICT QUAD 79 QUAD 19 TWP RD LONG RD UTM6 UTM6

There is no Bottom Hole Location data for this well

Owner Information: WVT CMP\_ID SUFFIX STATUS SURFACE\_OWNER WELL\_NUM CO\_NUM LEASE LEASE\_NUM MINERAL\_OWN OPERATOR\_AC COMPLETION PROF\_VO PROP\_TRPT\_FM TRM\_EST\_CR

Completion Information: WVT CMP\_ID SUFF\_ID ELEV DAYUM FIELD DEEPEST\_FM DEEPEST\_FM INTIAL\_CLASS FINAL\_CLASS TYPE NO CMP\_MIND TWD TWD NEW\_FTS ROD O\_BEF O\_AFT O\_BEF O\_AFT

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
There is no Production NGL data for this well
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

WV Geological & Economic Survey

Well: County = 51 Permit = 70752

Location Information View Map

WV COUNTY PERMIT NO DISTRICT QUAD 79 QUAD 19 TWP RD LONG RD UTM6 UTM6

There is no Bottom Hole Location data for this well

Owner Information: WVT CMP\_ID SUFFIX STATUS SURFACE\_OWNER WELL\_NUM CO\_NUM LEASE LEASE\_NUM MINERAL\_OWN OPERATOR\_AC COMPLETION PROF\_VO PROP\_TRPT\_FM TRM\_EST\_CR

Completion Information: WVT CMP\_ID SUFF\_ID ELEV DAYUM FIELD DEEPEST\_FM DEEPEST\_FM INTIAL\_CLASS FINAL\_CLASS TYPE NO CMP\_MIND TWD TWD NEW\_FTS ROD O\_BEF O\_AFT O\_BEF O\_AFT

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
There is no Production NGL data for this well
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

WV Geological & Economic Survey

Well: County = 51 Permit = 70753

Location Information View Map

WV COUNTY PERMIT NO DISTRICT QUAD 79 QUAD 19 TWP RD LONG RD UTM6 UTM6

There is no Bottom Hole Location data for this well

Owner Information: WVT CMP\_ID SUFFIX STATUS SURFACE\_OWNER WELL\_NUM CO\_NUM LEASE LEASE\_NUM MINERAL\_OWN OPERATOR\_AC COMPLETION PROF\_VO PROP\_TRPT\_FM TRM\_EST\_CR

Completion Information: WVT CMP\_ID SUFF\_ID ELEV DAYUM FIELD DEEPEST\_FM DEEPEST\_FM INTIAL\_CLASS FINAL\_CLASS TYPE NO CMP\_MIND TWD TWD NEW\_FTS ROD O\_BEF O\_AFT O\_BEF O\_AFT

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
There is no Production NGL data for this well
There is no Production Water data for this well
There is no Stratigraphy data for this well
There is no Wireline (E-Log) data for this well
There is no Plugging data for this well
There is no Sample data for this well

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WV Geological & Economic Survey  
**Well: County = 51 Permit = 70754**

Location Information [View Map](#)  
**API#** COUNTY PERMIT TAX DISTRICT QUAD7S QUAD1S CAT\_ID LOW\_ID UTMN UTMW  
 425417254 51 70754 510000 000000 00 000000 00 000000 000000 000000

There is no Bottom Hole Location data for this well

Owner Information  
**API#** CMP\_ID SURFID STATUS SURFACE\_OWNER WELL\_NUM CO\_NUM LEASE LEASE\_NUM MINERAL\_OWN OPERATOR\_AC COMPLETION\_PROP\_VO PROP\_TRST\_FM TRC\_EST\_FM  
 425417254 000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000

Completion Information  
**API#** CMP\_ID SURFID ELEV DATUM FIELD DEEPST\_FWI DEEPST\_FMT INITIAL\_CLASS FINAL\_CLASS TYPE RIG CMP\_MTHD YTD YMD NEW\_PIS RIG\_O\_BEP O\_APT O\_BEP O\_APT  
 425417254 000 000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000

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

WV Geological & Economic Survey  
**Well: County = 51 Permit = 70755**

Location Information [View Map](#)  
**API#** COUNTY PERMIT TAX DISTRICT QUAD7S QUAD1S CAT\_ID LOW\_ID UTMN UTMW  
 425417254 51 70755 510000 000000 00 000000 00 000000 000000 000000

There is no Bottom Hole Location data for this well

Owner Information  
**API#** CMP\_ID SURFID STATUS SURFACE\_OWNER WELL\_NUM CO\_NUM LEASE LEASE\_NUM MINERAL\_OWN OPERATOR\_AC COMPLETION\_PROP\_VO PROP\_TRST\_FM TRC\_EST\_FM  
 425417254 000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000

Completion Information  
**API#** CMP\_ID SURFID ELEV DATUM FIELD DEEPST\_FWI DEEPST\_FMT INITIAL\_CLASS FINAL\_CLASS TYPE RIG CMP\_MTHD YTD YMD NEW\_PIS RIG\_O\_BEP O\_APT O\_BEP O\_APT  
 425417254 000 000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000

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

WV Geological & Economic Survey  
**Well: County = 51 Permit = 70756**

Location Information [View Map](#)  
**API#** COUNTY PERMIT TAX DISTRICT QUAD7S QUAD1S CAT\_ID LOW\_ID UTMN UTMW  
 425417254 51 70756 510000 000000 00 000000 00 000000 000000 000000

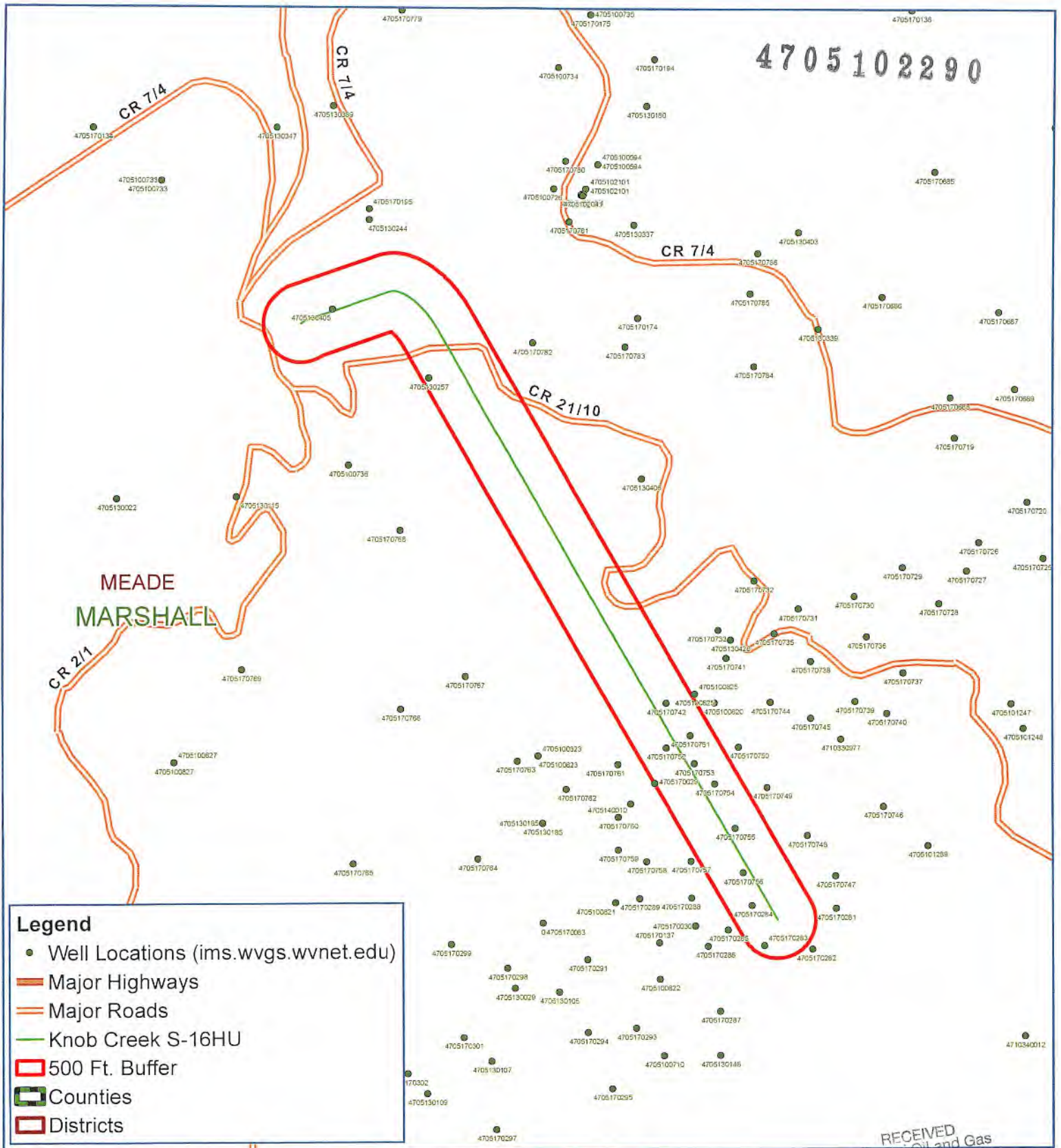
There is no Bottom Hole Location data for this well

Owner Information  
**API#** CMP\_ID SURFID STATUS SURFACE\_OWNER WELL\_NUM CO\_NUM LEASE LEASE\_NUM MINERAL\_OWN OPERATOR\_AC COMPLETION\_PROP\_VO PROP\_TRST\_FM TRC\_EST\_FM  
 425417254 000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000

Completion Information  
**API#** CMP\_ID SURFID ELEV DATUM FIELD DEEPST\_FWI DEEPST\_FMT INITIAL\_CLASS FINAL\_CLASS TYPE RIG CMP\_MTHD YTD YMD NEW\_PIS RIG\_O\_BEP O\_APT O\_BEP O\_APT  
 425417254 000 000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000 000000

There is no Pay data for this well  
 There is no Production Gas data for this well  
 There is no Production Oil data for this well \*\* some operators may have reported NGL under Oil  
 There is no Production NGL data for this well \*\* some operators may have reported NGL under Oil  
 There is no Production Water data for this well  
 There is no Stratigraphy data for this well  
 There is no Wireline (E-Log) data for this well  
 There is no Plugging data for this well  
 There is no Sample data for this well

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Map Created: September 25, 2019  
 Map Current As Of: September 25, 2019

# Knob Creek S - 16HU Meade District Marshall County, WV



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

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Map Prepared by:



4705102290



TUG HILL OPERATING

Well: Knob Creek S-16HU (slot P)
Site: Knob Creek
Project: Marshall County, West Virginia.
Design: rev3

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

System Datum: Mean Sea Level
Depth Reference: GL=737 @ 737.00usft
Surface location
Northing 14443164.07 Easting 1723212.94 Latitude 39.77012366 Longitude -80.70533874

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.881°

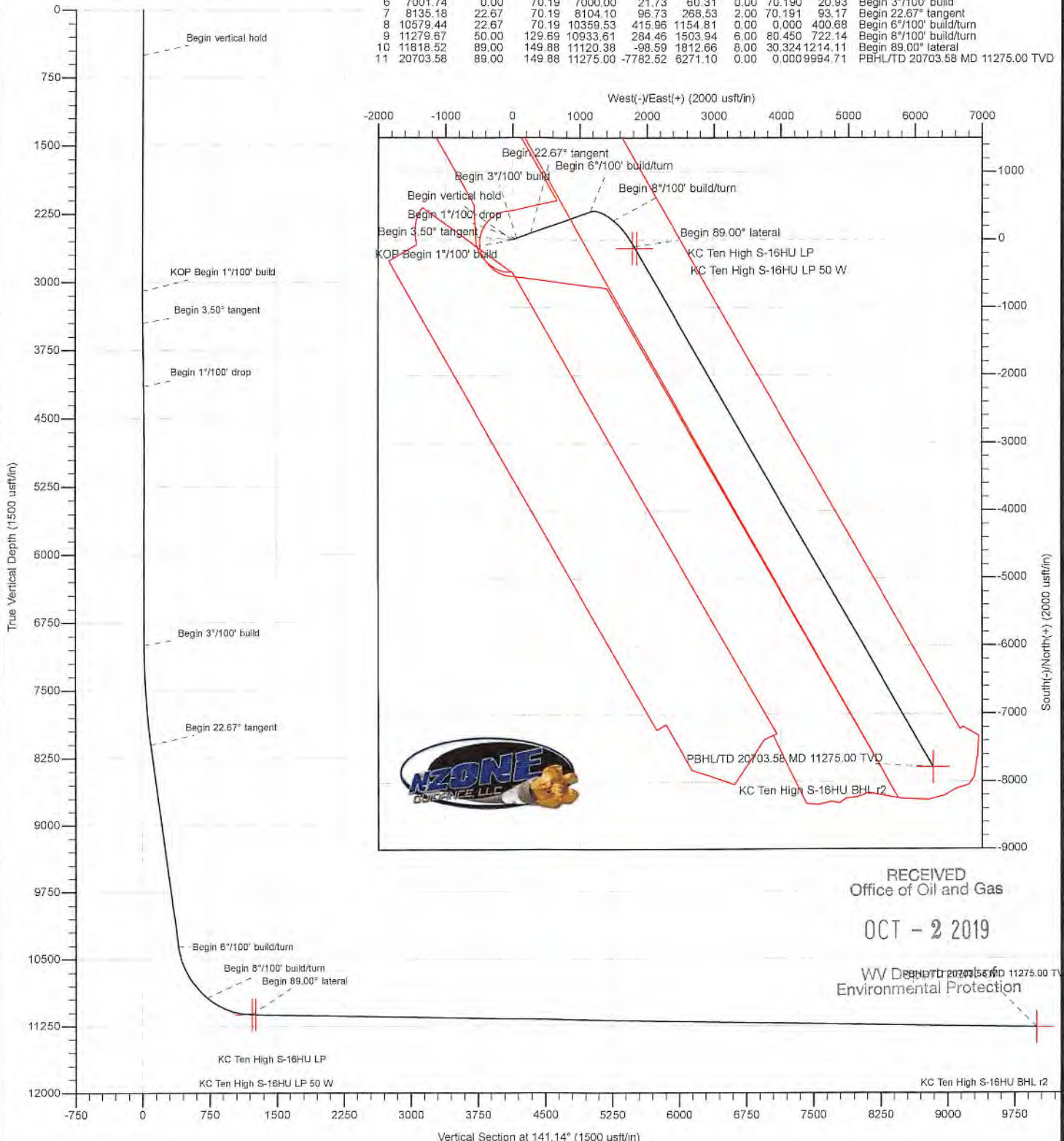


Azimuths to Grid North
True North: -0.19°
Magnetic North: -8.88°

Magnetic Field
Strength: 52139.6snT
Dip Angle: 66.92°
Date: 9/19/2017
Model: IGRF2015

SECTION DETAILS

Table with 11 columns: Sec, MD, Inc, Azi, TVD, +N/-S, +E/-W, Dleg, TFace, VSect, Annotation. Contains wellbore data for 11 sections.



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4705102290



Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14 It	<b>Local Co-ordinate Reference:</b>	Well Knob Creek S-16HU (slot P)
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL=737 @ 737.00usft
<b>Project:</b>	Marshall County, West Virginia.	<b>MD Reference:</b>	GL=737 @ 737.00usft
<b>Site:</b>	Knob Creek	<b>North Reference:</b>	Grid
<b>Well:</b>	Knob Creek S-16HU (slot P)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev3		

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

<b>Site</b>	Knob Creek				
<b>Site Position:</b>		<b>Northing:</b>	14,443,053.74 usft	<b>Latitude:</b>	39.76982148
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,723,120.29 usft	<b>Longitude:</b>	-80.70566975
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.188 °

<b>Well</b>	Knob Creek S-16HU (slot P)					
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	14,443,164.07 usft	<b>Latitude:</b>	39.77012366
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	1,723,212.94 usft	<b>Longitude:</b>	-80.70533874
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>		<b>Ground Level:</b>	737.00 usft

<b>Wellbore</b>	Original Hole				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	9/19/2017	-8.693	66.922	52,139.62567471

<b>Design</b>	rev3			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	141.14

<b>Plan Survey Tool Program</b>	<b>Date</b>	8/11/2019		
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>
1	0.00	20,703.58 rev3 (Original Hole)	MWD	
			MWD - Standard	

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Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14 It	<b>Local Co-ordinate Reference:</b>	Well Knob Creek S-16HU (slot P)
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL=737 @ 737.00usft
<b>Project:</b>	Marshall County, West Virginia.	<b>MD Reference:</b>	GL=737 @ 737.00usft
<b>Site:</b>	Knob Creek	<b>North Reference:</b>	Grid
<b>Well:</b>	Knob Creek S-16HU (slot P)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev3		

Plan Sections											
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	
3,450.00	3.50	70.19	3,449.78	3.62	10.05	1.00	1.00	0.00	0.00	70.190	
4,150.00	3.50	70.19	4,148.48	18.10	50.26	0.00	0.00	0.00	0.00	0.000	
4,500.00	0.00	70.19	4,498.26	21.73	60.31	1.00	-1.00	0.00	0.00	180.000	
7,001.74	0.00	70.19	7,000.00	21.73	60.31	0.00	0.00	0.00	0.00	70.190	
8,135.18	22.67	70.19	8,104.10	96.73	268.53	2.00	2.00	0.00	0.00	70.191	
10,579.44	22.67	70.19	10,359.53	415.96	1,154.81	0.00	0.00	0.00	0.00	0.000	
11,279.67	50.00	129.69	10,933.61	284.46	1,503.94	6.00	3.90	8.50	80.450		
11,818.52	89.00	149.88	11,120.38	-98.59	1,812.66	8.00	7.24	3.75	30.324		
20,703.58	89.00	149.88	11,275.00	-7,782.52	6,271.10	0.00	0.00	0.00	0.000		KC Ten High S-16HU

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Planning Report - Geographic

4705102290

Database: DB\_Jul2216dt\_v14 It  
 Company: Tug Hill Operating LLC  
 Project: Marshall County, West Virginia.  
 Site: Knob Creek  
 Well: Knob Creek S-16HU (slot P)  
 Wellbore: Original Hole  
 Design: rev3

Local Co-ordinate Reference: Well Knob Creek S-16HU (slot P)  
 TVD Reference: GL=737 @ 737.00usft  
 MD Reference: GL=737 @ 737.00usft  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature

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Planned Survey

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Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
100.00	0.00	0.00	100.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
200.00	0.00	0.00	200.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
300.00	0.00	0.00	300.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
400.00	0.00	0.00	400.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
500.00	0.00	0.00	500.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
<b>Begin vertical hold</b>									
600.00	0.00	0.00	600.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
700.00	0.00	0.00	700.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
800.00	0.00	0.00	800.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
900.00	0.00	0.00	900.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
1,600.00	0.00	0.00	1,600.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
1,700.00	0.00	0.00	1,700.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
1,800.00	0.00	0.00	1,800.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
1,900.00	0.00	0.00	1,900.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
2,000.00	0.00	0.00	2,000.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
2,100.00	0.00	0.00	2,100.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
2,200.00	0.00	0.00	2,200.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
2,300.00	0.00	0.00	2,300.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
2,400.00	0.00	0.00	2,400.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
2,500.00	0.00	0.00	2,500.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
2,600.00	0.00	0.00	2,600.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
2,700.00	0.00	0.00	2,700.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
2,800.00	0.00	0.00	2,800.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
2,900.00	0.00	0.00	2,900.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
3,000.00	0.00	0.00	3,000.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
3,100.00	0.00	0.00	3,100.00	0.00	0.00	14,443,164.07	1,723,212.94	39.77012366	-80.70533874
<b>KOP Begin 1°/100' build</b>									
3,200.00	1.00	70.19	3,199.99	0.30	0.82	14,443,164.37	1,723,213.76	39.77012447	-80.70533582
3,300.00	2.00	70.19	3,299.96	1.18	3.28	14,443,165.26	1,723,216.23	39.77012688	-80.70532704
3,400.00	3.00	70.19	3,399.86	2.66	7.39	14,443,166.73	1,723,220.33	39.77013090	-80.70531242
3,450.00	3.50	70.19	3,449.78	3.62	10.05	14,443,167.70	1,723,223.00	39.77013352	-80.70530292
<b>Begin 3.50° tangent</b>									
3,500.00	3.50	70.19	3,499.69	4.66	12.93	14,443,168.73	1,723,225.87	39.77013633	-80.70529268
3,600.00	3.50	70.19	3,599.50	6.73	18.67	14,443,170.80	1,723,231.61	39.77014196	-80.70527222
3,700.00	3.50	70.19	3,699.32	8.79	24.41	14,443,172.87	1,723,237.36	39.77014759	-80.70525175
3,800.00	3.50	70.19	3,799.13	10.86	30.16	14,443,174.94	1,723,243.10	39.77015322	-80.70523129
3,900.00	3.50	70.19	3,898.94	12.93	35.90	14,443,177.01	1,723,248.84	39.77015885	-80.70521083
4,000.00	3.50	70.19	3,998.76	15.00	41.64	14,443,179.07	1,723,254.59	39.77016448	-80.70519036
4,100.00	3.50	70.19	4,098.57	17.07	47.39	14,443,181.14	1,723,260.33	39.77017011	-80.70516990
4,150.00	3.50	70.19	4,148.48	18.10	50.26	14,443,182.18	1,723,263.20	39.77017293	-80.70515966
<b>Begin 1°/100' drop</b>									
4,200.00	3.00	70.19	4,198.40	19.07	52.93	14,443,183.14	1,723,265.87	39.77017554	-80.70515016
4,300.00	2.00	70.19	4,298.30	20.54	57.03	14,443,184.62	1,723,269.97	39.77017956	-80.70513554
4,400.00	1.00	70.19	4,398.26	21.43	59.49	14,443,185.50	1,723,272.44	39.77018198	-80.70512676
4,500.00	0.00	70.19	4,498.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
4,600.00	0.00	70.19	4,598.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
4,700.00	0.00	70.19	4,698.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384



Planning Report - Geographic

Database: DB\_Jul2216dt\_v14 lt  
 Company: Tug Hill Operating LLC  
 Project: Marshall County, West Virginia.  
 Site: Knob Creek  
 Well: Knob Creek S-16HU (slot P)  
 Wellbore: Original Hole  
 Design: rev3

Local Co-ordinate Reference: Well Knob Creek S-16HU (slot P)  
 TVD Reference: GL=737 @ 737.00usft  
 MD Reference: GL=737 @ 737.00usft  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature

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Planned Survey

WV Department of  
 Environmental Protection

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,800.00	0.00	70.19	4,798.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
4,900.00	0.00	70.19	4,898.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
5,000.00	0.00	70.19	4,998.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
5,100.00	0.00	70.19	5,098.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
5,200.00	0.00	70.19	5,198.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
5,300.00	0.00	70.19	5,298.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
5,400.00	0.00	70.19	5,398.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
5,500.00	0.00	70.19	5,498.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
5,600.00	0.00	70.19	5,598.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
5,700.00	0.00	70.19	5,698.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
5,800.00	0.00	70.19	5,798.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
5,900.00	0.00	70.19	5,898.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
6,000.00	0.00	70.19	5,998.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
6,100.00	0.00	70.19	6,098.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
6,200.00	0.00	70.19	6,198.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
6,300.00	0.00	70.19	6,298.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
6,400.00	0.00	70.19	6,398.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
6,500.00	0.00	70.19	6,498.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
6,600.00	0.00	70.19	6,598.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
6,700.00	0.00	70.19	6,698.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
6,800.00	0.00	70.19	6,798.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
6,900.00	0.00	70.19	6,898.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
7,000.00	0.00	70.19	6,998.26	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
7,001.74	0.00	70.19	7,000.00	21.73	60.31	14,443,185.80	1,723,273.26	39.77018278	-80.70512384
<b>Begin 3°/100' build</b>									
7,100.00	1.97	70.19	7,098.24	22.30	61.90	14,443,186.37	1,723,274.84	39.77018434	-80.70511819
7,200.00	3.97	70.19	7,198.10	24.05	66.77	14,443,188.12	1,723,279.71	39.77018911	-80.70510085
7,300.00	5.97	70.19	7,297.72	26.98	74.91	14,443,191.06	1,723,287.85	39.77019709	-80.70507184
7,400.00	7.97	70.19	7,396.98	31.09	86.32	14,443,195.17	1,723,299.26	39.77020827	-80.70503119
7,500.00	9.97	70.19	7,495.75	36.37	100.98	14,443,200.45	1,723,313.92	39.77022264	-80.70497895
7,600.00	11.97	70.19	7,593.92	42.82	118.87	14,443,206.89	1,723,331.82	39.77024018	-80.70491519
7,700.00	13.97	70.19	7,691.37	50.42	139.98	14,443,214.50	1,723,352.92	39.77026087	-80.70483999
7,800.00	15.97	70.19	7,787.97	59.17	164.27	14,443,223.25	1,723,377.22	39.77028468	-80.70475343
7,900.00	17.97	70.19	7,883.61	69.06	191.72	14,443,233.13	1,723,404.67	39.77031158	-80.70465562
8,000.00	19.97	70.19	7,978.18	80.07	222.30	14,443,244.15	1,723,435.24	39.77034155	-80.70454688
8,100.00	21.97	70.19	8,071.55	92.20	255.96	14,443,256.27	1,723,468.90	39.77037454	-80.70442674
8,135.18	22.67	70.19	8,104.10	96.72	268.53	14,443,260.80	1,723,481.47	39.77038686	-80.70438196
<b>Begin 22.67° tangent</b>									
8,200.00	22.67	70.19	8,163.91	105.19	292.03	14,443,269.26	1,723,504.98	39.77040990	-80.70429821
8,300.00	22.67	70.19	8,256.19	118.25	328.29	14,443,282.33	1,723,541.24	39.77044544	-80.70416902
8,400.00	22.67	70.19	8,348.46	131.31	364.55	14,443,295.39	1,723,577.50	39.77048098	-80.70403982
8,500.00	22.67	70.19	8,440.74	144.37	400.81	14,443,308.45	1,723,613.76	39.77051652	-80.70391062
8,600.00	22.67	70.19	8,533.01	157.43	437.07	14,443,321.51	1,723,650.02	39.77055206	-80.70378142
8,700.00	22.67	70.19	8,625.29	170.49	473.33	14,443,334.57	1,723,686.28	39.77058760	-80.70365223
8,800.00	22.67	70.19	8,717.56	183.56	509.59	14,443,347.63	1,723,722.54	39.77062313	-80.70352303
8,900.00	22.67	70.19	8,809.84	196.62	545.85	14,443,360.69	1,723,758.80	39.77065867	-80.70339383
9,000.00	22.67	70.19	8,902.11	209.68	582.11	14,443,373.75	1,723,795.06	39.77069421	-80.70326463
9,100.00	22.67	70.19	8,994.38	222.74	618.37	14,443,386.81	1,723,831.32	39.77072975	-80.70313544
9,200.00	22.67	70.19	9,086.66	235.80	654.63	14,443,399.87	1,723,867.57	39.77076529	-80.70300624
9,300.00	22.67	70.19	9,178.93	248.86	690.89	14,443,412.93	1,723,903.83	39.77080083	-80.70287704
9,400.00	22.67	70.19	9,271.21	261.92	727.15	14,443,425.99	1,723,940.09	39.77083636	-80.70274784
9,500.00	22.67	70.19	9,363.48	274.98	763.41	14,443,439.05	1,723,976.35	39.77087190	-80.70261864
9,600.00	22.67	70.19	9,455.76	288.04	799.67	14,443,452.12	1,724,012.61	39.77090744	-80.70248944
9,700.00	22.67	70.19	9,548.03	301.10	835.93	14,443,465.18	1,724,048.87	39.77094298	-80.70236025



Planning Report - Geographic

Database: DB\_Jul2216dt\_v14 lt  
 Company: Tug Hill Operating LLC  
 Project: Marshall County, West Virginia.  
 Site: Knob Creek  
 Well: Knob Creek S-16HU (slot P)  
 Wellbore: Original Hole  
 Design: rev3

Local Co-ordinate Reference: Well Knob Creek S-16HU (slot P)  
 TVD Reference: GL=737 @ 737.00usft  
 MD Reference: GL=737 @ 737.00usft  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature

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Planned Survey

WV Department of  
 Environmental Protection

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,800.00	22.67	70.19	9,640.31	314.16	872.19	14,443,478.24	1,724,085.13	39.77097851	-80.70223105
9,900.00	22.67	70.19	9,732.58	327.22	908.45	14,443,491.30	1,724,121.39	39.77101405	-80.70210185
10,000.00	22.67	70.19	9,824.86	340.28	944.71	14,443,504.36	1,724,157.65	39.77104959	-80.70197265
10,100.00	22.67	70.19	9,917.13	353.35	980.97	14,443,517.42	1,724,193.91	39.77108513	-80.70184345
10,200.00	22.67	70.19	10,009.41	366.41	1,017.23	14,443,530.48	1,724,230.17	39.77112066	-80.70171425
10,300.00	22.67	70.19	10,101.68	379.47	1,053.49	14,443,543.54	1,724,266.43	39.77115620	-80.70158505
10,400.00	22.67	70.19	10,193.96	392.53	1,089.75	14,443,556.60	1,724,302.69	39.77119174	-80.70145585
10,500.00	22.67	70.19	10,286.23	405.59	1,126.01	14,443,569.66	1,724,338.95	39.77122727	-80.70132665
10,579.44	22.67	70.19	10,359.53	415.96	1,154.82	14,443,580.04	1,724,367.76	39.77125550	-80.70122401
<b>Begin 6°/100' build/turn</b>									
10,600.00	22.90	73.32	10,378.49	418.45	1,162.38	14,443,582.53	1,724,375.32	39.77126227	-80.70119708
10,700.00	24.86	87.37	10,470.00	425.01	1,202.05	14,443,589.08	1,724,414.99	39.77127991	-80.70105581
10,800.00	27.92	99.02	10,559.63	422.30	1,246.21	14,443,586.38	1,724,459.15	39.77127207	-80.70089868
10,900.00	31.77	108.29	10,646.40	410.36	1,294.37	14,443,574.44	1,724,507.31	39.77123884	-80.70072743
11,000.00	36.15	115.64	10,729.35	389.32	1,346.00	14,443,553.39	1,724,558.95	39.77118057	-80.70054391
11,100.00	40.90	121.54	10,807.59	359.40	1,400.55	14,443,523.47	1,724,613.49	39.77109791	-80.70035015
11,200.00	45.89	126.39	10,880.25	320.94	1,457.40	14,443,485.01	1,724,670.35	39.77099176	-80.70014827
11,279.67	50.00	129.69	10,933.61	284.46	1,503.94	14,443,448.53	1,724,716.88	39.77089115	-80.69998309
<b>Begin 8°/100' build/turn</b>									
11,300.00	51.41	130.74	10,946.48	274.30	1,515.95	14,443,438.38	1,724,728.90	39.77086315	-80.69994046
11,400.00	58.46	135.38	11,003.92	218.38	1,575.59	14,443,382.45	1,724,788.54	39.77070901	-80.69972888
11,500.00	65.65	139.35	11,050.78	153.38	1,635.29	14,443,317.46	1,724,848.24	39.77052998	-80.69951718
11,600.00	72.93	142.89	11,086.13	80.59	1,693.90	14,443,244.66	1,724,906.84	39.77032952	-80.69930949
11,700.00	80.27	146.17	11,109.30	1.40	1,750.26	14,443,165.48	1,724,963.20	39.77011153	-80.69910985
11,800.00	87.64	149.30	11,119.83	-82.63	1,803.29	14,443,081.45	1,725,016.23	39.76988027	-80.69892215
11,818.52	89.00	149.88	11,120.38	-98.59	1,812.66	14,443,065.48	1,725,025.60	39.76983634	-80.69888899
<b>Begin 89.00° lateral</b>									
11,900.00	89.00	149.88	11,121.79	-169.06	1,853.54	14,442,995.02	1,725,066.49	39.76964245	-80.69874433
12,000.00	89.00	149.88	11,123.53	-255.54	1,903.72	14,442,908.54	1,725,116.67	39.76940449	-80.69856679
12,100.00	89.00	149.88	11,125.27	-342.02	1,953.90	14,442,822.05	1,725,166.84	39.76916652	-80.69838925
12,200.00	89.00	149.88	11,127.02	-428.50	2,004.08	14,442,735.57	1,725,217.02	39.76892856	-80.69821171
12,300.00	89.00	149.88	11,128.76	-514.98	2,054.26	14,442,649.09	1,725,267.20	39.76869059	-80.69803417
12,400.00	89.00	149.88	11,130.50	-601.46	2,104.44	14,442,562.61	1,725,317.38	39.76845263	-80.69785663
12,500.00	89.00	149.88	11,132.24	-687.95	2,154.62	14,442,476.13	1,725,367.56	39.76821466	-80.69767910
12,600.00	89.00	149.88	11,133.98	-774.43	2,204.80	14,442,389.65	1,725,417.74	39.76797669	-80.69750157
12,700.00	89.00	149.88	11,135.72	-860.91	2,254.98	14,442,303.17	1,725,467.92	39.76773873	-80.69732403
12,800.00	89.00	149.88	11,137.46	-947.39	2,305.15	14,442,216.68	1,725,518.10	39.76750076	-80.69714650
12,900.00	89.00	149.88	11,139.20	-1,033.87	2,355.33	14,442,130.20	1,725,568.28	39.76726279	-80.69696897
13,000.00	89.00	149.88	11,140.94	-1,120.35	2,405.51	14,442,043.72	1,725,618.46	39.76702483	-80.69679144
13,100.00	89.00	149.88	11,142.68	-1,206.83	2,455.69	14,441,957.24	1,725,668.63	39.76678686	-80.69661391
13,200.00	89.00	149.88	11,144.42	-1,293.32	2,505.87	14,441,870.76	1,725,718.81	39.76654889	-80.69643639
13,300.00	89.00	149.88	11,146.16	-1,379.80	2,556.05	14,441,784.28	1,725,768.99	39.76631092	-80.69625886
13,400.00	89.00	149.88	11,147.90	-1,466.28	2,606.23	14,441,697.80	1,725,819.17	39.76607296	-80.69608134
13,500.00	89.00	149.88	11,149.64	-1,552.76	2,656.41	14,441,611.31	1,725,869.35	39.76583499	-80.69590381
13,600.00	89.00	149.88	11,151.38	-1,639.24	2,706.59	14,441,524.83	1,725,919.53	39.76559702	-80.69572629
13,700.00	89.00	149.88	11,153.12	-1,725.72	2,756.77	14,441,438.35	1,725,969.71	39.76535905	-80.69554877
13,800.00	89.00	149.88	11,154.86	-1,812.20	2,806.94	14,441,351.87	1,726,019.89	39.76512108	-80.69537125
13,900.00	89.00	149.88	11,156.60	-1,898.69	2,857.12	14,441,265.39	1,726,070.07	39.76488311	-80.69519373
14,000.00	89.00	149.88	11,158.34	-1,985.17	2,907.30	14,441,178.91	1,726,120.25	39.76464514	-80.69501622
14,100.00	89.00	149.88	11,160.08	-2,071.65	2,957.48	14,441,092.43	1,726,170.43	39.76440717	-80.69483870
14,200.00	89.00	149.88	11,161.82	-2,158.13	3,007.66	14,441,005.94	1,726,220.60	39.76416920	-80.69466119
14,300.00	89.00	149.88	11,163.56	-2,244.61	3,057.84	14,440,919.46	1,726,270.78	39.76393123	-80.69448367
14,400.00	89.00	149.88	11,165.30	-2,331.09	3,108.02	14,440,832.98	1,726,320.96	39.76369326	-80.69430616
14,500.00	89.00	149.88	11,167.04	-2,417.57	3,158.20	14,440,746.50	1,726,371.14	39.76345528	-80.69412865

4705102290



Planning Report - Geographic

Database: DB\_Jul2216dt\_v14 It  
 Company: Tug Hill Operating LLC  
 Project: Marshall County, West Virginia.  
 Site: Knob Creek  
 Well: Knob Creek S-16HU (slot P)  
 Wellbore: Original Hole  
 Design: rev3

Local Co-ordinate Reference: Well Knob Creek S-16HU (slot P)  
 TVD Reference: GL=737 @ 737.00usft  
 MD Reference: GL=737 @ 737.00usft  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature

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Planned Survey

WV Department of  
 Environmental Protection

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
14,600.00	89.00	149.88	11,168.78	-2,504.06	3,208.38	14,440,660.02	1,726,421.32	39.76321731	-80.69395114
14,700.00	89.00	149.88	11,170.52	-2,590.54	3,258.56	14,440,573.54	1,726,471.50	39.76297934	-80.69377363
14,800.00	89.00	149.88	11,172.26	-2,677.02	3,308.74	14,440,487.06	1,726,521.68	39.76274137	-80.693459612
14,900.00	89.00	149.88	11,174.00	-2,763.50	3,358.91	14,440,400.57	1,726,571.86	39.76250340	-80.69341862
15,000.00	89.00	149.88	11,175.74	-2,849.98	3,409.09	14,440,314.09	1,726,622.04	39.76226542	-80.69324111
15,100.00	89.00	149.88	11,177.48	-2,936.46	3,459.27	14,440,227.61	1,726,672.22	39.76202745	-80.69306361
15,200.00	89.00	149.88	11,179.22	-3,022.94	3,509.45	14,440,141.13	1,726,722.40	39.76178948	-80.69288611
15,300.00	89.00	149.88	11,180.96	-3,109.43	3,559.63	14,440,054.65	1,726,772.57	39.76155150	-80.69270861
15,400.00	89.00	149.88	11,182.70	-3,195.91	3,609.81	14,439,968.17	1,726,822.75	39.76131353	-80.69253111
15,500.00	89.00	149.88	11,184.44	-3,282.39	3,659.99	14,439,881.69	1,726,872.93	39.76107556	-80.69235361
15,600.00	89.00	149.88	11,186.18	-3,368.87	3,710.17	14,439,795.20	1,726,923.11	39.76083758	-80.69217611
15,700.00	89.00	149.88	11,187.92	-3,455.35	3,760.35	14,439,708.72	1,726,973.29	39.76059961	-80.69199861
15,800.00	89.00	149.88	11,189.66	-3,541.83	3,810.53	14,439,622.24	1,727,023.47	39.76036163	-80.69182112
15,900.00	89.00	149.88	11,191.41	-3,628.31	3,860.71	14,439,535.76	1,727,073.65	39.76012366	-80.69164362
16,000.00	89.00	149.88	11,193.15	-3,714.79	3,910.88	14,439,449.28	1,727,123.83	39.75988568	-80.69146613
16,100.00	89.00	149.88	11,194.89	-3,801.28	3,961.06	14,439,362.80	1,727,174.01	39.75964770	-80.69128864
16,200.00	89.00	149.88	11,196.63	-3,887.76	4,011.24	14,439,276.32	1,727,224.19	39.75940973	-80.69111115
16,300.00	89.00	149.88	11,198.37	-3,974.24	4,061.42	14,439,189.83	1,727,274.36	39.75917175	-80.69093366
16,400.00	89.00	149.88	11,200.11	-4,060.72	4,111.60	14,439,103.35	1,727,324.54	39.75893378	-80.69075617
16,500.00	89.00	149.88	11,201.85	-4,147.20	4,161.78	14,439,016.87	1,727,374.72	39.75869580	-80.69057869
16,600.00	89.00	149.88	11,203.59	-4,233.68	4,211.96	14,438,930.39	1,727,424.90	39.75845782	-80.69040120
16,700.00	89.00	149.88	11,205.33	-4,320.16	4,262.14	14,438,843.91	1,727,475.08	39.75821984	-80.69022372
16,800.00	89.00	149.88	11,207.07	-4,406.65	4,312.32	14,438,757.43	1,727,525.26	39.75798187	-80.69004623
16,900.00	89.00	149.88	11,208.81	-4,493.13	4,362.50	14,438,670.95	1,727,575.44	39.75774389	-80.68986875
17,000.00	89.00	149.88	11,210.55	-4,579.61	4,412.67	14,438,584.46	1,727,625.62	39.75750591	-80.68969127
17,100.00	89.00	149.88	11,212.29	-4,666.09	4,462.85	14,438,497.98	1,727,675.80	39.75726793	-80.68951379
17,200.00	89.00	149.88	11,214.03	-4,752.57	4,513.03	14,438,411.50	1,727,725.98	39.75702995	-80.68933631
17,300.00	89.00	149.88	11,215.77	-4,839.05	4,563.21	14,438,325.02	1,727,776.16	39.75679197	-80.68915884
17,400.00	89.00	149.88	11,217.51	-4,925.53	4,613.39	14,438,238.54	1,727,826.33	39.75655399	-80.68898136
17,500.00	89.00	149.88	11,219.25	-5,012.02	4,663.57	14,438,152.06	1,727,876.51	39.75631601	-80.68880389
17,600.00	89.00	149.88	11,220.99	-5,098.50	4,713.75	14,438,065.58	1,727,926.69	39.75607803	-80.68862641
17,700.00	89.00	149.88	11,222.73	-5,184.98	4,763.93	14,437,979.10	1,727,976.87	39.75584005	-80.68844894
17,800.00	89.00	149.88	11,224.47	-5,271.46	4,814.11	14,437,892.61	1,728,027.05	39.75560207	-80.68827147
17,900.00	89.00	149.88	11,226.21	-5,357.94	4,864.29	14,437,806.13	1,728,077.23	39.75536409	-80.68809400
18,000.00	89.00	149.88	11,227.95	-5,444.42	4,914.47	14,437,719.65	1,728,127.41	39.75512611	-80.68791653
18,100.00	89.00	149.88	11,229.69	-5,530.90	4,964.64	14,437,633.17	1,728,177.59	39.75488813	-80.68773907
18,200.00	89.00	149.88	11,231.43	-5,617.39	5,014.82	14,437,546.69	1,728,227.77	39.75465015	-80.68756160
18,300.00	89.00	149.88	11,233.17	-5,703.87	5,065.00	14,437,460.21	1,728,277.95	39.75441217	-80.68738414
18,400.00	89.00	149.88	11,234.91	-5,790.35	5,115.18	14,437,373.73	1,728,328.13	39.75417418	-80.68720667
18,500.00	89.00	149.88	11,236.65	-5,876.83	5,165.36	14,437,287.24	1,728,378.30	39.75393620	-80.68702921
18,600.00	89.00	149.88	11,238.39	-5,963.31	5,215.54	14,437,200.76	1,728,428.48	39.75369822	-80.68685175
18,700.00	89.00	149.88	11,240.13	-6,049.79	5,265.72	14,437,114.28	1,728,478.66	39.75346024	-80.68667429
18,800.00	89.00	149.88	11,241.87	-6,136.27	5,315.90	14,437,027.80	1,728,528.84	39.75322225	-80.68649683
18,900.00	89.00	149.88	11,243.61	-6,222.76	5,366.08	14,436,941.32	1,728,579.02	39.75298427	-80.68631937
19,000.00	89.00	149.88	11,245.35	-6,309.24	5,416.26	14,436,854.84	1,728,629.20	39.75274629	-80.68614192
19,100.00	89.00	149.88	11,247.09	-6,395.72	5,466.44	14,436,768.36	1,728,679.38	39.75250830	-80.68596446
19,200.00	89.00	149.88	11,248.83	-6,482.20	5,516.61	14,436,681.87	1,728,729.56	39.75227032	-80.68578701
19,300.00	89.00	149.88	11,250.57	-6,568.68	5,566.79	14,436,595.39	1,728,779.74	39.75203233	-80.68560956
19,400.00	89.00	149.88	11,252.31	-6,655.16	5,616.97	14,436,508.91	1,728,829.92	39.75179435	-80.68543211
19,500.00	89.00	149.88	11,254.05	-6,741.64	5,667.15	14,436,422.43	1,728,880.09	39.75155636	-80.68525466
19,600.00	89.00	149.88	11,255.80	-6,828.13	5,717.33	14,436,335.95	1,728,930.27	39.75131838	-80.68507721
19,700.00	89.00	149.88	11,257.54	-6,914.61	5,767.51	14,436,249.47	1,728,980.45	39.75108039	-80.68489976
19,800.00	89.00	149.88	11,259.28	-7,001.09	5,817.69	14,436,162.99	1,729,030.63	39.75084240	-80.68472231
19,900.00	89.00	149.88	11,261.02	-7,087.57	5,867.87	14,436,076.50	1,729,080.81	39.75060442	-80.68454487
20,000.00	89.00	149.88	11,262.76	-7,174.05	5,918.05	14,435,990.02	1,729,130.99	39.75036643	-80.68436742



Planning Report - Geographic

Database: DB\_Jul2216dt\_v14 lt  
 Company: Tug Hill Operating LLC  
 Project: Marshall County, West Virginia.  
 Site: Knob Creek  
 Well: Knob Creek S-16HU (slot P)  
 Wellbore: Original Hole  
 Design: rev3

Local Co-ordinate Reference: Well Knob Creek S-16HU (slot P)  
 TVD Reference: GL=737 @ 737.00usft  
 MD Reference: GL=737 @ 737.00usft  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature

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WV Department of Environmental Protection

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
20,100.00	89.00	149.88	11,264.50	-7,260.53	5,968.23	14,435,903.54	1,729,181.17	39.75012844	-80.68418998
20,200.00	89.00	149.88	11,266.24	-7,347.01	6,018.40	14,435,817.06	1,729,231.35	39.74989046	-80.68401254
20,300.00	89.00	149.88	11,267.98	-7,433.50	6,068.58	14,435,730.58	1,729,281.53	39.74965247	-80.68383510
20,400.00	89.00	149.88	11,269.72	-7,519.98	6,118.76	14,435,644.10	1,729,331.71	39.74941448	-80.68365766
20,500.00	89.00	149.88	11,271.46	-7,606.46	6,168.94	14,435,557.62	1,729,381.89	39.74917649	-80.68348022
20,600.00	89.00	149.88	11,273.20	-7,692.94	6,219.12	14,435,471.13	1,729,432.06	39.74893851	-80.68330279
20,700.00	89.00	149.88	11,274.94	-7,779.42	6,269.30	14,435,384.65	1,729,482.24	39.74870052	-80.68312535
20,703.58	89.00	149.88	11,275.00	-7,782.52	6,271.10	14,435,381.56	1,729,484.04	39.74869200	-80.68311900

PBHL/TD 20703.58 MD 11275.00 TVD

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
KC Ten High S-16HU LF - hit/miss target - Shape	0.00	0.00	11,120.00	-125.39	1,850.34	14,443,038.69	1,725,063.28	39.76976241	-80.69875521
- plan misses target center by 19.18usft at 11860.59usft MD (11121.11 TVD, -134.98 N, 1833.77 E)									
- Point									
KC Ten High S-16HU LF - plan misses target center by 32.76usft at 11830.49usft MD (11120.58 TVD, -108.94 N, 1818.66 E)	0.00	0.00	11,120.00	-125.39	1,790.34	14,443,038.69	1,725,003.28	39.76976297	-80.69896873
- Point									
KC Ten High S-16HU BF - plan hits target center - Point	0.00	0.00	11,275.00	-7,782.52	6,271.10	14,435,381.56	1,729,484.04	39.74869200	-80.68311900

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
500.00	500.00	0.00	0.00	Begin vertical hold
3,100.00	3,100.00	0.00	0.00	KOP Begin 1°/100' build
3,450.00	3,449.78	3.62	10.05	Begin 3.50° tangent
4,150.00	4,148.48	18.10	50.26	Begin 1°/100' drop
7,001.74	7,000.00	21.73	60.31	Begin 3°/100' build
8,135.18	8,104.10	96.72	268.53	Begin 22.67° tangent
10,579.44	10,359.53	415.96	1,154.82	Begin 6°/100' build/turn
11,279.67	10,933.61	284.46	1,503.94	Begin 8°/100' build/turn
11,818.52	11,120.38	-98.59	1,812.66	Begin 89.00° lateral
20,703.58	11,275.00	-7,782.52	6,271.10	PBHL/TD 20703.58 MD 11275.00 TVD

WW-9  
(4/16)

4705102290

API Number 47 - 051 -  
Operator's Well No. Knob Creek S-16-HU

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) 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 water for frac and flow back water

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

Proposed Disposal Method For Treated Pit Wastes:

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

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

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

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

Additives to be used in drilling medium? Barite for weight

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

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

-Landfill or offsite name/permit number? Wetzel County Sanitary Landfill (SWF-1021 / WV0109185) and Westmoreland Sanitary Landfill, LLC (SAN1405 / PA DEP EC#1386426)

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

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

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

Company Official Signature Jim Pancake  
Company Official (Typed Name) Jim Pancake  
Company Official Title VP Geosciences

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Subscribed and sworn before me this 26 day of SEPTEMBER, 2019

Maureen A Stead

Notary Public  
Commonwealth of Pennsylvania - Notary Seal  
MAUREEN A STEAD - Notary Public  
Washington County  
My Commission Expires Jan 28, 2023  
Commission Number 1259926

My commission expires 1/28/23



Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 12.93 Prevegetation pH 6.0

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch 2.5 Tons/acre

Seed Mixtures

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

Attach:

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: *Jim Wilkes*

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

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Environmental Protection

Title: WVDEP Oil and Gas Inspector

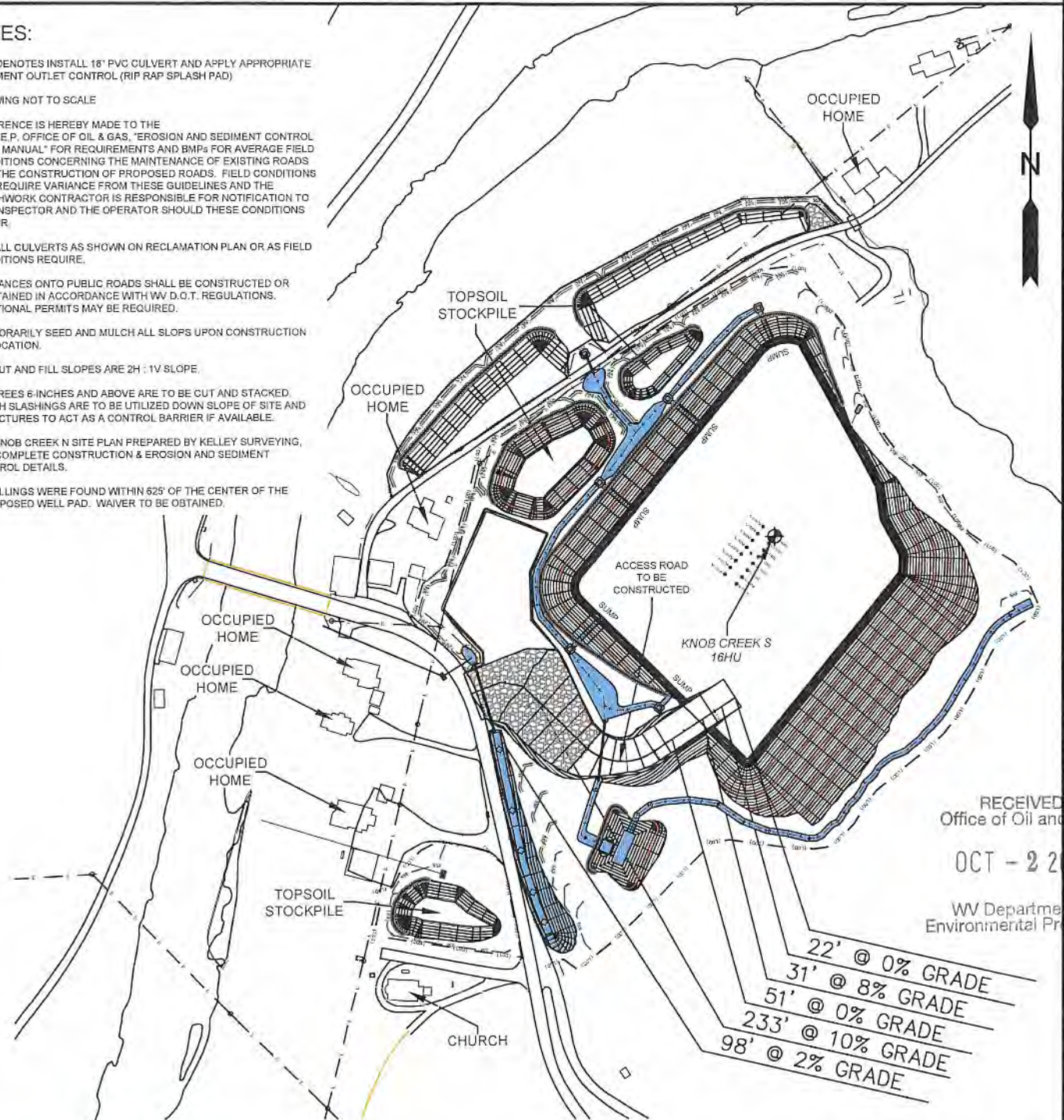
Date: 9/27/19

Field Reviewed? (  ) Yes (  ) No

# PROPOSED KNOB CREEK S - 16HU

**NOTES:**

1. - DENOTES INSTALL 18" PVC CULVERT AND APPLY APPROPRIATE SEDIMENT OUTLET CONTROL (RIP RAP SPLASH PAD)
2. DRAWING NOT TO SCALE
3. REFERENCE IS HEREBY MADE TO THE WV D.E.P. OFFICE OF OIL & GAS, "EROSION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BMPs FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES AND THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION TO THE INSPECTOR AND THE OPERATOR SHOULD THESE CONDITIONS OCCUR.
4. INSTALL CULVERTS AS SHOWN ON RECLAMATION PLAN OR AS FIELD CONDITIONS REQUIRE.
5. ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED.
6. TEMPORARILY SEED AND MULCH ALL SLOPS UPON CONSTRUCTION OF LOCATION.
7. ALL CUT AND FILL SLOPES ARE 2H : 1V SLOPE.
8. ALL TREES 6 INCHES AND ABOVE ARE TO BE CUT AND STACKED. BRUSH SLASHINGS ARE TO BE UTILIZED DOWN SLOPE OF SITE AND STRUCTURES TO ACT AS A CONTROL BARRIER IF AVAILABLE.
9. SEE KNOB CREEK N SITE PLAN PREPARED BY KELLEY SURVEYING, FOR COMPLETE CONSTRUCTION & EROSION AND SEDIMENT CONTROL DETAILS.
10. DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF THE PROPOSED WELL PAD. WAIVER TO BE OBTAINED.



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22' @ 0% GRADE  
31' @ 8% GRADE  
51' @ 0% GRADE  
233' @ 10% GRADE  
98' @ 2% GRADE

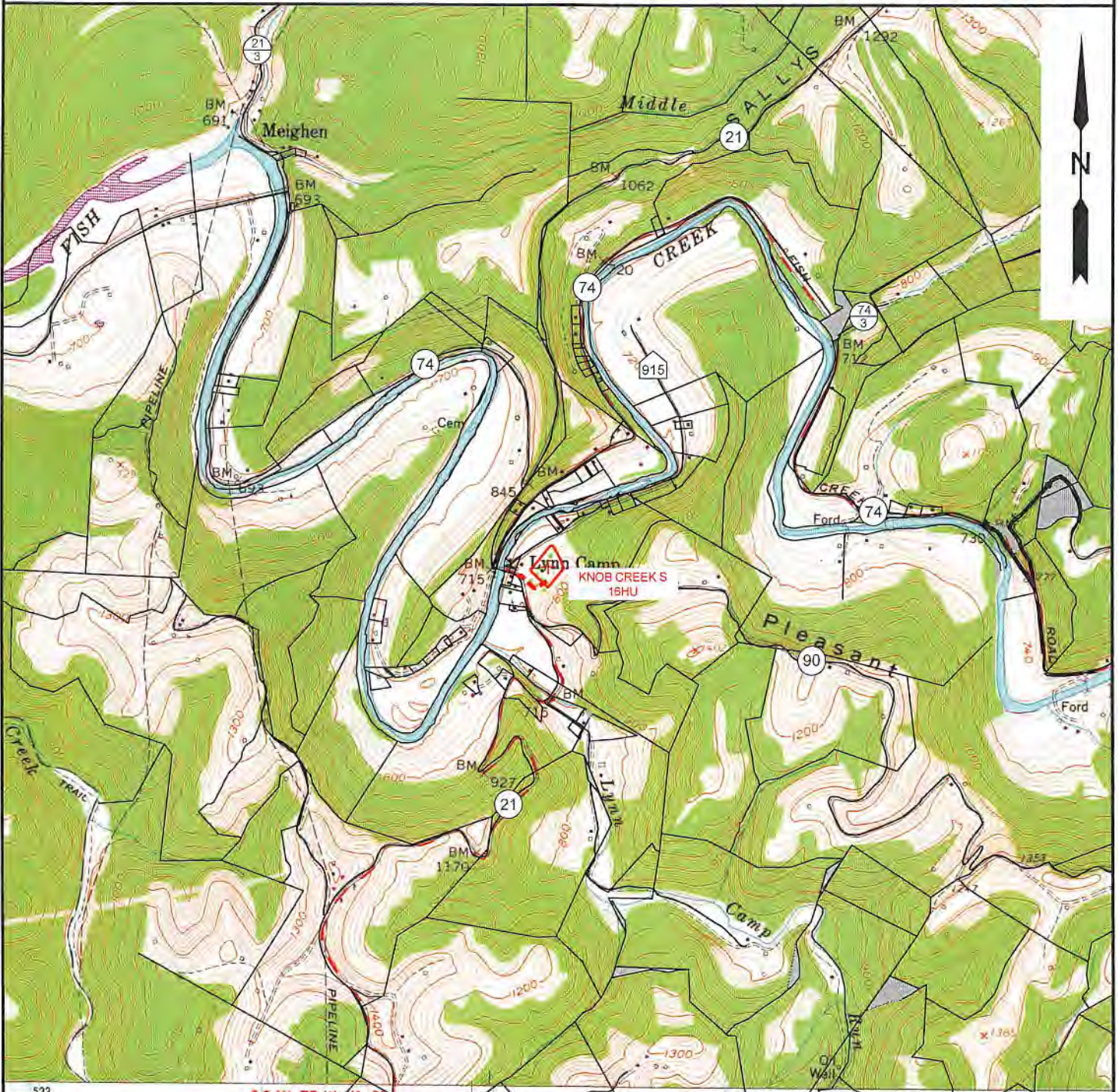
— \* \* \* \* — SILT FENCE AND/OR SEDIMENT AND EROSION CONTROL MEASURE.

**SLS**  
Land & Energy Development  
Solutions from the ground up.  
P.O. Box 150 • 12 Vanhorn Drive • Glenville, WV 26351 • (304) 462-5634  
www.sls.wv.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR: TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317	
COUNTY	DISTRICT		
MARSHALL	MEADE		
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8789	09/27/2019	NONE

**TUG HILL**  
OPERATING

# PROPOSED KNOB CREEK S - 16HU



NOTE: CLOSEST WATER PURVEYOR  
GRANDVIEW - DOOLIN PUBLIC SERVICE DISTRICT  
PROCTOR, WV

LAT: 39.7137712  
LON: -80.8258327  
LOCATED: S 59°36'12" W AT 39,574.55' FROM THE CENTER OF KNOB CREEK N WELL PAD LOCATION.

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www.slsww.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.	8789	09/27/2019	1" = 2000'

**TUG HILL**  
OPERATING

4705102290



**Well Site Safety Plan**  
Tug Hill Operating, LLC

*JK*  
*9/27/19*

Well Name: Knob Creek N-16HU

Pad Location: Knob Creek  
Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

NORTHING - 4,402,285.21

EASTING - 525,236.36

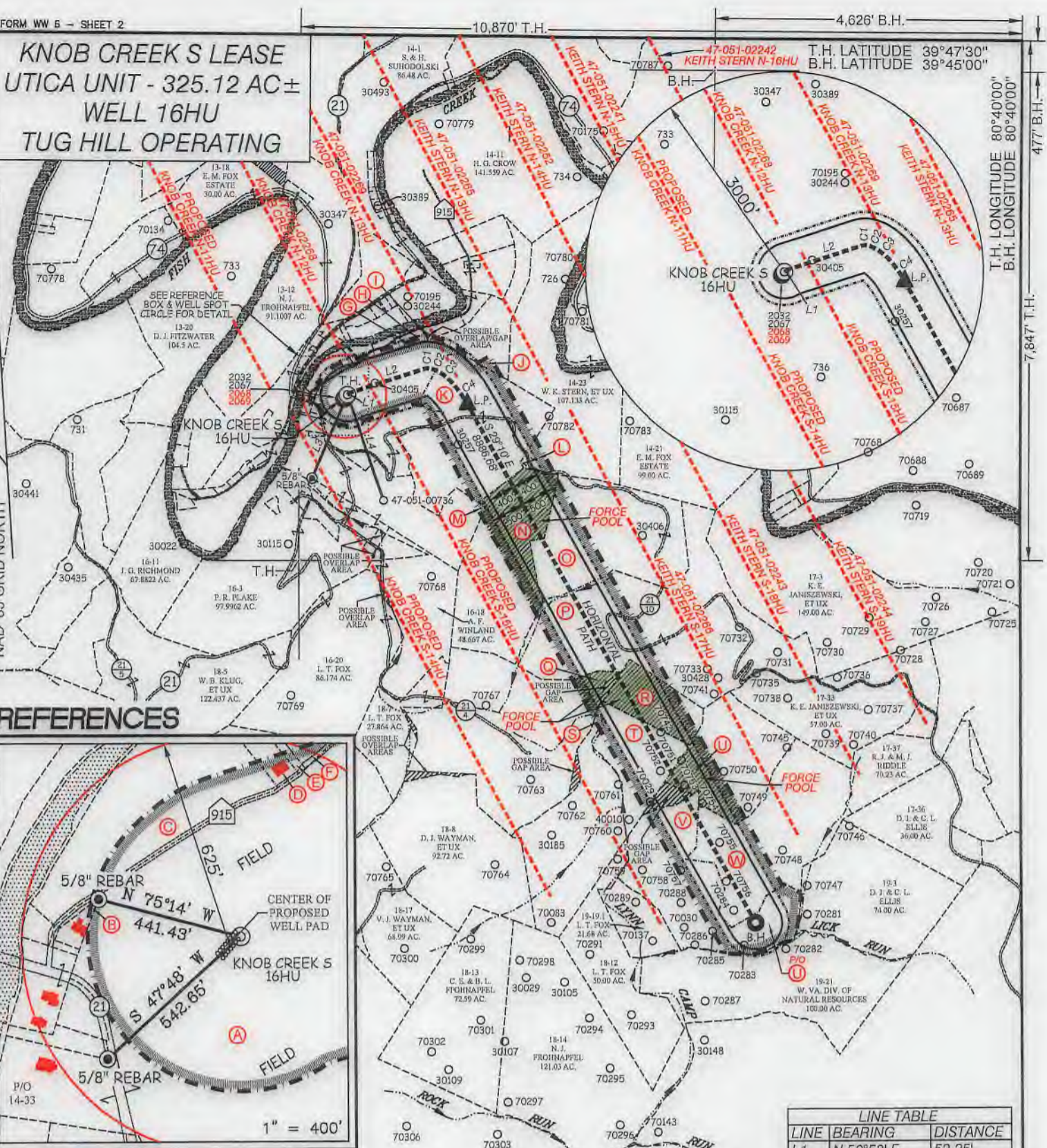
September 2019

RECEIVED  
Office of Oil and Gas

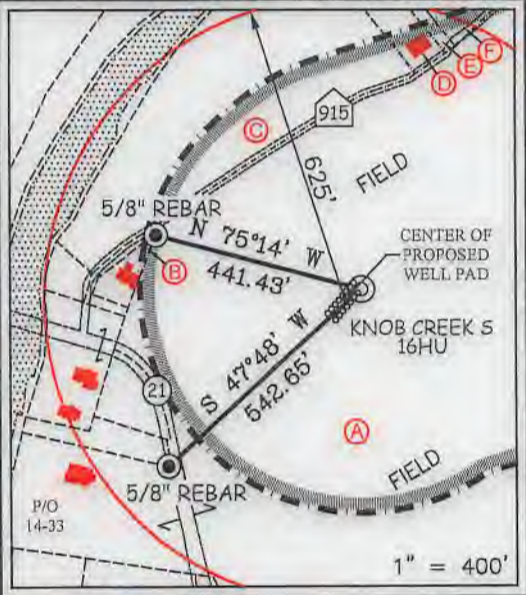
OCT - 2 2019

WV Department of  
Environmental Protection

**Knob Creek S Lease  
Utica Unit - 325.12 AC ±  
Well 16HU  
Tug Hill Operating**



**REFERENCES**



LINE TABLE		
LINE	BEARING	DISTANCE
L1	N 50°58' E	52.35'
L2	N 72°02' E	1183.45'
L3	S 22°57' W	1355.45'
L4	S 19°14' E	1673.35'

CHORD BEARING				
CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	84.77'	192.50'	N 87°26' E	84.09'
C2	105.13'	371.28'	S 71°22' E	104.78'
C3	244.70'	848.35'	S 53°59' E	243.85'
C4	443.09'	1552.92'	S 36°47' E	441.59'

P.O. Box 150 • 12 Vanhorn Drive • Glenville, WV 26031 • (304) 492-5834  
www.slsww.com

P.S. 849 *C. Victor Moyers*

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)		
NAD'83 S.P.C.(FT)	N. 464,891.03	E. 1,629,708.20
NAD'83 GEO.	LAT-(N) 39.770124	LONG-(W) 80.705339
NAD'83 UTM (M)	N. 4,402,285.21	E. 525,236.36
LANDING POINT		
NAD'83 S.P.C.(FT)	N. 464,762.1	E. 1,631,519.6
NAD'83 GEO.	LAT-(N) 39.769836	LONG-(W) 80.698889
NAD'83 UTM (M)	N. 4,402,255.2	E. 525,798.9
BOTTOM HOLE		
NAD'83 S.P.C.(FT)	N. 457,002.2	E. 1,635,850.5
NAD'83 GEO.	LAT-(N) 39.748692	LONG-(W) 80.683119
NAD'83 UTM (M)	N. 4,399,913.1	E. 527,147.8



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

LEGEND	
UNIT BOUNDARY	
LEASED TRACTS INSIDE	
UNIT BOUNDARY	
SURFACE LINE	
PROPOSED UTICA	
WELL LATERAL	
400' OFFSET LINE	
500' OFFSET LINE	
TIE LINE	
CREEK	
ROAD	
FORGE POOL TRACT	
COUNTY ROUTE	
PROPOSED WELL	
EXISTING WELL	
PERMITTED WELL	
SURFACE OWNER (SEE TABLE)	
LEASE # (SEE ADDITIONAL SHEETS)	

SCALE 1" = 2000' FILE NO. 8789P16HU.dwg  
KNOB CREEK S-16HU REV4  
DATE OCTOBER 1, 2019  
REVISED  
OPERATORS WELL NO. KNOB CREEK S-16HU  
API WELL NO. 47 051 02290  
NO. STATE COUNTY PERMIT

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

WELL OPERATOR TUG HILL OPERATING, LLC ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 FORT WORTH, TX 76107  
DESIGNATED AGENT DIANNA STAMPER CT CORPORATION SYSTEM ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313

T.H. LONGITUDE 80°40'00" B.H. LONGITUDE 80°40'00" 477' B.H. 7847' T.H.

**NOB CREEK S LEASE  
UTICA UNIT - 325.12 AC±  
WELL 16HU  
TUG HILL OPERATING**

B.H.

T.H. LATITUDE 39°47'30"  
B.H. LATITUDE 39°45'00"

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)		
NAD'83 S.P.C.(FT)	N. 464,891.03	E. 1,629,708.20
NAD'83 GEO.	LAT-(N) 39.770124	LONG-(W) 80.705339
NAD'83 UTM (M)	N. 4,402,285.21	E. 525,236.36
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BOTTOM HOLE		
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NAD'83 GEO.	LAT-(N) 39.748692	LONG-(W) 80.683119
NAD'83 UTM (M)	N. 4,399,913.1	E. 527,147.8

T.H. LONGITUDE 80°40'00"  
B.H. LONGITUDE 80°40'00"

7,847' T.H.

TAG	SURFACE OWNER	PARCEL	ACRES
A	DAVID LEE FRANKLIN	9-14-33	65.824
B	MARGARET FOX - LIFE	9-14-39	8,675 SQ. FT
C	DAVID LEE FRANKLIN	9-14-44	2.913
D	TWILA C. COFFIELD	9-14-32	0.583
E	TWILA C. COFFIELD	9-14-32.1	0.184
F	RICHARD L. HARVETH, ET UX	9-14-54	1.649
G	ANDREW FASOULETOS, ET UX	9-14-29.1	1.171
H	ANDREW FASOULETOS, ET UX	9-14-29	0.209
I	CHARLES R. SCHELLHASE, ET UX	9-14-28	3.029
J	PATRICK J. SCHELLHASE TRUST	9-14-11.3	23.424
K	JOHN F. CUNNINGHAM, ET UX	9-14-22	75.22
L	WILLIAM KEITH STERN, ET UX	9-14-23	107.133
M	RONALD R. YOUNG, ET UX - LIFE	9-16-15	52.02
N	ALICE FAYE WINLAND	9-16-19	75.00
O	DAVID P. WARSINSKY & ELLEN K. NYLES	9-17-1	70.00
P	I. C. YOUNG ESTATE	9-17-2	140.00
Q	ROBERT J. COMBS, ET AL	9-18-9	110.75
R	WSD PROPERTIES, LLC	9-17-41	25.57
S	BETTY J. GOULDSBERRY ESTATE, ET AL	9-18-11	60.00
T	BETTY J. GOULDSBERRY ESTATE, ET AL	9-18-10	20.00
U	I. C. YOUNG ESTATE	9-17-40	51.44
V	I. C. YOUNG ESTATE	9-19-1	80.00
W	I. C. YOUNG ESTATE	9-19-2	80.00

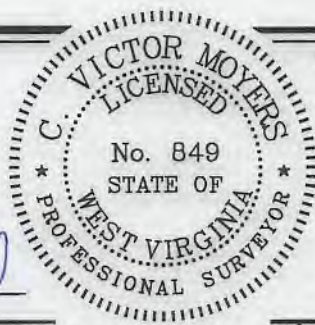
T.H.

**NOTES ON SURVEY**

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- SEE REFERENCES FOR DWELLINGS LOCATED WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'.
- BASED ON WV DOT COUNTY ROUTE 74 IS A 40' STRIP OF LAND ACQUIRED IN NUMEROUS DEEDS.
- PROPOSED LATERAL OR TOP HOLE OF KNOB CREEK S-16HU IS WITHIN 3000' OF THE TOP HOLES OR LATERALS OF EXISTING WELLS PROPOSED KNOB CREEK N-11HU, KNOB CREEK N-12HU (47-051-02268), KNOB CREEK N-13HU (47-051-02269), PROPOSED KNOB CREEK S-14HU, PROPOSED KNOB CREEK S-15HU, KEITH STERN N-13HU (47-051-02265), KEITH STERN N-14HU (47-051-02252), KEITH STERN S-17HU (47-051-02266), KEITH STERN S-18HU (47-051-02243).



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.



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.  
DATE OCTOBER 1, 2019  
REVISED \_\_\_\_\_  
OPERATORS WELL NO. KNOB CREEK S-16HU  
API Deep  
WELL NO. 47-051-02290HU  
STATE            COUNTY            PERMIT           

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8789P16HU.dwg  
KNOB CREEK S-16HU REV4  
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

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



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

LOCATION: GROUND = 729.30' ELEVATION PROPOSED = 734.67' WATERSHED FISH CREEK (HUC 10)  
DISTRICT MEADE COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'

SURFACE OWNER DAVID LEE FRANKLIN ACREAGE 65.824±  
ROYALTY OWNER DAVID LEE FRANKLIN, ET AL - SEE ADDITIONAL SHEETS ACREAGE 65.824±  
PROPOSED WORK: LEASE NO. SEE ADDITIONAL SHEETS  
DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION  PLUG AND ABANDON  CLEAN OUT AND REPLUG  OTHER   
PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_ TARGET FORMATION POINT PLEASANT  
ESTIMATED DEPTH TVD: 11,351' TMD: 20,709'

COUNTY NAME  
PERMIT

WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER  
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS CT CORPORATION SYSTEM  
FORT WORTH, TX 76107 ADDRESS 5400 D BIG TYLER ROAD  
CHARLESTON, WV 25313

WW-6A1  
(5/13)

Operator's Well No. Knob Creek S-16HU

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

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

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

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

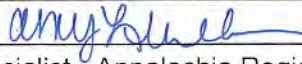
\*See attached pages

**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. Miller   
 Its: Permitting Specialist - Appalachia Region









Lease ID	Parcel	Trap	Grantor, Lease, Etc.	Grantee, Lease, Etc.	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*17233	9-17-2	P	TIMOTHY MCDOWELL	CHESSAPEAKE APPALACHIA LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17234	9-17-2	P	GAREN P. MCDOWELL	CHESSAPEAKE APPALACHIA LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17235	9-17-2	P	WINONA RIDDLE	CHESSAPEAKE APPALACHIA LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17236	9-17-2	P	TERON L MILLER	CHESSAPEAKE APPALACHIA LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17237	9-17-2	P	JENNIFER WHEATON	CHESSAPEAKE APPALACHIA LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17238	9-17-2	P	USA ANNI MCDOWELL	CHESSAPEAKE APPALACHIA LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17239	9-17-2	P	AMITA RAE MILLER	CHESSAPEAKE APPALACHIA LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17240	9-17-2	P	BONNIE GRISSELL	CHESSAPEAKE APPALACHIA LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17241	9-17-2	P	BARBARA K BURLEY	CHESSAPEAKE APPALACHIA LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17242	9-17-2	P	GERALD MILLER	CHESSAPEAKE APPALACHIA LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17243	9-17-2	P	DAVID MCDOWELL	CHESSAPEAKE APPALACHIA LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17244	9-17-2	P	KAREN CECIL	CHESSAPEAKE APPALACHIA LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17245	9-17-2	P	CHAD E LONGFELLOW	CHESSAPEAKE APPALACHIA LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17246	9-17-2	P	JAMES PERK COCHRAN	TH EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17247	9-17-2	P	JACQUELYNNE FERRARI AND JOHN C FERRARI	TH EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17248	9-17-2	P	CAROL GONGOLA	TH EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17249	9-17-2	P	MICHAEL E SWIFT AND FLODY A SWIFT	TH EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17250	9-17-2	P	RAE ELLEN FLOOD AND KENNETH FLOOD	TH EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17251	9-17-2	P	HELL CALL AND MELINDA CALL	TH EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17252	9-17-2	P	SANDRA YAMAGAWA	TH EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17253	9-17-2	P	MARIE K WILLIAMS	TH EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17254	9-17-2	P	STEPHEN S MASON AND CAROLE R MASON	TH EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17255	9-17-2	P	GARREN LEE WARD AND MARTIN TERRY	TH EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17256	9-17-2	P	MARY THERESA SOLEAU AND THOMAS SOLEAU	TH EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17257	9-17-2	P	LAWRENCE J VAUGHN AND GAIL VAUGHN	TH EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17258	9-17-2	P	JENNIFER WHEATON	TH EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17259	9-17-2	P	GEMMA RUDY AND TIMOTHY RUDY	TH EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17260	9-17-2	P	DAVID MCDOWELL AND JAMES CECIL MCDOWELL	TH EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17261	9-17-2	P	LESA ANNI MCDOWELL AND ROBERT JOSEPH HILL	TH EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17262	9-17-2	P	DAVID MCDOWELL AND CRISTAL MCDOWELL	TH EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17263	9-17-2	P	THOMAS S BAKER AND VICKIE L BAKER	TH EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17264	9-17-2	P	CHERYL HILL	TH EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17265	9-17-2	P	CHARLIE M AND DON L STANLEY	TH EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17266	9-17-2	P	CHARLIE M AND KEVIN L ENGLE	TH EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17267	9-17-2	P	PATRICIA L VIANNE BONAR	TH EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17268	9-17-2	P	LORE SHAMAHAN AND PATRICK SHAMAHAN	TH EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25
10*17269	9-17-2	P	LOIS ELAINE WICHAM	TH EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 4/7/25





Lease ID	Parcel ID	Tract	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Realty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment			
10*15938	9-18-10	T	MARK W YORK	CHESSAPEAKE APPALACHIA LLC	1/8*	695 357	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC; 36/455	
10*15940	9-18-10	T	HARVEY H HAUFFSCHULT	CHESSAPEAKE APPALACHIA LLC	1/8*	695 36F	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC; 36/455
10*15941	9-18-10	T	REGINEA MELUCA BLODSFORTH	CHESSAPEAKE APPALACHIA LLC	1/8*	698 37D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC; 36/455
10*15942	9-18-10	T	CLARA YORK	CHESSAPEAKE APPALACHIA LLC	1/8*	698 197	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC; 36/455
10*15943	9-18-10	T	DANA MELUCA THOMPSON	CHESSAPEAKE APPALACHIA LLC	1/8*	700 90	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC; 36/455
10*15944	9-18-10	T	DMETRYA MELUCA AND ROBIN MELUCA	CHESSAPEAKE APPALACHIA LLC	1/8*	700 109	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC; 36/455
10*15945	9-18-10	T	HELENE MCMASTERS AND KEITH MCMASTERS	CHESSAPEAKE APPALACHIA LLC	1/8*	707 148	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC; 36/455
10*15946	9-18-10	T	JOSEPH W EMERY	CHESSAPEAKE APPALACHIA LLC	1/8*	707 150	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC; 36/455
10*15947	9-18-10	T	GERALD ARTHUR EBERT	CHESSAPEAKE APPALACHIA LLC	1/8*	703 588	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC; 36/455
10*15948	9-18-10	T	GERALD ALLEN EPFAT	CHESSAPEAKE APPALACHIA LLC	1/8*	707 155	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC; 36/455
10*15949	9-18-10	T	CLARENCE W EMERY	CHESSAPEAKE APPALACHIA LLC	1/8*	703 596	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC; 36/455
10*15950	9-18-10	T	MARVIN GIBSON	CHESSAPEAKE APPALACHIA LLC	1/8*	707 154	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC; 36/455
10*15951	9-18-10	T	GEORGE F FERGUSON	CHESSAPEAKE APPALACHIA LLC	1/8*	707 156	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC; 36/455
10*15952	9-18-10	T	DOM A HINNEGAN	CHESSAPEAKE APPALACHIA LLC	1/8*	707 315	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC; 36/455
10*15953	9-18-10	T	GARNETT E EMERY	CHESSAPEAKE APPALACHIA LLC	1/8*	708 77	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SWN Production Company LLC to TH Exploration LLC; 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC; 36/455

Lease ID	Parcel	Term	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*17174	9-18-00	T	JOSHUA EARL YONHO, JR.	CHESSAPEAKE APPALACHIA LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17175	9-18-00	T	HANE ELIEN MARCIUM	CHESSAPEAKE APPALACHIA LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17176	9-18-00	T	NOEL S YONHO	CHESSAPEAKE APPALACHIA LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17178	9-18-00	T	THOMAS S YONHO	CHESSAPEAKE APPALACHIA LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17179	9-18-00	T	CHARLES VINCENT YONHO	CHESSAPEAKE APPALACHIA LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17280	9-18-00	T	CHRISTA D DAVIES	CHESSAPEAKE APPALACHIA LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17281	9-18-00	T	WALTER COURTNEY WRIGHT AND LARNA COURTNEY WRIGHT	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17282	9-18-00	T	DEAN M COURTNEY WRIGHT	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17283	9-18-00	T	FRED C COURTNEY WRIGHT	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17284	9-18-00	T	JACOB A COURTNEY WRIGHT	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17285	9-18-00	T	ADAM D COURTNEY WRIGHT	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17286	9-18-00	T	HAZEL B BOFFLE AND RALPH KOEHLER	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17287	9-18-00	T	MARLE F LUND AND DAVID LUND	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17288	9-18-00	T	CHANGUO HIL MCKINLEY AND MARK E MCKINLEY	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17289	9-18-00	T	WILLIAM W WELCH AND ARBON WELCH	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17290	9-18-00	T	ROBERT L REGGIE AND JAMES REGGIE	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17291	9-18-00	T	MARIE D REGGIE AND ALICIA REGGIE	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17292	9-18-00	T	KATHY S SULTAN AND MICHAEL SULTAN	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17293	9-18-00	T	LARRY G TAYLOR AND TOWNIE E TAYLOR	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17294	9-18-00	T	HEBE COLE BECK	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17364	9-17-40	U	AUBERT HARTLEY AND CHRISTOPHER HARTLEY	J S ROGERS	South Penn Oil Company, 2201/533 657182	Unrecorded transfer - Company to Dallas Petroleum Services, 248811 Workings Agreement between South Penn Oil Company & Hope Natural Gas Company, 2201/533 657182	John H. Robinson and Charles F. Eagon et al to John H. Robinson and Charles F. Eagon; George F. Eagon; Ellen Barrie, 31895	Elise Robinson & Andrew L. Henry, Harry H. Crown Jr. & Charles L. Reed & Kathryn C. Reed, 3921895	Katherine A. Henry & Harry H. Crown Jr. & Charles L. Reed & Kathryn C. Reed, 3921895	Carl D. Perkins & Dorothy Louise Perkins to Perkins Oil and Gas Co., 4842281	Hope Natural Gas Company to Consolidated Gas Supply Corp., 3747234	CNG Development Company merged into CNG Production Company effective 4/17/2000	Chesapeake Appalachia LLC to SWN Production LLC, 331110	Chesapeake Appalachia LLC to SWN Production LLC, 331110	Chesapeake Appalachia LLC to SWN Production LLC, 331110	Chesapeake Appalachia LLC to SWN Production LLC, 331110	Chesapeake Appalachia LLC to SWN Production LLC, 331110	Chesapeake Appalachia LLC to SWN Production LLC, 331110
10*17365	9-18-01	V	SHIRLEY KOOPLE	CHESSAPEAKE APPALACHIA LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17366	9-18-01	V	BONNIE MINERALS LLC	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17367	9-18-01	V	LOIS LANE WICKHAM	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17368	9-18-01	V	MARLA MANTHER	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17369	9-18-01	V	CHAD A YOUNG	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17370	9-18-01	V	NEIL ROBERT YOUNG	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17371	9-18-01	V	CLARA SUE YOUNG	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17372	9-18-01	V	CAROLYN J YOUNG	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17373	9-18-01	V	FRANK WOODS	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17374	9-18-01	V	RONALD A YOUNG AND GERALDINE YOUNG	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17375	9-18-01	V	MELISSA D FLETCHER & SCOTT A FLETCHER	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17376	9-18-01	V	LELAND SHERBURNE YOUNG	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17377	9-18-01	V	LELAND SHERBURNE YOUNG	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17378	9-18-01	V	SUSAN C YOUNG	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17379	9-18-01	V	CAROL A SMARAS	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17380	9-18-01	V	AICEL F WINLAND	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17381	9-18-01	V	MICHAEL S OTT AND SYBIL OTT	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17382	9-18-01	V	LYNETTE DUNN YOUNG	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17383	9-18-01	V	GRANT D RICHARDS AND KERRI S RICHARDS	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17384	9-18-01	V	RONALD A YOUNG	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17385	9-18-01	V	LARRY F BONAR AND DEBRA BONAR	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17386	9-18-01	V	AUBURN BOYD YOUNG, JENNIFER A YOUNG, FLETCHER	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17387	9-18-01	V	NEIL ROBERT YOUNG	THE EXPLORATION LLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

"FORCE POOL"

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Lease ID	Block	Tract	Grantor Lease, Bk.	Grantee Lease, Bk.	Royalty	Lease Book Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	
10P78674	9-19-2	W	MICHAEL WALKER	TH EXPLORATION LLC	1/8*	609	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10P78675	9-19-2	W	MARK A WALKER	TH EXPLORATION LLC	1/8*	611	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10P78676	9-19-2	W	CHAD A YOUNG	TH EXPLORATION LLC	1/8*	632	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10P78677	9-19-2	W	LOG ELAINE WICKHAM	TH EXPLORATION LLC	1/8*	634	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10P78678	9-19-2	W	CAROL SUE YOUNG	TH EXPLORATION LLC	1/8*	635	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10P78679	9-19-2	W	ERIE J YOUNG	TH EXPLORATION LLC	1/8*	375	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10P78680	9-19-2	W	RONALD W YOUNG	TH EXPLORATION LLC	1/8*	373	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10P78681	9-19-2	W	RONALD P YOUNG AND GERALDINE YOUNG	TH EXPLORATION LLC	1/8*	368	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10P78682	9-19-2	W	MELISSA D FLETCHER & SCOTT A FLETCHER	TH EXPLORATION LLC	1/8*	938	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10P78683	9-19-2	W	ALICIA B YOUNG	TH EXPLORATION LLC	1/8*	689	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10P78684	9-19-2	W	SIOBANK S YOUNG	TH EXPLORATION LLC	1/8*	203	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10P78685	9-19-2	W	LARRY R BONAR AND DEBRA L BONAR	TH EXPLORATION LLC	1/8*	957	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10P78686	9-19-2	W	CARLA J SIMMS	TH EXPLORATION LLC	1/8*	957	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10P78687	9-19-2	W	AJCEC WINDLAND	TH EXPLORATION LLC	1/8*	395	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10P78688	9-19-2	W	WILLIAM S GIBB LOTT	TH EXPLORATION LLC	1/8*	957	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10P78689	9-19-2	W	KEVIN L BARNY YOUNG	TH EXPLORATION LLC	1/8*	415	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10P78690	9-19-2	W	HOLLY A YOUNG	TH EXPLORATION LLC	1/8*	957	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10P78691	9-19-2	W	GRANT D RICHARDS AND KERIS RICHARDS	TH EXPLORATION LLC	1/8*	456	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10P78692	9-19-2	W	SHIRLEY KONIETZ AND KEITH KONIETZ BENJINE	TH EXPLORATION LLC	1/8*	957	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10P78693	9-19-2	W	PERRY YODER AND KEVIN LYNN YODER	TH EXPLORATION LLC	1/8*	356	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10P78694	9-19-2	W	ADREN BOVDY YOUNG JIMMIE A YOUNG, PETITIONER	TH EXPLORATION LLC	1/8*	966	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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





**PARTIAL ASSIGNMENT OF OIL AND GAS LEASES**

This **PARTIAL ASSIGNMENT OF OIL AND GAS LEASES** (hereinafter, "**Assignment**"), made the 31 day of May, 2018 (hereinafter, "**Effective Date**"), is by and between **CNX GAS COMPANY LLC**, a Virginia limited liability company, whose address is 1000 CONSOL Energy Drive, Suite 400, Canonsburg, Pennsylvania 15317 (hereinafter "**Assignor**") and **TH EXPLORATION, LLC**, a Texas limited liability company, whose address is 1320 S. University Drive, Suite 500, Fort Worth, TX 76107 (hereinafter "**Assignee**"). All references in this Assignment to "**Party**" or "**Parties**" shall be deemed at all times to mean Assignor or Assignee or both. Capitalized terms used but not defined herein shall have the meaning given such terms in the Acreage Trade Agreement, by and between Assignor and Assignee dated April 9, 2018 (the "**ATA**").

**WHEREAS**, Assignor desires to assign all of Assignor's right, title and interest in and to those Oil and Gas Lease(s) as same may have been previously or will in the future be modified, extended, or amended (hereinafter, "**Lease**" or "**Leases**"), covering certain tracts of land (hereinafter, "**Lands**") located in Marshall County, West Virginia; such Leases and Lands covered thereby being more particularly described on Exhibit "A" attached hereto and made a part hereof insofar and only insofar as such Leases cover the Target Formations (as defined below).

**NOW, THEREFORE**, for and in consideration of TEN AND NO/100 DOLLARS (\$10.00) and other valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Assignor does hereby **GRANT, BARGAIN, ASSIGN, TRANSFER, AND CONVEY** unto Assignee the following "**Assigned Rights**":

- (a) All of Assignor's right, title, and interest in and to those Leases set forth on Exhibit A attached hereto **INSOFAR AND ONLY INSOFAR** as to the particular Target Formation(s) (defined below) described and delineated on Exhibit A for each Lease:
  - i. "**Target Formation(s)**" means, with respect to each Lease, two hundred feet (200') above the top and two hundred feet (200') below the base of the Marcellus Formation or the Utica Formation or both, as specified for each Lease on Exhibit A. For the purposes of this Assignment, the Marcellus Formation shall be defined as the formation commonly known as the Marcellus Shale Formation, with the top of the Marcellus Shale Formation defined as the correlative stratigraphic equivalent to that point found at 6517 feet (6517') measured depth on the Halliburton Simms U-5H Composite DLL\_DEN\_NEU Log dated June 14, 2014 (the "**Log**")

## ASSIGNMENT AND CONVEYANCE

This Assignment and Conveyance (this "*Assignment*") is from STATOIL USA ONSHORE PROPERTIES INC., a Delaware corporation ("*Assignor*"), to TH Exploration, LLC, a Texas limited liability company ("*Assignee*"), and is executed on August 22, 2016 (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 19, 2016 (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 the Target Formations and INSOFAR AND ONLY INSOFAR as they cover those lands described on Exhibit A (the "*Leasehold Rights*") and (ii) any surface use agreements that relate to such Leasehold Rights (collectively with the Leasehold Rights, the "*Conveyed Assets*"). Assignor does hereby reserve unto itself the right and subsurface easement to drill through the Leasehold Rights to access the those depths and formations in the Leases other than the Target Formations and (y) to shoot seismic, sonic, or other energy or waves through the Leasehold Rights and to receive, record and evaluate such energy or waves, including those reflected from or in any way pertaining to the reserved depths, and to utilize any and all other exploration technologies that image the subsurface of the leasehold including the reserved depths and to receive, record and evaluate all images resulting therefrom.

**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 1.4 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.**

(a) EXCEPT AS EXPRESSLY REPRESENTED OTHERWISE IN SECTION VI OF THE ACREAGE TRADE AGREEMENT OR THIS ASSIGNMENT, ASSIGNOR MAKES NO, AND HEREBY EXPRESSLY DISCLAIMS, ANY REPRESENTATION OR WARRANTY, EXPRESS, IMPLIED OR STATUTORY, INCLUDING AS TO (I) TITLE TO THE LEASEHOLD RIGHTS, (II) THE CONTENTS, CHARACTER OR NATURE OF ANY

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Environmental Protection

ASHLEY FAUTNER  
AMERICAN PETROLEUM PARTNERS OPERATING LLC.  
4600 J BARRY COURT STE 310  
CANNONSBURG PA 15317-5854

4705102290

BOOK 0042 PAGE 0109

STATE OF WEST VIRGINIA §  
§  
COUNTY OF MARSHALL §

ASSIGNMENT AND CONVEYANCE

**THIS ASSIGNMENT AND CONVEYANCE** (the "Assignment") is made and entered into this 18th day of May, 2018, and made effective December 12, 2017 (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 December 12, 2017 (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", 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

Marshall County  
Jan Pest, Clerk  
Instrument 1440860  
05/25/2018 @ 02:36:09 PM  
ASSIGNMENTS  
Book 42 @ Page 109  
Pages Recorded 9  
Recording Cost \$ 15.00

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Environmental Protection

WV-AGIR-0009

**ASSIGNMENT AND CONVEYANCE**

This Assignment and Conveyance (this "*Assignment*") is from SWN PRODUCTION COMPANY, LLC, a Texas limited liability company ("*Assignor*"), to TH Exploration, LLC, a Texas limited liability company ("*Assignee*"), and is executed on December 18, 2017 (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 August 24, 2017 (the "*Acreage Trade Agreement*").

**ARTICLE 1  
ASSIGNMENT OF ASSETS**

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

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

**Section 1.2 Assignment Subject to Acreage Trade Agreement.** This Assignment is made in accordance with and is subject to the terms, covenants and conditions contained in that certain Acreage Trade Agreement. In the event of a conflict between the provisions of the Acreage Trade Agreement and this Assignment, the provisions of the Acreage Trade Agreement shall control. The execution and delivery of this Assignment by Assignor, and the execution and acceptance of this Assignment by Assignee, shall not operate to release or impair any surviving rights or obligations of either Party with respect to the other under the Acreage Trade Agreement.

**ARTICLE 2  
SPECIAL WARRANTY OF TITLE AND DISCLAIMERS**

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

**Section 2.2 Disclaimers of Warranties and Representations.**

(a) EXCEPT AS EXPRESSLY REPRESENTED OTHERWISE IN SECTION VI OF THE ACREAGE TRADE AGREEMENT OR THIS ASSIGNMENT, ASSIGNOR MAKES NO, AND HEREBY EXPRESSLY DISCLAIMS, ANY REPRESENTATION OR



October 1, 2019

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

RE: Knob Creek S-15HU

Subject: CR 21 Road Crossing Letter

Dear Laura:

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 21 in the area reflected on the Knob Creek S-16HU 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 [amiller@tug-hilop.com](mailto:amiller@tug-hilop.com).

Sincerely,

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

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

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Environmental Protection

WW-PN  
(11-18-2015)

**Horizontal Natural Gas Well Work Permit  
Application Notice By Publication**

**Notice is hereby given:**

Pursuant to West Virginia Code 22-6A-10(e) prior to filing an application for a permit for a horizontal well the applicant shall publish in the county in which the well is located or is proposed to be located a Class II legal advertisement.

**Paper:** Moundsville Daily Echo

**Public Notice Date:** 8/14/2019; 8/21/2019

The following applicant intends to apply for a horizontal natural well work permit which disturbs three acres or more of surface excluding pipelines, gathering lines and roads **or** utilizes more than two hundred ten thousand gallons of water in any thirty day period.

**Applicant:** Tug Hill Operating, LLC

**Well Number:** Knob Creek S-16HU

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

**Business Conducted:** Natural gas production.

**Location –**

State:	<u>West Virginia</u>	County:	<u>Marshall</u>
District:	<u>Meade</u>	Quadrangle:	<u>Glen Easton 7.5'</u>
UTM Coordinate NAD83 Northing:	<u>4,402,285.21</u>		
UTM coordinate NAD83 Easting:	<u>525,236.36</u>		
Watershed:	<u>Fish Creek (HUC-10)</u>		

**Coordinate Conversion:**

To convert the coordinates above into longitude and latitude, visit: [http://tagis.dep.wv.gov/convert/llutm\\_conus.php](http://tagis.dep.wv.gov/convert/llutm_conus.php)

**Electronic notification:**

To receive an email when applications have been received or issued by the Office of Oil and Gas, visit <http://www.dep.wv.gov/insidedep/Pages/DEPMailingLists.aspx> to sign up.

**Reviewing Applications:**

Copies of the proposed permit application may be reviewed at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE Charleston, WV 25304 (304-926-0450). Full copies or scans of the proposed permit application will cost \$15, whether mailed or obtained at DEP headquarters. Copies may be requested by calling the office or by sending an email to [DEP.comments@wv.gov](mailto:DEP.comments@wv.gov).

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**Submitting Comments:**

Comments may be submitted online at <https://apps.dep.wv.gov/oog/comments/comments.cfm>, or by letter to Permit Review, Office of Oil and Gas, 601 57<sup>th</sup> Street, SE Charleston, WV 25304. Please reference the county, well number and operator when using this option.

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Environmental Protection

Regardless of format for comment submissions, they must be received no later than thirty days after the permit application is received by the Office of Oil and Gas.

For information related to horizontal drilling visit: [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx)



(304) 845-2660  
P.O. BOX 369  
MOUNDSVILLE  
WEST VIRGINIA  
26041

AFFIDAVIT OF PUBLICATION

STATE OF WEST VIRGINIA,  
COUNTY OF MARSHALL, to wit

I, Mary Margaret Rine being first duly sworn upon my oath, do depose and say:  
• that I am Legal Advertising Manager of the MOUNDSVILLE DAILY ECHO, a Republican newspaper;  
• that I have been duly authorized to execute this affidavit;  
• that such newspaper has been published for over 119 years, is regularly published afternoons daily except Saturdays and Sundays, for at least fifty weeks during the calendar year, in the municipality of Moundsville, Marshall County, West Virginia.  
• that such newspaper is a newspaper of "general circulation" as defined in Art. 3, Chap. 59 of the Code of West Virginia 1931 as amended, within Moundsville and Marshall County;  
• that such newspaper averages in length four or more pages, exclusive of any cover, per Issue;  
• that such newspaper is circulated to the general public at a definite price or consideration;  
• that such newspaper is a newspaper to which the general public resorts for passing events of a political, religious, commercial and social nature and for current happenings, announcements, miscellaneous reading matters, advertisements and other notices;  
• and that the annexed notice described as follows:

Legal Advertisement

PARTY(ies)

Well # Knob Creek S-16 HU

NATURE (and agency if heard before one)

CERTIF-BILL TO

Amy Miller,  
Permit Specialist-Appalachia  
Tug Hill Operating  
380 Southpointe Blvd, Plaza II  
Suite 200  
Canonburg, PA 15317

WAS PUBLISHED IN-SAID NEWSPAPER AS FOLLOWS

Times	Dates
2	August 15, 22

BY WORDS	PUBLICATION CHARGES
492	\$98.99

(signed) Mary Margaret Rine

NOTARIZATION

OFFICIAL SEAL  
Taken, sworn and subscribed before me this 23rd  
day of August 2019  
Moundsville Daily Echo  
PO Box 369  
Moundsville, WV 26041  
My Commission Expires August 1, 2022  
Amy D. Stumphy Notary Public

PAGE FOUR--Moundsville Daily LEGAL ADVERTISEMENT

Horizontal Natural Gas Well Work Permit

Application Notice By Publication Notice is hereby given: Pursuant to West Virginia Code 22-6A-10(e) prior to filing an application for a permit for a horizontal well the applicant shall publish in the county in which the well is located or is proposed to be located a Class II legal advertisement.

Paper: Moundsville Daily Echo  
Public Notice Date: August 15, 2019 & August 22, 2019

The following applicant intends to apply for a horizontal natural well work permit which disturbs three acres or more of surface excluding pipelines, gathering lines and roads or utilizes more than two hundred ten thousand gallons of water in any thirty day period.

Applicant: Tug Hill Operating, Inc.  
Address: 380 Southpointe Boulevard, Plaza II, Suite 200, Canonburg, PA 15317

Well Number: Knob Creek S-16HU  
Business Conducted: Natural gas production.

Location -  
State: West Virginia  
County: Marshall  
District: Meade

Quadrangle: Glen Easton 7.5'  
UTM Coordinate: NAD83 North-  
ing: 4,402,285.21

UTM coordinate NAD83 Easting: 525,236.36  
Watershed: Fish Creek (HUC-10)

Coordinate Conversion:  
To convert the coordinates above into longitude and latitude, visit: [http://tags.dep.wv.gov/convert/llutm\\_conus.php](http://tags.dep.wv.gov/convert/llutm_conus.php)

Electronic notification:  
To receive an email when applications have been received or issued by the Office of Oil and Gas, visit <http://www.dep.wv.gov/insidedep/Pages/DEPMailingLists.aspx> to sign up.

Reviewing Applications: Copies of the proposed permit application may be reviewed at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE Charleston, WV 25304 (304-926-0450). Full copies or scans of the proposed permit application will cost \$15, whether mailed or obtained at DEP headquarters. Copies may be requested by calling the office or by sending an email to [DEPcomments@wv.gov](mailto:DEPcomments@wv.gov).

Submitting Comments:  
Comments may be submitted online at <https://apps.dep.wv.gov/oog/comments/comments.cfm>, or by letter to Permit Review, Office of Oil and Gas, 601 57th Street, SE Charleston, WV 25304. Please reference the county, well number, and operator when using this option. Regardless of format for comment submissions, they must be received no later than thirty days after the permit application is received by the Office of Oil and Gas.

For information related to horizontal drilling visit: [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

PUBLISH: August 15, 22, 2019.

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WV Department of Environmental Protection



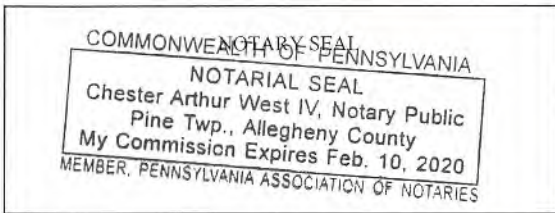


WW-6AC  
(1/12)

**Certification of Notice is hereby given:**

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

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



Subscribed and sworn before me this 14 day of October 2019  
*[Signature]* Notary Public  
 My Commission Expires 2-10-2020

**Oil and Gas Privacy Notice:**

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

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 WV Department of  
 Environmental Protection

WW-6A  
(9-13)

API NO. 47- \_\_\_\_\_  
OPERATOR WELL NO. Knob Creek S-16HU  
Well Pad Name: Knob Creek

**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:** 9/30/2019 **Date Permit Application Filed:** 10/1/2019

**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: David Lee Franklin  
Address: 131 Saint Joseph Road  
Glen Easton, WV 26039  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_

COAL OWNER OR LESSEE  
Name: CNX Land Resources, Inc.  
Address: 1000 Consol Energy Drive  
Canonsburg, PA 15318

COAL OPERATOR  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_

SURFACE OWNER(s) (Road and/or Other Disturbance)  
Name: David Lee Franklin  
Address: 131 Saint Joseph Road  
Glen Easton, WV 26039  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)  
Name: \*See attached list  
Address: \_\_\_\_\_

SURFACE OWNER(s) (Impoundments or Pits)  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_

OPERATOR OF ANY NATURAL GAS STORAGE FIELD  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_

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\*Please attach additional forms if necessary

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(8-13)

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4705102290

API NO. 47-

OPERATOR WELL NO. Knob Creek S-16HU

Well Pad Name: Knob Creek

**Notice is hereby given:**

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

**This Notice Shall Include:**

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

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

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

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

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 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

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API NO. 47- \_\_\_\_\_ - \_\_\_\_\_  
OPERATOR WELL NO. Knob Creek S-16HU  
Well Pad Name: Knob Creek

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

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Environmental Protection

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

**Time Limits and Methods for Filing Comments.**

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

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

**Comment Requirements**

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

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

**Permit Denial or Condition**

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

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

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

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

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API NO. 47- \_\_\_\_\_  
OPERATOR WELL NO. Knob Creek S-16HU  
Well Pad Name: Knob Creek

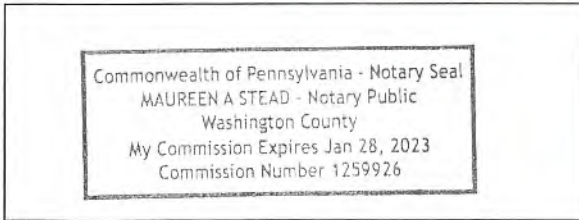
**Notice is hereby given by:**

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

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

**Oil and Gas Privacy Notice:**

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



Subscribed and sworn before me this 30 day of SEPT., 2019.  
*Maureen A Stead* Notary Public  
My Commission Expires 1/28/23

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## Exhibit WW-6A

## Supplement Pg. 1A

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

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

Well: KNOB CREEK S – 16HU  
District: Meade (Residence #'s 1-12, 14-26) (Church #13)  
State: WV

There are twenty-five (25) residences, no businesses, one (1) church, no schools or no emergency facilities within two-thousand feet (2,000') of the above referenced well location.

<p><b>Residence # 1</b> TM 14 Pcl. 39 Margaret Fox – Life c/o Paul Fox Phone: 304-455-3817 (Per Tax Address – Paul G. Fox) <b>Physical Address:</b> 31 Crow Dr. Glen Easton, WV 26039 <b>Tax Address:</b> 5761 Saint Joseph Rd. Proctor, WV 26055</p>	<p><b>Residence # 2</b> TM 14 Pcl. 32 Twila C. Coffield Phone: 304-845-5941 <b>Physical Address:</b> 184 Crow Dr. Glen Easton, WV 26039 <b>Tax Address:</b> 16 Sandy Ave. Moundsville, WV 26041-1020</p>	<p><b>Residence # 3</b> TM 14 Pcl. 54 Richard L. Harveth, Et Ux c/o Richard Lee Harveth Phone: 304-845-7397; 304-845-5128 <b>Physical Address:</b> 220 Crow Dr. Glen Easton, WV 26039 <b>Tax Address:</b> Same</p>
<p><b>Residence # 4</b> TM 14 Pcl. 42 John C. Lagos, Et Ux Phone: 304-845-2793 <b>Physical Address:</b> 12529 Fish Creek Rd. Glen Easton, WV 26039 <b>Tax Address:</b> 404 Jefferson Ave. Glen Dale, WV 26038</p>	<p><b>Residence # 5</b> TM 14 Pcl. 53 James E. Peelman Phone: None Found <b>Physical Address:</b> 12551 Fish Creek Rd. Glen Easton, WV 26039 <b>Tax Address:</b> 12551 Fish Creek Rd. Glen Easton, WV 26039</p>	<p><b>Residence # 6</b> TM 14 Pcl. 29.1 Andrew Fasouletos, Et Ux Phone: 304-845-9009 <b>Physical Address:</b> 329 Crow Dr. Glen Easton, WV 26039 <b>Tax Address:</b> 1. Rd. 2 Box 150 Proctor, WV 26055 2. 3391 Taylors Ridge Rd. Proctor, WV 26055-9723</p>
<p><b>Residence # 7</b> TM 14 Pcl. 29.1 Andrew Fasouletos, Et Ux Phone: 304-845-9009 <b>Physical Address:</b> 361 Crow Dr. Glen Easton, WV 26039 <b>Tax Address:</b> 1. Rd. 2 Box 150 Proctor, WV 26055 2. 3391 Taylors Ridge Rd. Proctor, WV 26055-9723</p>	<p><b>Residence # 8</b> TM 14 Pcl. 29 Andrew Fasouletos, Et Ux c/o Tena Marie Stricklin Phone: 304-845-9009 <b>Physical Address:</b> 389 Crow Dr. Glen Easton, WV 26039 <b>Tax Address:</b> 1. 3391 Taylors Ridge Rd. Proctor, WV 26055-9723 2. Rd. 2 Box 150 Proctor, WV 26055</p>	<p><b>Residence # 9</b> TM 14 Pcl. 48 Michael L. &amp; Cheryl J. Acree Phone: 304-455-2148; 304-455-5859 <b>Physical Address:</b> 12725 Fish Creek Rd. Glen Easton, WV 26039 <b>Tax Address:</b> 189 Plum St. Proctor, WV 26055</p> <p style="text-align: right;">RECEIVED Office of Oil and Gas OCT - 2 2019 WV Department of Environmental Protection</p>



<p><b>Residence # 10</b>  TM 14 Pcl. 45  George R. Taylor, Et Ux  Phone: 304-845-2987  <b>Physical Address:</b>  12781 Fish Creek Rd.  Glen Easton, WV 26039  <b>Tax Address:</b>  Same</p>	<p><b>Residence # 11</b>  TM 16 Pcl. 15.1  Eric J. Young  Phone: 304-686-3398; 304-905-1986  (Per Address – Chelsey Long); 304-845-0154 (Per Address – Bill J. Blatt)  <b>Physical Address:</b>  153 Young Ln.  Glen Easton, WV 26039  <b>Tax Address:</b>  Same</p>	<p><b>Residence # 12</b>  TM 16 Pcl. 15  Ronald R. Young, Et Ux - Life  Phone: 304-845-6044 (Per Tax Address – Geraldine M. Young)  <b>Physical Address:</b>  348 Saint Joseph Rd.  Glen Easton, WV 26039  <b>Tax Address:</b>  Same</p>
<p><b>Church # 13</b>  TM 16 Pcl. 14  Lynn Camp Methodist Church  Phone:  <b>Physical Address:</b>  171 Saint Joseph Rd.  Glen Easton, WV 26039  <b>Tax Address:</b>  Unknown Address  Moundsville, WV 26041</p>	<p><b>Residence # 14</b>  TM 16 Pcl. 15  Ronald R. Young, Et Ux - Life  Phone: 304-845-6044 (Per Tax Address – Geraldine M. Young)  <b>Physical Address:</b>  323 Saint Joseph Rd.  Glen Easton, WV 26039  <b>Tax Address:</b>  348 Saint Joseph Rd.  Glen Easton, WV 26039</p>	<p><b>Residence # 15</b>  TM 16 Pcl. 13.5  Paul R. Blake &amp; Paul R. Blake II  Phone: 304-845-9369  <b>Physical Address:</b>  616 Saint Joseph Rd.  Glen Easton, WV 26039  <b>Tax Address:</b>  121 Vandivere Ln.  Glen Easton, WV 26039-9707</p>
<p><b>Residence # 16</b>  TM 16 Pcl. 13.1  Paul W. Blake - Life  Phone: 304-845-2999  <b>Physical Address:</b>  581 Saint Joseph Rd.  Glen Easton, WV 26039  <b>Tax Address:</b>  1500 8<sup>th</sup> St.  Moundsville, WV 26041-2031</p>	<p><b>Residence # 17</b>  TM 16 Pcl. 13.6  Wesley D. Yeater, Et Ux  Phone: 304-843-5212  <b>Physical Address:</b>  37 Vandivere Ln.  Glen Easton, WV 26039  <b>Tax Address:</b>  Same</p>	<p><b>Residence # 18</b>  TM 16 Pcl. 13.3  Paul R. Blake  Phone: 304-845-9369  <b>Physical Address:</b>  121 Vandivere Ln.  Glen Easton, WV 26039  <b>Tax Address:</b>  Same</p>
<p><b>Residence # 19</b>  TM 16 Pcl. 12.2  Spencer J. &amp; Carrie A. Richmond  Phone: 304-845-2274; 304-845-8186  <b>Physical Address:</b>  293 Richmond Ln.  Glen Easton, WV 26039  <b>Tax Address:</b>  243 Richmond Ln.  Glen Easton, WV 26039</p>	<p><b>Residence # 20</b>  TM 16 Pcl. 12.7  Spencer J. &amp; Carrie A. Richmond  Phone: 304-845-2274; 304-845-8186  <b>Physical Address:</b>  243 Richmond Ln.  Glen Easton, WV 26039  <b>Tax Address:</b>  Same</p>	<p><b>Residence # 21</b>  TM 16 Pcl. 12.1  James G. Richmond, Et Ux  Phone: 304-845-8186  <b>Physical Address:</b>  157 Richmond Ln.  Glen Easton, WV 26039  <b>Tax Address:</b>  Same</p>
<p><b>Residence # 22</b>  TM 14 Pcl. 33  David Lee Franklin  Phone: 304-845-6025; 304-845-3203  <b>Physical Address:</b>  131 Saint Joseph Rd.  Glen Easton, WV 26039  <b>Tax Address:</b>  131 Saint Joseph Rd.  Glen Easton, WV 26039</p>	<p><b>Residence # 23</b>  TM 14 Pcl. 37  Margaret Fox – Life  c/o Paul Fox  Phone: 304-455-3817 (Per Tax Address – Paul G. Fox)  <b>Physical Address:</b>  107 Saint Joseph Rd.  Glen Easton, WV 26039  <b>Tax Address:</b>  5761 Saint Joseph Rd.  Proctor, WV 26055</p>	<p><b>Residence # 24</b>  TM 14 Pcl. 37  Margaret Fox – Life  c/o Paul Fox  Phone: 304-455-3817 (Per Tax Address – Paul G. Fox)  <b>Physical Address:</b>  51 Saint Joseph Rd.  Glen Easton, WV 26039  <b>Tax Address:</b>  5761 Saint Joseph Rd.  Proctor, WV 26055</p>

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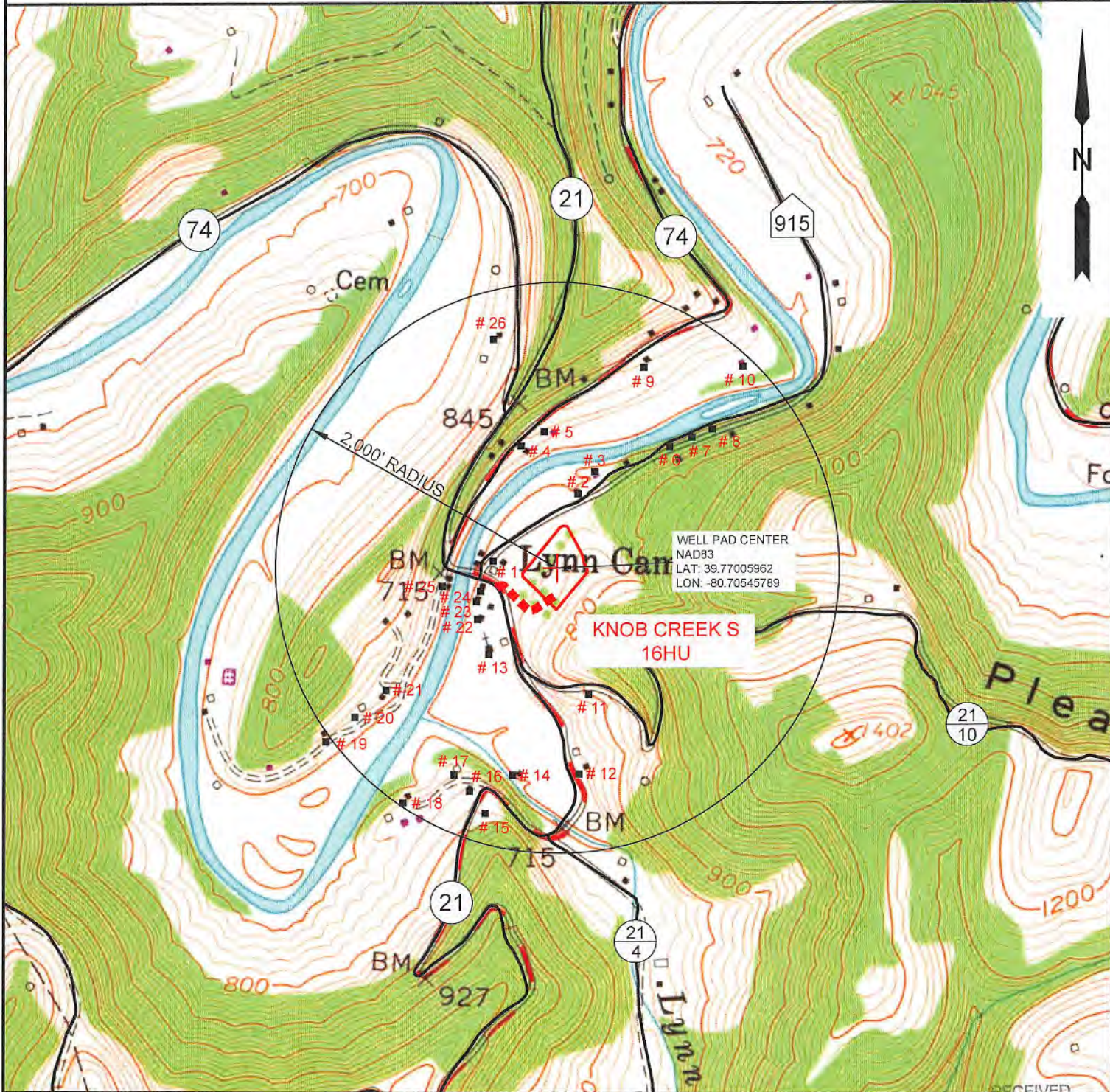
<p><b>Residence # 25</b> TM 13 Pcl. 13 Margaret K. Fox – Life c/o Paul Fox Phone: 304-455-3817 (Per Tax Address – Paul G. Fox) <b>Physical Address:</b> 28 Richmond Ln. Glen Easton, WV 26039 <b>Tax Address:</b> 5761 Saint Joseph Rd. Proctor, WV 26055</p>	<p><b>Residence # 26</b> TM 13 Pcl. 12 Nila Jean Prohnappel Phone: None Found <b>Physical Address:</b> 11975 Fish Creek Rd. Glen Easton, WV 26039 <b>Tax Address:</b> Rd. 1 Box 190 Proctor, WV 26055-9703</p>	
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# PROPOSED KNOB CREEK S - 16HU



NOTE: THERE APPEARS TO BE TWENTY-SIX (26) POSSIBLE WATER SOURCES WITHIN 2,000'.

Office of Oil and Gas

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**SLS**  
Land & Energy Development  
Solutions from the ground up.  
P.O. Box 150 • 12 Vanhorn Drive • Glenville, WV 26351 • (304) 462-5634  
www.slsww.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
DRAWN BY		DATE	SCALE
K.G.M.		09/27/2019	1" = 1000'

WV Department of Environmental Protection  
**TUG HILL**  
OPERATING

WW-6A3  
(1/12)

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

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

**Date of Notice:** 2/5/2018      **Date of Planned Entry:** 2/12/2018

**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: David Lee Franklin (Pad and Access Road)  
Address: 131 Saint Joseph Road  
Glen Easton, WV 26039  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_

COAL OWNER OR LESSEE  
Name: CNX Land Resources, Inc.  
Address: 1000 Consol Energy Drive  
Canonsburg, PA 15318

MINERAL OWNER(s)  
Name: David Lee Franklin  
Address: 131 Saint Joseph Road  
Glen Easton, WV 26039

\*please attach additional forms if necessary

**Notice is hereby given:**

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

State: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>39.7700596; -80.7054579</u>
County: <u>Marshall</u>	Public Road Access: <u>St. Joseph Road - County Route 21</u>
District: <u>Meade</u>	Watershed: <u>Fish Creek (HUC 10)</u>
Quadrangle: <u>Glen Easton 7.5'</u>	Generally used farm name: <u>David Lee Franklin</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-hillop.com

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

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Environmental Protection

**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).

WW-6A5  
(1/12)

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

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

**Date of Notice:** 10/01/2019      **Date Permit Application Filed:** 10/01/2019

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

CERTIFIED MAIL                                       HAND  
RETURN RECEIPT REQUESTED                                      DELIVERY

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

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

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

Name: David Lee Franklin

Address: 131 Saint Joseph Road

Glen Easton, WV 26039

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

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

**Notice is hereby given:**

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

State: <u>West Virginia</u>	UTM NAD 83	Easting: <u>525,236.36</u>
County: <u>Marshall</u>		Northing: <u>4,402,285.21</u>
District: <u>Meade</u>	Public Road Access: <u>St. Joseph Road - CR 21</u>	
Quadrangle: <u>Glen Easton 7.5'</u>	Generally used farm name: <u>David Lee Franklin</u>	
Watershed: <u>Fish Creek (HUC 10)</u>		

**This Notice Shall Include:**

Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by **W. Va. Code § 22-6A-10(b)** to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 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 Operator: Tug Hill Operating, LLC

Telephone: 724-749-8388

Email: amiller@tug-hilltop.com

Address: 380 Southpointe Boulevard, Plaza II, Suite 200

Canonsburg, PA 15317

Facsimile: 724-338-2030

**Oil and Gas Privacy Notice:**

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

RECEIVED  
Office of Oil and Gas

OCT - 2 2019

WV Department of  
Environmental Protection

TUG HILL OPERATING LLC  
SUSANNE DELIERE  
380 SOUTHPOINTE BLVD  
SUITE 200  
CANONSBURG PA 15317

**LIMITED POWER OF ATTORNEY**

That I, David Lee Franklin, hereby make, name and appoint, Tug Hill Operating, LLC, by and through its officers, agents or employees to be my limited power of attorney, for the sole and specific purpose of executing Well Location Restriction Waivers(s) that permit the conducting of oil or gas well work and the drilling of additional oil and gas wells on the Knob Creek Well Pad situate in Meade District, Marshall County, West Virginia, shown on Tax Map 14, as Parcel 33. See attached **Exhibit A**. Said waivers shall be of the type shown on the attached **Exhibit B**, differing only in the api number and operator well number located on the form.

I the said David Lee Franklin hereby declare that acts done by my said attorney for said specific and sole purpose shall be as good, valid and effective, to all intents and purposes whatsoever, as if the same had been made or done by me, and I hereby undertake to ratify whatsoever my attorney shall lawfully do or cause to be done, by virtue of these presents.

I further direct this Limited Power of Attorney shall be good and valid until a revocation thereof has been duly executed by the undersigned.

David Lee Franklin (SEAL)

STATE OF West Virginia:

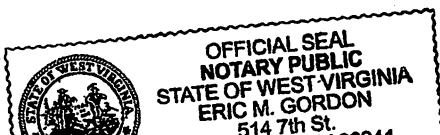
County of Marshall, to-wit:

The foregoing instrument was acknowledged before me this 29th day of March, 2018, by David Lee Franklin.

Given under my hand this 29th day of March, 2018.

My commission expires: JAN 18, 2022.

**(NOTARY SEAL/STAMP REQUIRED)**



Eric M. Gordon  
Notary Public for the aforesaid

**LIMITED POWER OF ATTORNEY**

That I, Linda Lee Franklin, hereby make, name and appoint, Tug Hill Operating, LLC, by and through its officers, agents or employees to be my limited power of attorney, for the sole and specific purpose of executing Well Location Restriction Waivers(s) that permit the conducting of oil or gas well work and the drilling of additional oil and gas wells on the Knob Creek Well Pad situate in Meade District, Marshall County, West Virginia, shown on Tax Map 14, as Parcel 33. See attached **Exhibit A**. Said waivers shall be of the type shown on the attached **Exhibit B**, differing only in the api number and operator well number located on the form.

I the said Linda Lee Franklin hereby declare that acts done by my said attorney for said specific and sole purpose shall be as good, valid and effective, to all intents and purposes whatsoever, as if the same had been made or done by me, and I hereby undertake to ratify whatsoever my attorney shall lawfully do or cause to be done, by virtue of these presents.

I further direct this Limited Power of Attorney shall be good and valid until a revocation thereof has been duly executed by the undersigned.

Linda Lee Franklin (SEAL)

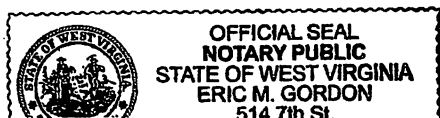
STATE OF West Virginia :  
County of Marshall , to-wit:

The foregoing instrument was acknowledged before me this 29th day of March , 2018, by Linda Lee Franklin.

Given under my hand this 29th day of March , 2018.

My commission expires: Jan 18, 2022

(NOTARY SEAL/STAMP REQUIRED)



Eric M. Gordon  
Notary Public for the aforesaid

**LIMITED POWER OF ATTORNEY**

That I, Louis T. Fox, hereby make, name and appoint, Tug Hill Operating, LLC, its successors and assigns, by and through its officers, agents or employees to be my limited power of attorney, for the sole and specific purpose of executing Well Location Restriction Waivers(s) waiving all well site restrictions listed under West Virginia Code 22-6A-12(a) for the Knob Creek Well Pad situate in Meade District, Marshall County, West Virginia, located on Tax Map 14, Parcel 33 and depicted on the attached **Exhibit A**. Said waivers shall be of the type shown on the attached **Exhibit B**.

I the said Louis T. Fox hereby declare that acts done by my said attorney for said specific and sole purpose shall be as good, valid and effective, to all intents and purposes whatsoever, as if the same had been made or done by me, and I hereby undertake to ratify whatsoever my attorney shall lawfully do or cause to be done, by virtue of these presents.

I further direct this Limited Power of Attorney shall be good and valid until a revocation thereof has been duly executed by the undersigned.

Louis T. Fox 3-24-18 (SEAL)

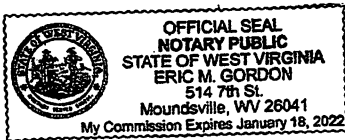
STATE OF West Virginia:  
COUNTY OF Marshall, to-wit:

The foregoing instrument was acknowledged before me this 24th day of March, 2018, by Louis T. Fox.

Given under my hand this 24th day of March, 2018.

My commission expires: Jan 18, 2022.

(NOTARY SEAL/STAMP REQUIRED)

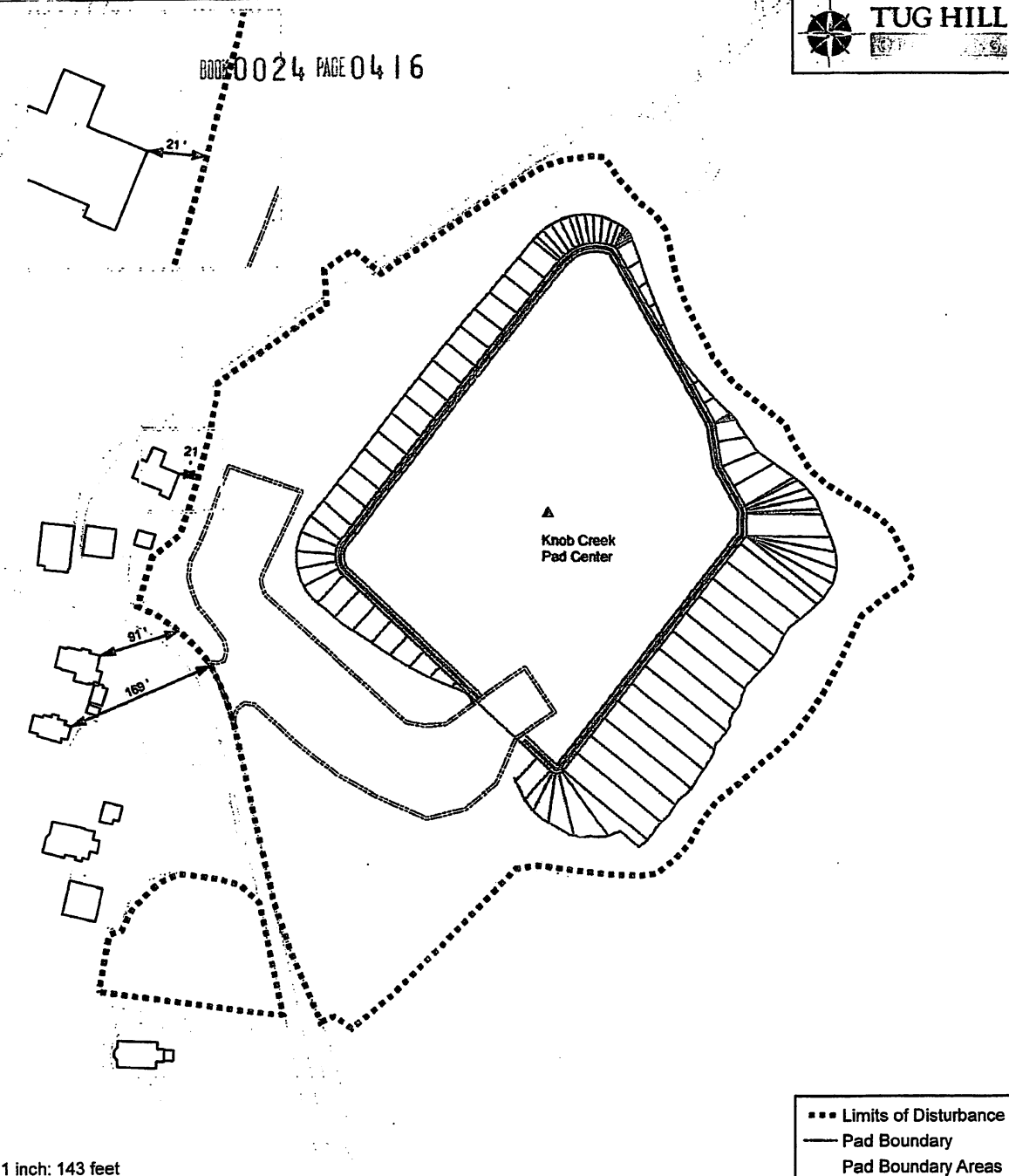


Notary Public for the aforesaid  
County and/or State

**This Instrument Prepared By:**  
Eric M. Gordon, Esquire  
Berry, Kessler, Crutchfield, Taylor & Gordon  
514 Seventh Street  
Moundsville, WV 26041  
(304) 845-2580

Marshall County  
Jan Pest, Clerk  
Instrument 1439957  
05/03/2018 @ 02:36:25 PM  
POWER OF ATTORNEY  
Book 24 @ Page 415  
Pages Recorded: 3  
Recording Cost \$ 11.00





1 inch: 143 feet

... Limits of Disturbance  
 — Pad Boundary  
 — Pad Boundary Areas

0 35 70 140  
 Feet

NOTE: THE APPROXIMATE LOCATION FOR THE SURFACE SITE ACCESS ROAD, NORTH OF HERE AND THE LOCATION OF THE PROPERTY TO BE PADDED AREALY LOCATED IN CONFORMANCE WITH THE DISTRICTAL RECORDS AND THE COUNTY COURT RECORDS SHALL BE AS SHOWN AND DESCRIBED IN THE DEEDS FILED IN THE COUNTY RECORDS AND THE APPROXIMATE LOCATION AND THE DISTANCE TO THE ACCESS ROAD AND POINT OF BEGINNING TO THE LOCATION SHALL BE AS SHOWN AND DESCRIBED IN THE DEEDS FILED IN THE COUNTY RECORDS.

**Exhibit "A"**  
 Marshall, WV

Date: 3-24-18  
 Paul H. Fox 3-24-18  
 Name: [Signature]  
 Name: Paul H. Fox



Date: 3/8/2018  
 PCS: NAD 1983 UTM Zone 17N Foot U8

Mark H. Fox 3-24-18

May 24 2018  
Thomas John Fox 3-31-18

**LIMITED POWER OF ATTORNEY**

That I, Thomas John Fox, hereby make, name and appoint, Tug Hill Operating, LLC, by and through its officers, agents or employees to be my limited power of attorney, for the sole and specific purpose of executing Well Location Restriction Waivers(s) that permit the conducting of oil or gas well work and the drilling of additional oil and gas wells on the Knob Creek Well Pad situate in Meade District, Marshall County, West Virginia, shown on Tax Map 14, as Parcel 33. See attached **Exhibit A**. Said waivers shall be of the type shown on the attached **Exhibit B**, differing only in the api number and operator well number located on the form.

I the said Thomas John Fox hereby declare that acts done by my said attorney for said specific and sole purpose shall be as good, valid and effective, to all intents and purposes whatsoever, as if the same had been made or done by me, and I hereby undertake to ratify whatsoever my attorney shall lawfully do or cause to be done, by virtue of these presents.

I further direct this Limited Power of Attorney shall be good and valid until a revocation thereof has been duly executed by the undersigned.

Thomas John Fox (SEAL)

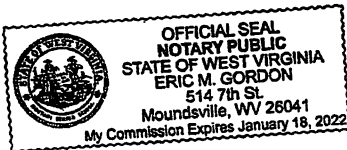
STATE OF West Virginia:  
County of Marshall, to-wit:

The foregoing instrument was acknowledged before me this 31st day of March, 2018, by Thomas John Fox.

Given under my hand this 31st day of March, 2018.

My commission expires: Jan 18, 2022

(NOTARY SEAL/STAMP REQUIRED)

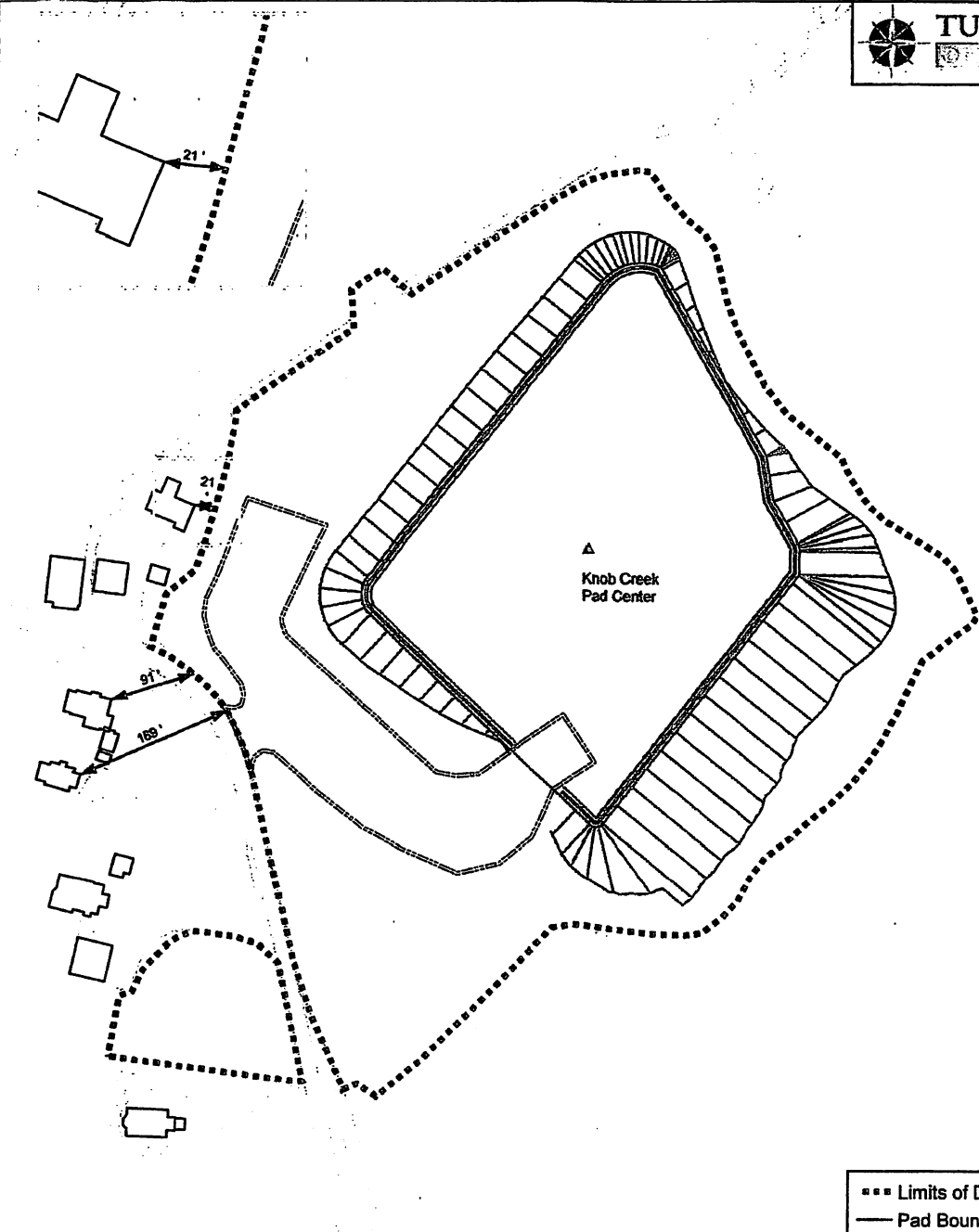


[Signature]  
Notary Public for the aforesaid  
County and/or State

**This Instrument Prepared By:**

Eric M. Gordon, Esquire  
Berry, Kessler, Crutchfield, Taylor & Gordon  
514 Seventh Street  
Moundsville, WV 26041  
(304) 845-2580

Marshall County  
Jan Pest, Clerk  
Instrument 1439960  
05/03/2018 @ 02:36:25 PM  
POWER OF ATTORNEY  
Book 24 @ Page 424  
Pages Recorded 3  
Recording Cost \$ 11.00



--- Limits of Disturbance  
 — Pad Boundary  
 ▨ Pad Boundary Areas

1 inch: 143 feet

0 35 70 140  
 Feet



Exhibit "A"

Marshall, WV

Date: 3-24-18  
 Part of For 3-24-18  
 Name: [Signature]  
 Name: Mark H. Fox



Date: 3/8/2018  
 PCS: NAD 1983 UTM Zone 17N Foot US

Mark H. Fox 3-24-18

May 24, 2018  
Thomas John Fox 3-31-18

**LIMITED POWER OF ATTORNEY**

That I, MARK H. FOX, hereby make, name and appoint, Tug Hill Operating, LLC, its successors and assigns, by and through its officers, agents or employees to be my limited power of attorney, for the sole and specific purpose of executing Well Location Restriction Waivers(s) waiving all well site restrictions listed under West Virginia Code 22-6A-12(a) for the Knob Creek Well Pad situate in Meade District, Marshall County, West Virginia, located on Tax Map 14, Parcel 33 and depicted on the attached **Exhibit A**. Said waivers shall be of the type shown on the attached **Exhibit B**.

I the said MARK H. FOX hereby declare that acts done by my said attorney for said specific and sole purpose shall be as good, valid and effective, to all intents and purposes whatsoever, as if the same had been made or done by me, and I hereby undertake to ratify whatsoever my attorney shall lawfully do or cause to be done, by virtue of these presents.

I further direct this Limited Power of Attorney shall be good and valid until a revocation thereof has been duly executed by the undersigned.

Mark H. Fox 3-24-18 (SEAL)

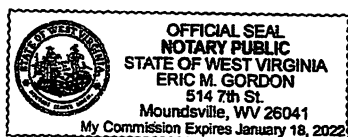
STATE OF West Virginia:  
COUNTY OF Marshall, to-wit:

The foregoing instrument was acknowledged before me this 24th day of March, 2018, by Mark H. Fox.

Given under my hand this 24th day of March, 2018.

My commission expires: Jan 18, 2022

**(NOTARY SEAL/STAMP REQUIRED)**



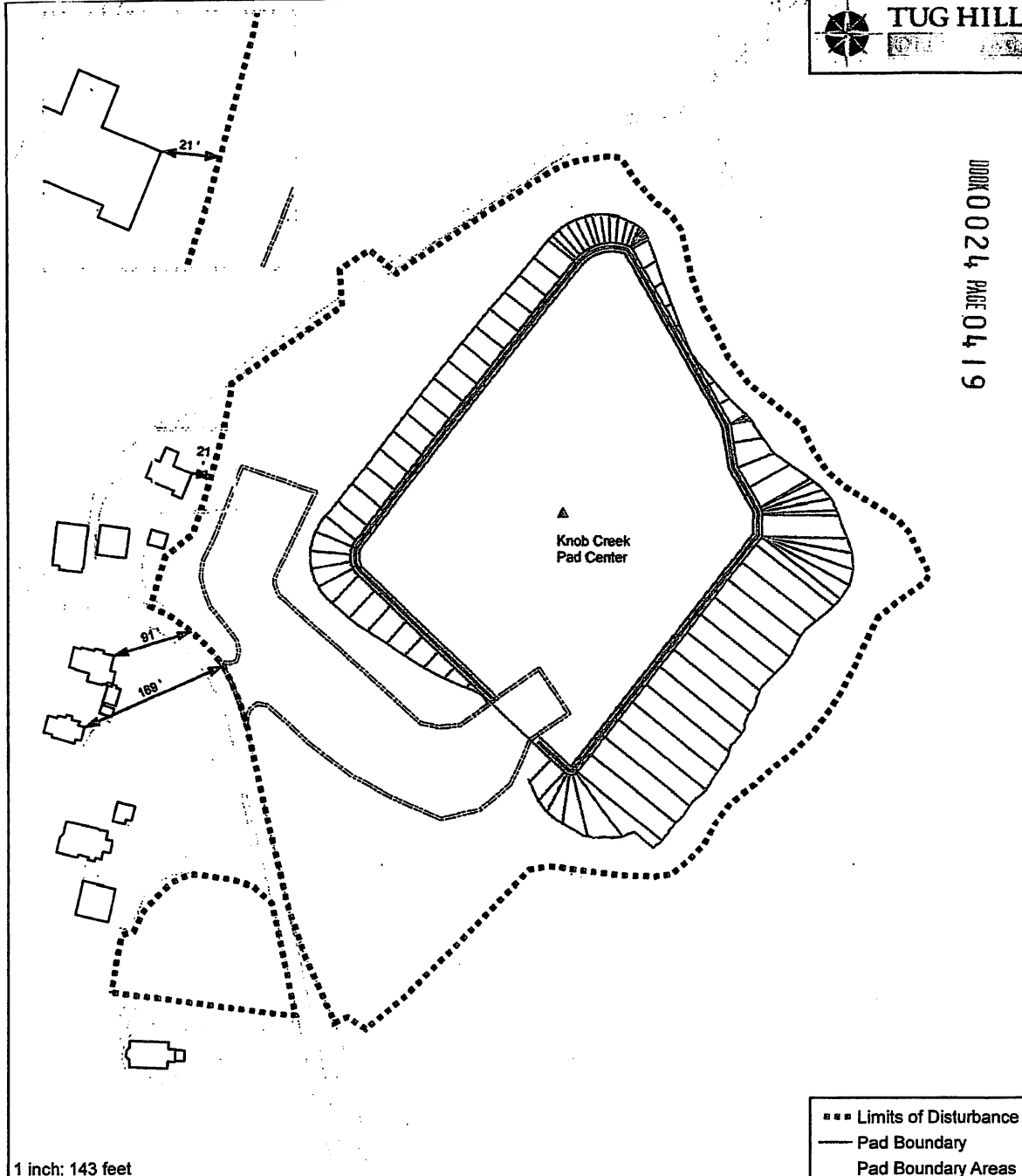
Notary Public for the aforesaid  
County and/or State

**This Instrument Prepared By:**

Eric M. Gordon, Esquire  
Berry, Kessler, Crutchfield, Taylor & Gordon  
514 Seventh Street  
Moundsville, WV 26041  
(304) 845-2580

T:\MSaston\Limited Power of Attorney\EMG.Limited.POA.wpd

Marshall County  
Jan Pest, Clerk  
Instrument 1439959  
05/03/2018 @ 02:36:25 PM  
POWER OF ATTORNEY  
Book 24 @ Page 421  
Pages Recorded 3  
Recording Cost \$ 11.00



1 inch: 143 feet

■■■ Limits of Disturbance  
 — Pad Boundary  
 — Pad Boundary Areas

0 35 70 140  
Feet

NOTE: THE APPROVED SITE LOCATION FOR THE PADFACE OF THE TOWER SHALL BE THE POINT OF THE PADFACE OF THE PROPERTY THE PERMITS AND AS SHOWN ON THIS SITE. ANY OTHER LOCATION LOCATIONS SHOWN ON THIS DRAWING ARE ONLY FOR INFORMATION AND SHALL NOT BE USED TO CONSIDER THE ACTUAL PROPERTY OR PERMITS. ALL PAD BOUNDARIES AND DISTANCES SHOWN ON THIS DRAWING ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DAMAGE TO THE ADJACENT ROAD AND PROPERTY AND SHALL BE FULLY RESPONSIBLE FOR ANY DAMAGE TO THE ADJACENT ROAD AND PROPERTY.

**Exhibit "A"**

Marshall, WV

Date: 3-24-18  
 Mark H. Fox 3-24-18

Name: [Signature]

Name: Mark H. Fox



Date: 3/8/2018  
 PCS: NAD 1983 UTM Zone 17N Foot US

Mark H. Fox 3-24-18

May 24 3-30-18  
 Thomas John Fox 3-31-18

TUG HILL OPERATING LLC  
SUSANNE DELIERE  
380 SOUTHPOINTE BLVD  
SUITE 200  
CANDANBURG PA 15317

**LIMITED POWER OF ATTORNEY**

That I, Paul G. Fox, hereby make, name and appoint, Tug Hill Operating, LLC, its successors and assigns, by and through its officers, agents or employees to be my limited power of attorney, for the sole and specific purpose of executing Well Location Restriction Waivers(s) waiving all well site restrictions listed under West Virginia Code 22-6A-12(a) for the Knob Creek Well Pad situate in Meade District, Marshall County, West Virginia, located on Tax Map 14, Parcel 33 and depicted on the attached **Exhibit A**. Said waivers shall be of the type shown on the attached **Exhibit B**.

I the said Paul G. Fox hereby declare that acts done by my said attorney for said specific and sole purpose shall be as good, valid and effective, to all intents and purposes whatsoever, as if the same had been made or done by me, and I hereby undertake to ratify whatsoever my attorney shall lawfully do or cause to be done, by virtue of these presents.

I further direct this Limited Power of Attorney shall be good and valid until a revocation thereof has been duly executed by the undersigned.

Paul G. Fox 3-24-18 (SEAL)

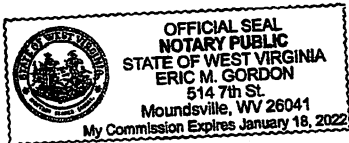
STATE OF West Virginia:  
COUNTY OF Marshall, to-wit:

The foregoing instrument was acknowledged before me this 24th day of March, 2018, by Paul G. Fox.

Given under my hand this 24th day of March, 2018.

My commission expires: Jan 18, 2022

(NOTARY SEAL/STAMP REQUIRED)

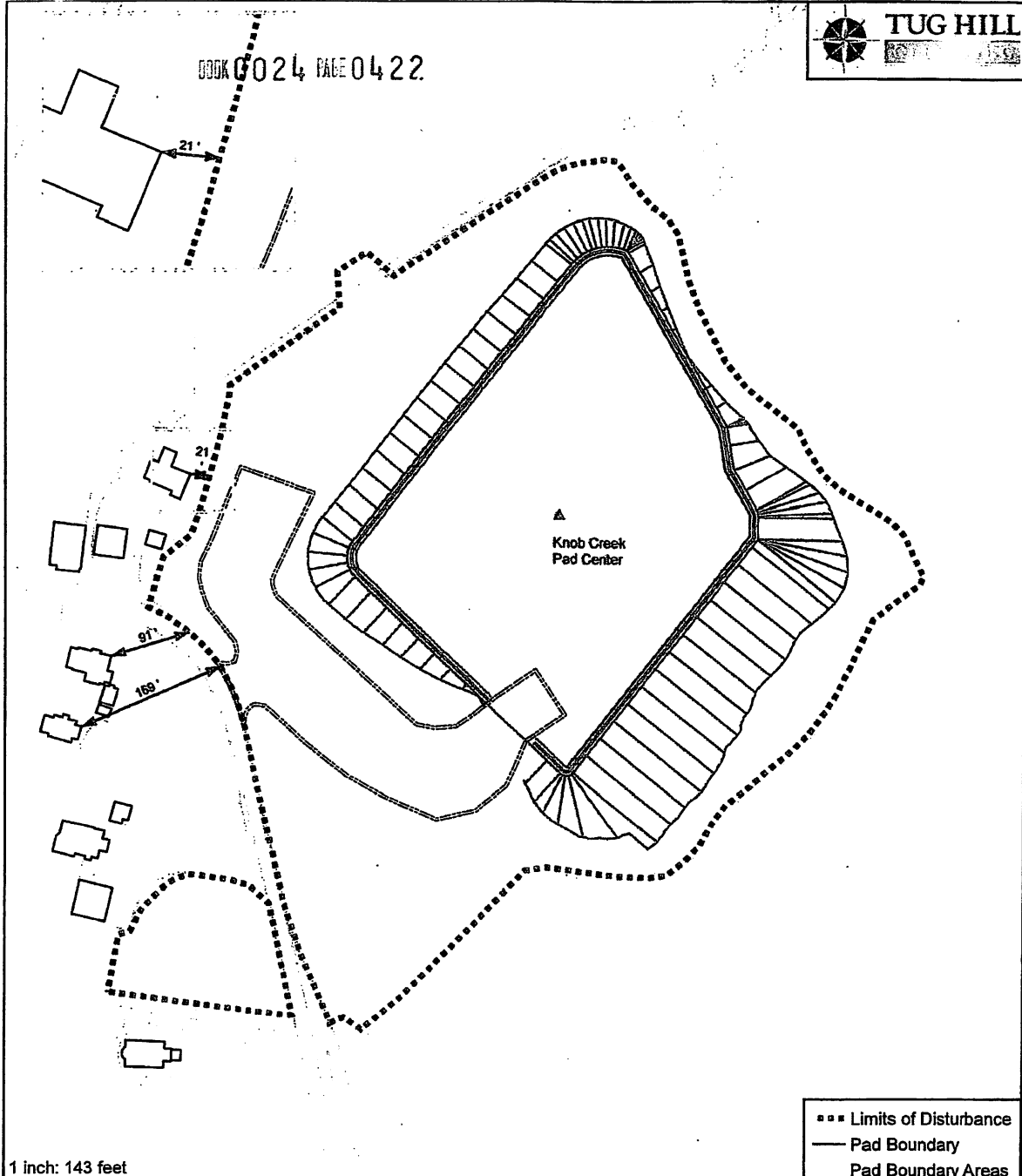


Notary Public for the aforesaid  
County and/or State

**This Instrument Prepared By:**

Eric M. Gordon, Esquire  
Berry, Kessler, Crutchfield, Taylor & Gordon  
514 Seventh Street  
Moundsville, WV 26041  
(304) 845-2580

Marshall County  
Jan Pest, Clerk  
Instrument 1439958  
05/03/2018 @ 02:36:25 PM  
POWER OF ATTORNEY  
Book 24 @ Page 418  
Pages Recorded 3  
Recording Cost \$



■■■ Limits of Disturbance  
 — Pad Boundary  
 — Pad Boundary Areas

1 inch: 143 feet

0 35 70 140  
Feet

N

NOTE: THE APPROVED SITE LOCATION FOR THE DAMAGE SITE ACCESS ROAD DEPENDS UPON THE LOCATION OF THE PROPERTY TO BE ACQUIRED AND LOCATIONS SHOWN AS THE EXISTING ROAD DEPENDS UPON THE ACTUAL PROPERTY TO BE ACQUIRED. THE LOCATION OF THE PROPERTY TO BE ACQUIRED IS SHOWN AS AN APPROXIMATE LOCATION AND SHOULD BE VERIFIED BY THE CLIENT. THE LOCATION OF THE PROPERTY TO BE ACQUIRED IS SHOWN AS AN APPROXIMATE LOCATION AND SHOULD BE VERIFIED BY THE CLIENT. THE LOCATION OF THE PROPERTY TO BE ACQUIRED IS SHOWN AS AN APPROXIMATE LOCATION AND SHOULD BE VERIFIED BY THE CLIENT.

**Exhibit "A"**

Marshall, WV

Date: 3-24-18  
 Paul H. Fox 3-24-18  
 Name: Paul H. Fox  
 Name: Thomas John Fox



Date: 3/2/2018  
 PCS: NAD 1983 UTM Zone 17N Feet US

Mark H. Fox 3-24-18

May 22, 3-30-18  
 Thomas John Fox 3-31-18

**LIMITED POWER OF ATTORNEY**

That I, David E. Fox, hereby make, name and appoint, Tug Hill Operating, LLC, by and through its officers, agents or employees to be my limited power of attorney, for the sole and specific purpose of executing Well Location Restriction Waivers(s) that permit the conducting of oil or gas well work and the drilling of additional oil and gas wells on the Knob Creek Well Pad situate in Meade District, Marshall County, West Virginia, shown on Tax Map 14, as Parcel 33. See attached **Exhibit A**. Said waivers shall be of the type shown on the attached **Exhibit B**, differing only in the api number and operator well number located on the form.

I the said David E. Fox hereby declare that acts done by my said attorney for said specific and sole purpose shall be as good, valid and effective, to all intents and purposes whatsoever, as if the same had been made or done by me, and I hereby undertake to ratify whatsoever my attorney shall lawfully do or cause to be done, by virtue of these presents.

I further direct this Limited Power of Attorney shall be good and valid until a revocation thereof has been duly executed by the undersigned.

David E. Fox (SEAL)

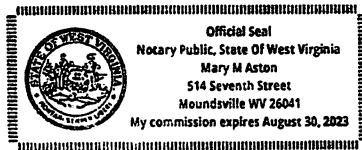
STATE OF West Virginia :  
County of Marshall , to-wit:

The foregoing instrument was acknowledged before me this 27 day of March, 2018, by David E. Fox.

Given under my hand this 27 day of March, 2018.

My commission expires: August 30, 2023.

**(NOTARY SEAL/STAMP REQUIRED)**



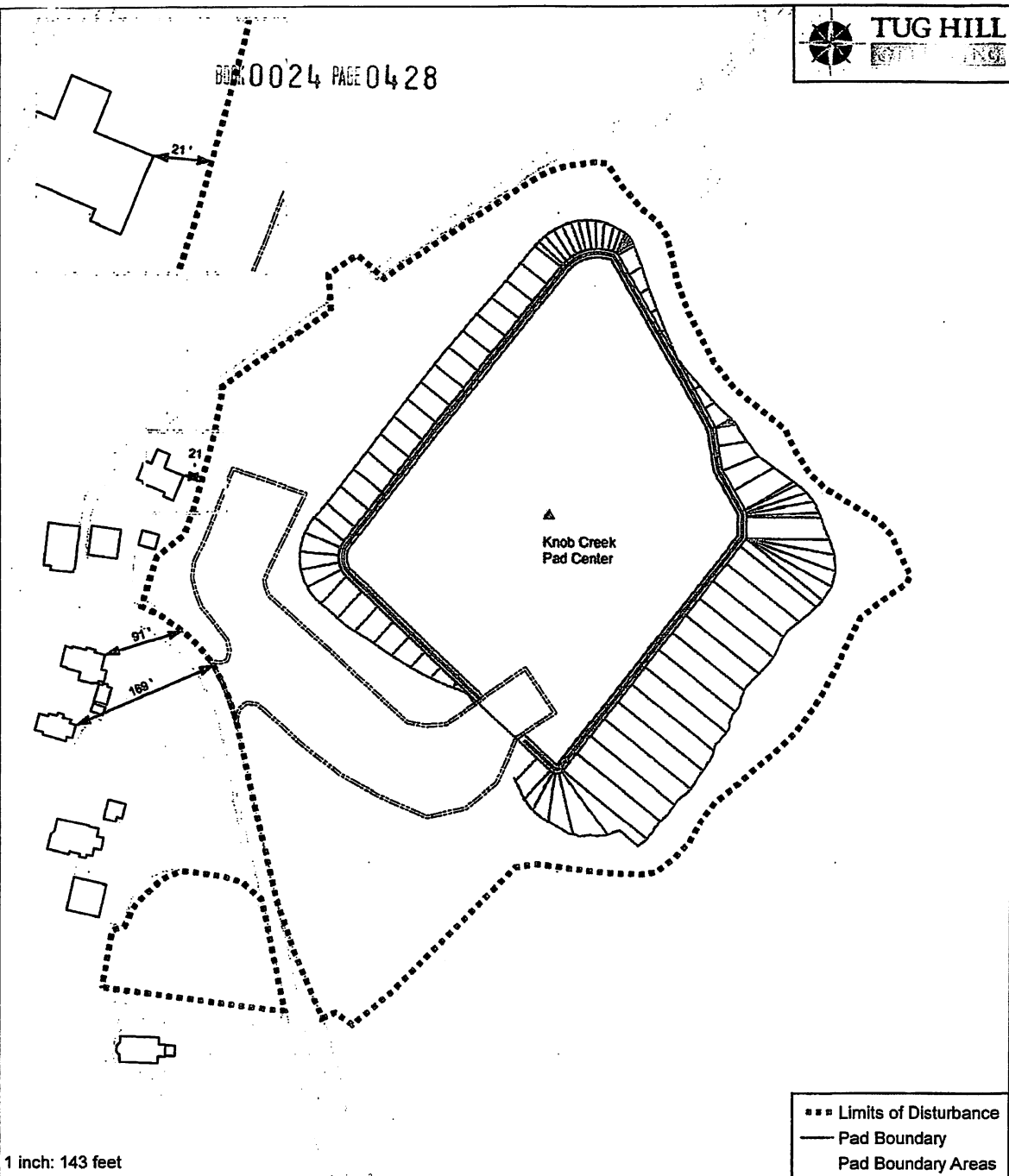
Mary M Aston  
Notary Public for the aforesaid  
County and/or State

**This Instrument Prepared By:**

Eric M. Gordon, Esquire  
Berry, Kessler, Crutchfield, Taylor & Gordon  
514 Seventh Street  
Moundsville, WV 26041  
(304) 845-2580

Marshall County  
Jan Pest, Clerk  
Instrument 1439961  
05/03/2018 @ 02:36:25 PM  
POWER OF ATTORNEY  
Book 24 @ Page 427  
Pages Recorded 3  
Recording Cost \$ 11.00





--- Limits of Disturbance  
 — Pad Boundary  
 — Pad Boundary Areas

1 inch: 143 feet

0 35 70 140  
 Feet

N

NOTE: UNAPPROVED SITE LOCATION FOR THE SURFACE SITE, ACCESS ROAD, RIGHT OF WAY AND THE LOCATION OF THE PROPERTY LINE, BOUNDARY, EASEMENTS, ETC. ARE SHOWN FOR INFORMATION ONLY. THE ACTUAL LOCATION OF THE PROPERTY LINE, BOUNDARY, EASEMENTS, ETC. ARE TO BE DETERMINED BY THE SURVEYOR IN THE FIELD. THE SURVEYOR IS NOT RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION PROVIDED IN THIS PLAN. THE SURVEYOR IS NOT RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION PROVIDED IN THIS PLAN. THE SURVEYOR IS NOT RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION PROVIDED IN THIS PLAN.

### Exhibit "A"

Marshall, WV

Date: 3-24-18  
 Name: Mark H. Fox 3-24-18  
 Name: Thomas John Fox 3-31-18



Date: 3/8/2018  
 PCS: NAD 1983 UTM Zone 17N Foot US

*Mark H. Fox 3-24-18*

*Thomas John Fox 3-31-18*

TUG HILL OPERATING LLC  
SUSANNE DELIERE  
380 SOUTHPOINTE BLVD  
SUITE 200  
CANONSBURG PA 15317

**LIMITED POWER OF ATTORNEY**

That I, Mary A. Fox, hereby make, name and appoint, Tug Hill Operating, LLC, its successors and assigns, by and through its officers, agents or employees to be my limited power of attorney, for the sole and specific purpose of executing Well Location Restriction Waivers(s) waiving all well site restrictions listed under West Virginia Code 22-6A-12(a) for the Knob Creek Well Pad situate in Meade District, Marshall County, West Virginia, located on Tax Map 14, Parcel 33 and depicted on the attached **Exhibit A**. Said waivers shall be of the type shown on the attached **Exhibit B**.

I the said Mary A. Fox hereby declare that acts done by my said attorney for said specific and sole purpose shall be as good, valid and effective, to all intents and purposes whatsoever, as if the same had been made or done by me, and I hereby undertake to ratify whatsoever my attorney shall lawfully do or cause to be done, by virtue of these presents.

I further direct this Limited Power of Attorney shall be good and valid until a revocation thereof has been duly executed by the undersigned.

Mary A. Fox (SEAL)

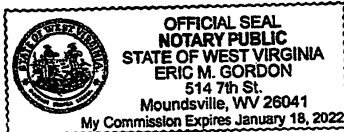
STATE OF West Virginia:  
COUNTY OF Marshall, to-wit:

The foregoing instrument was acknowledged before me this 30th day of March, 2018, by Mary A. Fox.

Given under my hand this 30th day of March, 2018.

My commission expires: Jan 18, 2022.

**(NOTARY SEAL/STAMP REQUIRED)**



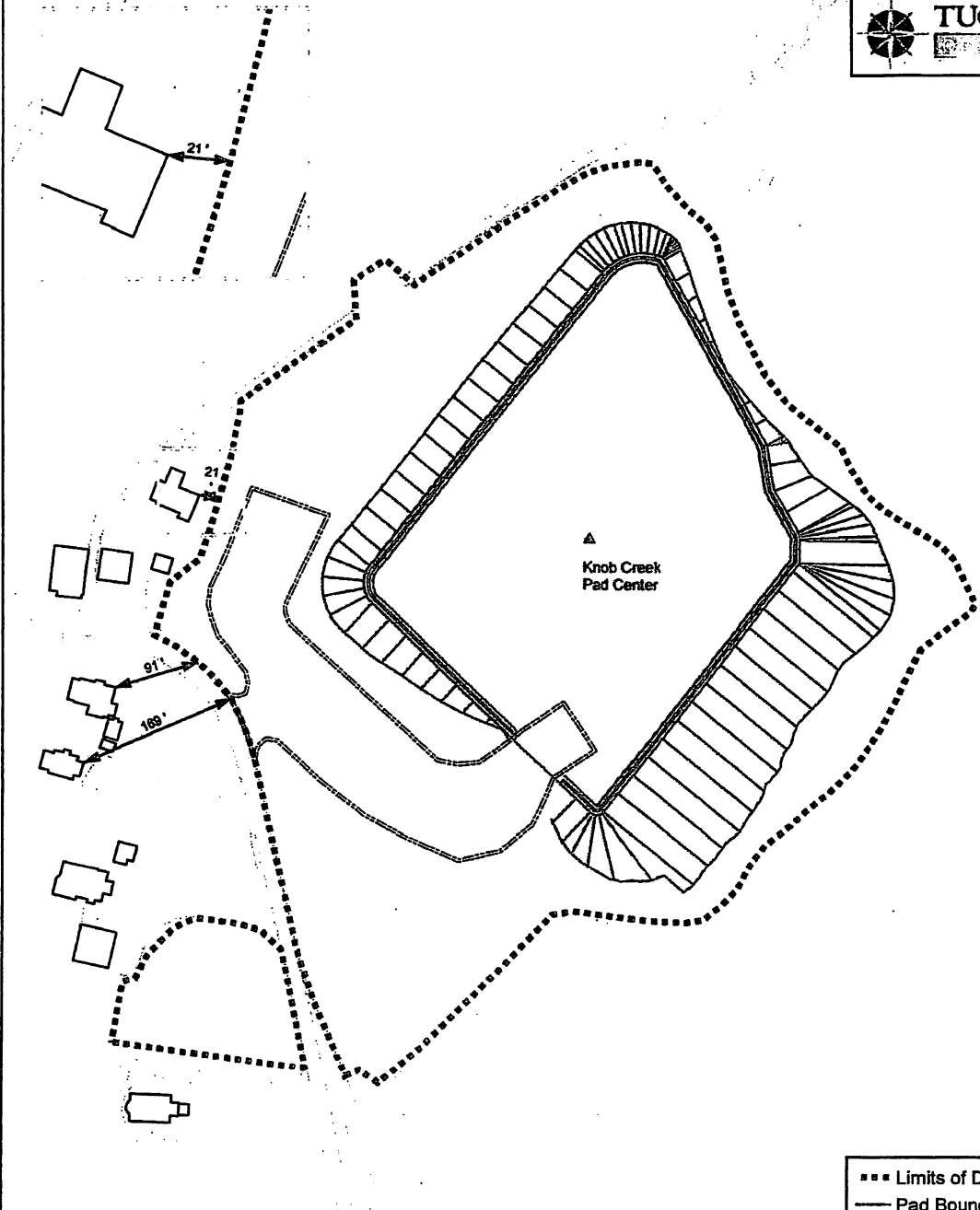
Notary Public for the aforesaid  
County and/or State

**This Instrument Prepared By:**

Eric M. Gordon, Esquire  
Berry, Kessler, Crutchfield, Taylor & Gordon  
514 Seventh Street  
Moundsville, WV 26041  
(304) 845-2580

T:\MSAston\Limited Power of Attorney\EMG.Limited.POA.wpd

Marshall County  
Jan Pest, Clerk  
Instrument 1439962  
05/03/2018 @ 02:36:25 PM  
POWER OF ATTORNEY  
Book 24 @ Page 430  
Pages Recorded 3  
Recording Cost \$ 11.00



--- Limits of Disturbance  
 — Pad Boundary  
 ▭ Pad Boundary Areas

1 inch: 143 feet

0 35 70 140  
 Feet



Exhibit "A"

Marshall, WV

Date: 3-24-18  
*Paul H. Fox 3-24-18*  
 Name: \_\_\_\_\_  
 Name: Thomas J. Fox



Date: 3/2/2018  
 PCS: NAD 1983 UTM Zone 17N Foot US

*Mark H. Fox 3-24-18*

*May 1st 2018  
 Thomas J. Fox 3-31-18*

WW-6RW  
(1-12)

API NO. 47- \_\_\_\_\_ -  
OPERATOR WELL NO. Knob Creek S-16HU  
Well Pad Name: Knob Creek

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
**WELL LOCATION RESTRICTION WAIVER**

The well operator, Tug Hill Operating, LLC is applying for a permit from the State of West Virginia to conduct oil or gas well work. Please be advised that well work permits are valid for twenty-four (24) months.

**Well Location Restrictions**

Pursuant to West Virginia Code § 22-6A-12(a), 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.

**WAIVER**

I, David Lee Franklin, by my Attorney-in-Fact, TH Exploration, LLC, hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through \_\_\_\_\_, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

State: West Virginia UTM NAD 83 Easting: 525,236.36  
County: Marshall UTM NAD 83 Northing: 4,402,285.21  
District: Meade Public Road Access: St. Joseph Road - County Route 21  
Quadrangle: Glen Easton 7.5' Generally used farm name: David Lee Franklin  
Watershed: Fish Creek (HUC-10)

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials and I therefore waive all well site restrictions listed under West Virginia Code § 22-6A-12(a).

**WELL SITE RESTRICTIONS BEING WAIVED**

\*Please check all that apply

- EXISTING WATER WELLS
- DEVELOPED SPRINGS
- DWELLINGS
- AGRICULTURAL BUILDINGS

**FOR EXECUTION BY A NATURAL PERSON**

Signature: \_\_\_\_\_

Print Name: \_\_\_\_\_

Date: \_\_\_\_\_

**FOR EXECUTION BY A CORPORATION, ETC.**

Company: TH Exploration, LLC as Attorney-in-Fact for David Lee Franklin

By: Douglas L. DeMartino

Its: Attorney-in-Fact

Signature: [Signature]

Date: 9/30/2019

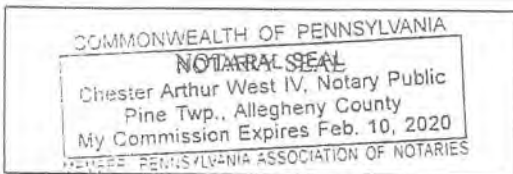
Well Operator: Tug Hill Operating, LLC

By: David G. DeLallo

Its: Land Team Lead

Signature: \_\_\_\_\_

Telephone: 724-749-8888



Subscribed and sworn before me this 30th day of September 2019

\_\_\_\_\_  
Notary Public

My Commission Expires 2-10-2020

WW-6RW  
(1-12)

API NO. 47- 051 -  
OPERATOR WELL NO. Knob Creek S-16HU  
Well Pad Name: Knob Creek

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
**WELL LOCATION RESTRICTION WAIVER**

The well operator, Tug Hill Operating, LLC is applying for a permit from the State of West Virginia to conduct oil or gas well work. Please be advised that well work permits are valid for twenty-four (24) months.

**Well Location Restrictions**

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**WAIVER**

I, Thomas John Fox, by my Attorney-in-Fact, TH Exploration, LLC, hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through \_\_\_\_\_, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

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County: Marshall UTM NAD 83 Northing: 4,402,285.21  
District: Meade Public Road Access: St. Joseph Road - County Route 21  
Quadrangle: Glen Easton 7.5' Generally used farm name: David Lee Franklin  
Watershed: Fish Creek (HUC-10)

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials and I therefore waive all well site restrictions listed under West Virginia Code § 22-6A-12(a).

**WELL SITE RESTRICTIONS BEING WAIVED**

\*Please check all that apply

- EXISTING WATER WELLS
- DEVELOPED SPRINGS
- DWELLINGS
- AGRICULTURAL BUILDINGS

**FOR EXECUTION BY A NATURAL PERSON**

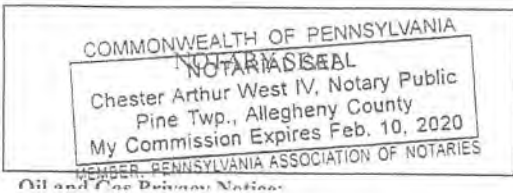
Signature: \_\_\_\_\_  
Print Name: \_\_\_\_\_  
Date: \_\_\_\_\_

**FOR EXECUTION BY A CORPORATION, ETC.**

Company: TH Exploration, LLC as Attorney-in-Fact for Thomas John Fox  
By: Douglas L. DeMartino  
Its: Attorney-in-Fact  
Signature: \_\_\_\_\_  
Date: 9/30/2019

Well Operator: Tug Hill Operating, LLC  
By: David G. DeLallo  
Its: Land Team Lead

Signature: \_\_\_\_\_  
Telephone: 724-749-8388



Subscribed and sworn before me this 30th day of September 2019  
\_\_\_\_\_  
Notary Public  
My Commission Expires 2-10-2020

WW-6RW  
(1-12)

API NO. 47- \_\_\_\_\_ - \_\_\_\_\_  
OPERATOR WELL NO. Knob Creek S-16HU  
Well Pad Name: Knob Creek

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
**WELL LOCATION RESTRICTION WAIVER**

The well operator, Tug Hill Operating, LLC is applying for a permit from the State of West Virginia to conduct oil or gas well work. Please be advised that well work permits are valid for twenty-four (24) months.

**Well Location Restrictions**

Pursuant to West Virginia Code § 22-6A-12(a), 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.

**WAIVER**

I, Linda Lee Franklin, by my Attorney-in-Fact, TH Exploration, LLC, hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through \_\_\_\_\_, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

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County: Marshall UTM NAD 83 Northing: 4,402,285.21  
District: Meade Public Road Access: St. Joseph Road - County Route 21  
Quadrangle: Glen Easton 7.5' Generally used farm name: David Lee Franklin  
Watershed: Fish Creek (HUC-10)

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials and I therefore waive all well site restrictions listed under West Virginia Code § 22-6A-12(a).

**WELL SITE RESTRICTIONS BEING WAIVED**

\*Please check all that apply

- EXISTING WATER WELLS
- DEVELOPED SPRINGS
- DWELLINGS
- AGRICULTURAL BUILDINGS

**FOR EXECUTION BY A NATURAL PERSON**

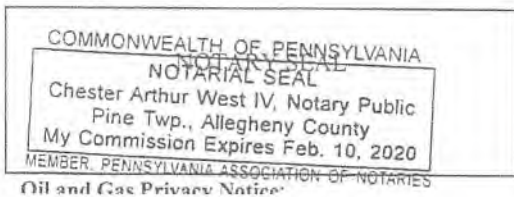
Signature: \_\_\_\_\_  
Print Name: \_\_\_\_\_  
Date: \_\_\_\_\_

**FOR EXECUTION BY A CORPORATION, ETC.**

Company: TH Exploration, LLC as Attorney-in-Fact for Linda Lee Franklin  
By: Douglas L. DeMartino  
Its: Attorney-in-Fact  
Signature: [Signature]  
Date: 9/30/2019

Well Operator: Tug Hill Operating, LLC  
By: David G. DeLallo  
Its: Land Team Lead

Signature: \_\_\_\_\_  
Telephone: 724-749-8888



Subscribed and sworn before me this 30th day of September 2019

\_\_\_\_\_  
Notary Public

My Commission Expires 2-10-2020

WW-6RW  
(1-12)

API NO. 47- \_\_\_\_\_  
OPERATOR WELL NO. Knob Creek S-16HU  
Well Pad Name: Knob Creek

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
**WELL LOCATION RESTRICTION WAIVER**

The well operator, Tug Hill Operating, LLC is applying for a permit from the State of West Virginia to conduct oil or gas well work. Please be advised that well work permits are valid for twenty-four (24) months.

**Well Location Restrictions**

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**WAIVER**

I, Douglas L. DeMartino, Esq., hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through \_\_\_\_\_, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

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County:	<u>Marshall</u>	UTM NAD 83 Northing:	<u>4,402,285.21</u>
District:	<u>Meade</u>	Public Road Access:	<u>St. Joseph Road - County Route 21</u>
Quadrangle:	<u>Glen Easton 7.5'</u>	Generally used farm name:	<u>David Lee Franklin</u>
Watershed:	<u>Fish Creek (HUC-10)</u>		

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials and I therefore waive all well site restrictions listed under West Virginia Code § 22-6A-12(a).

**WELL SITE RESTRICTIONS BEING WAIVED**

\*Please check all that apply

- EXISTING WATER WELLS
- DEVELOPED SPRINGS
- DWELLINGS
- AGRICULTURAL BUILDINGS

**FOR EXECUTION BY A NATURAL PERSON**

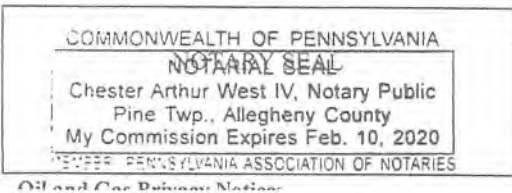
Signature: \_\_\_\_\_  
Print Name: \_\_\_\_\_  
Date: \_\_\_\_\_

**FOR EXECUTION BY A CORPORATION, ETC.**

Company: TH Exploration, LLC  
By: Douglas L. DeMartino, Esq.  
Its: Attorney-in-Fact  
Signature: [Signature]  
Date: 9/30/2019

Well Operator: Tug Hill Operating, LLC  
By: David G. DeLallo  
Its: Land Team Lead

Signature: [Signature]  
Telephone: 724-749-8388



Subscribed and sworn before me this 30th day of September 2019  
\_\_\_\_\_  
Notary Public  
My Commission Expires 2-10-2020

WW-6RW  
(1-12)

API NO. 47- \_\_\_\_\_ - \_\_\_\_\_  
OPERATOR WELL NO. Knob Creek S-16HU  
Well Pad Name: Knob Creek

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
**WELL LOCATION RESTRICTION WAIVER**

The well operator, Tug Hill Operating, LLC is applying for a permit from the State of West Virginia to conduct oil or gas well work. Please be advised that well work permits are valid for twenty-four (24) months.

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**WAIVER**

I, Paul G. Fox, by my Attorney-in-Fact, TH Exploration, LLC, hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through \_\_\_\_\_, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

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County: Marshall UTM NAD 83 Northing: 4,402,285.21  
District: Meade Public Road Access: St. Joseph Road - County Route 21  
Quadrangle: Glen Easton 7.5' Generally used farm name: David Lee Franklin  
Watershed: Fish Creek (HUC-10)

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials and I therefore waive all well site restrictions listed under West Virginia Code § 22-6A-12(a).

**WELL SITE RESTRICTIONS BEING WAIVED**

\*Please check all that apply

- EXISTING WATER WELLS
- DEVELOPED SPRINGS
- DWELLINGS
- AGRICULTURAL BUILDINGS

**FOR EXECUTION BY A NATURAL PERSON**

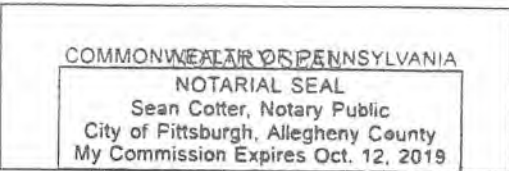
Signature: \_\_\_\_\_  
Print Name: \_\_\_\_\_  
Date: \_\_\_\_\_

**FOR EXECUTION BY A CORPORATION, ETC.**

Company: TH Exploration, LLC as Attorney-in-Fact for Paul G. Fox  
By: Douglas L. DeMartino  
Its: Attorney-in-Fact  
Signature: \_\_\_\_\_  
Date: 9/30/2019

Well Operator: Tug Hill Operating, LLC  
By: David G. DeLallo  
Its: Land Team Lead

Signature: \_\_\_\_\_  
Telephone: 724-749-9388



Subscribed and sworn before me this 30 day of September

Notary Public

My Commission Expires 10/12/2019



WW-6RW  
(1-12)

API NO. 47- \_\_\_\_\_  
OPERATOR WELL NO. Knob Creek S-16HU  
Well Pad Name: Knob Creek

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
**WELL LOCATION RESTRICTION WAIVER**

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**Well Location Restrictions**

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**WAIVER**

I, Mark H. Fox, by my Attorney-in-Fact, TH Exploration, LLC, hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through \_\_\_\_\_, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

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Watershed: Fish Creek (HUC-10)

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials and I therefore waive all well site restrictions listed under West Virginia Code § 22-6A-12(a).

**WELL SITE RESTRICTIONS BEING WAIVED**

\*Please check all that apply

- EXISTING WATER WELLS
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**FOR EXECUTION BY A NATURAL PERSON**

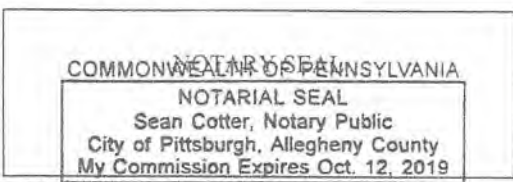
Signature: \_\_\_\_\_  
Print Name: \_\_\_\_\_  
Date: \_\_\_\_\_

**FOR EXECUTION BY A CORPORATION, ETC.**

Company: TH Exploration, LLC as Attorney-in-Fact for Mark H. Fox  
By: Douglas L. DeMartino  
Its: Attorney-in-Fact  
Signature: [Signature]  
Date: 9/30/2019

Well Operator: Tug Hill Operating, LLC  
By: David G. DeLallo  
Its: Land Team Lead

Signature: \_\_\_\_\_  
Telephone: 724-749-8398



Subscribed and sworn before me this 30 day of September  
\_\_\_\_\_  
Notary Public

My Commission Expires 10/12/2019

WW-6RW  
(1-12)

API NO. 47- \_\_\_\_\_  
OPERATOR WELL NO. Knob Creek S-16HU  
Well Pad Name: Knob Creek

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
**WELL LOCATION RESTRICTION WAIVER**

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**WAIVER**

I, David E. Fox by my Attorney-in-Fact TH Exploration, LLC, hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through \_\_\_\_\_, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

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District:	<u>Meade</u>	Public Road Access:	<u>St. Joseph Road - County Route 21</u>
Quadrangle:	<u>Glen Easton 7.5'</u>	Generally used farm name:	<u>David Lee Franklin</u>
Watershed:	<u>Fish Creek (HUC-10)</u>		

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**WELL SITE RESTRICTIONS BEING WAIVED**

\*Please check all that apply

- EXISTING WATER WELLS
- DEVELOPED SPRINGS
- DWELLINGS
- AGRICULTURAL BUILDINGS

**FOR EXECUTION BY A NATURAL PERSON**

Signature: \_\_\_\_\_  
Print Name: \_\_\_\_\_  
Date: \_\_\_\_\_

**FOR EXECUTION BY A CORPORATION, ETC.**

Company: TH Exploration, LLC as Attorney-in-Fact for David E. Fox  
By: Douglas L. DeMartino  
Its: Attorney-in-Fact  
Signature: \_\_\_\_\_  
Date: 9/30/2019

Well Operator: Tug Hill Operating, LLC

By: David G. DeLallo

Its: Land Team Lead

Signature: \_\_\_\_\_

Telephone: 724-749-8388

NOTARY SEAL  
Commonwealth of Pennsylvania - Notary Seal  
MAUREEN A STEAD - Notary Public  
Washington County  
My Commission Expires Jan 28, 2023  
Commission Number 1259926

Subscribed and sworn before me this 30 day of SEPTEMBER 2019

Maureen A Stead Notary Public

My Commission Expires 1/28/23

WW-6RW  
(1-12)

API NO. 47- \_\_\_\_\_ - \_\_\_\_\_  
OPERATOR WELL NO. Knob Creek S-16HU  
Well Pad Name: Knob Creek

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
**WELL LOCATION RESTRICTION WAIVER**

The well operator, Tug Hill Operating, LLC is applying for a permit from the State of West Virginia to conduct oil or gas well work. Please be advised that well work permits are valid for twenty-four (24) months.

**Well Location Restrictions**

Pursuant to West Virginia Code § 22-6A-12(a), 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.

**WAIVER**

I, Mary A. Fox, by my Attorney-in-Fact, TH Exploration, LLC, hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through \_\_\_\_\_, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

State: West Virginia UTM NAD 83 Easting: 525,236.36  
County: Marshall UTM NAD 83 Northing: 4,402,285.21  
District: Meade Public Road Access: St. Joseph Road - County Route 21  
Quadrangle: Glen Easton 7.5' Generally used farm name: David Lee Franklin  
Watershed: Fish Creek (HUC-10)

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials and I therefore waive all well site restrictions listed under West Virginia Code § 22-6A-12(a).

<p><b>WELL SITE RESTRICTIONS BEING WAIVED</b> *Please check all that apply</p> <p><input type="checkbox"/> EXISTING WATER WELLS</p> <p><input type="checkbox"/> DEVELOPED SPRINGS</p> <p><input checked="" type="checkbox"/> DWELLINGS</p> <p><input type="checkbox"/> AGRICULTURAL BUILDINGS</p>	<p><b>FOR EXECUTION BY A NATURAL PERSON</b> Signature: _____ Print Name: _____ Date: _____</p> <p><b>FOR EXECUTION BY A CORPORATION, ETC.</b> Company: <u>TH Exploration, LLC as Attorney-in-Fact for Mary A. Fox</u> By: <u>Douglas L. DeMartino</u> Its: <u>Attorney-in-Fact</u> Signature: <u>[Signature]</u> Date: <u>9/30/2019</u></p>
---	---

Well Operator: Tug Hill Operating, LLC  
By: David G. DeLallo  
Its: Land Team Lead

Signature: [Signature]  
Telephone: 724-749-8388

Commonwealth of West Virginia, Notary Seal  
**MAUREEN A STEAD** - Notary Public  
Washington County  
My Commission Expires Jan 28, 2023  
Commission Number 1259926

Subscribed and sworn before me this 30 day of SEPTEMBER 2019  
Maureen A Stead Notary Public  
My Commission Expires 1/28/23

WW-6RW  
(1-12)

API NO. 47- \_\_\_\_\_  
OPERATOR WELL NO. Knob Creek S-16HU  
Well Pad Name: Knob Creek

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
**WELL LOCATION RESTRICTION WAIVER**

The well operator, Tug Hill Operating, LLC is applying for a permit from the State of West Virginia to conduct oil or gas well work. Please be advised that well work permits are valid for twenty-four (24) months.

**Well Location Restrictions**

Pursuant to West Virginia Code § 22-6A-12(a), 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.

**WAIVER**

I, Louis T. Fox, by my Attorney-in-Fact, TH Exploration, LLC, hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through \_\_\_\_\_, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

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County: Marshall UTM NAD 83 Northing: 4,402,285.21  
District: Meade Public Road Access: St. Joseph Road - County Route 21  
Quadrangle: Glen Easton 7.5' Generally used farm name: David Lee Franklin  
Watershed: Fish Creek (HUC-10)

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials and I therefore waive all well site restrictions listed under West Virginia Code § 22-6A-12(a).

**WELL SITE RESTRICTIONS BEING WAIVED**

\*Please check all that apply

- EXISTING WATER WELLS
- DEVELOPED SPRINGS
- DWELLINGS
- AGRICULTURAL BUILDINGS

**FOR EXECUTION BY A NATURAL PERSON**

Signature: \_\_\_\_\_  
Print Name: \_\_\_\_\_  
Date: \_\_\_\_\_

**FOR EXECUTION BY A CORPORATION, ETC.**

Company: TH Exploration, LLC as Attorney-in-Fact for Louis T. Fox  
By: Douglas L. DeMartino  
Its: Attorney-in-Fact  
Signature: \_\_\_\_\_  
Date: 9/30/2019

Well Operator: Tug Hill Operating, LLC  
By: David G. DeLallo  
Its: Land Team Lead

Signature: \_\_\_\_\_  
Telephone: 724-749-8388

Commonwealth of Pennsylvania - Notary Seal  
MAUREEN A STEAD - Notary Public  
Washington County  
My Commission Expires Jan 28, 2023  
Commission Number 1259926

Subscribed and sworn before me this 30 day of SEPTEMBER 2019

Maureen A Stead Notary Public

My Commission Expires 1/28/23



## 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

October 1, 2019

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

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

Subject: DOH Permit for the Knob Creek Pad, Marshall County

Knob Creek Unit N-1HM	Knob Creek Unit N-2HM	Knob Creek Unit N-3HM
Knob Creek Unit S-6HM	Knob Creek Unit S-7HM	Knob Creek Unit S-8HM
Knob Creek Unit S-9HM	Knob Creek Unit S-10HM	Knob Creek Unit N-11HU
Knob Creek Unit S-14HU	Knob Creek Unit S-15HU	Knob Creek Unit S-16HU

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2018-0224 which has been issued to Tug Hill Operating, LLC for access to the State Road for a well site located off of Marshall County Route 21 SLS.

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

Very Truly Yours,

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

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

RECEIVED  
Office of Oil and Gas

OCT - 2 2019

WV Department of  
Environmental Protection



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

Well No. Knob Creek S-16HU

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

RECEIVED  
Office of Oil and Gas

OCT - 2 2019

WV Department of  
Environmental Protection

**WEST VIRGINIA COUNTY MAP**



**WVDEP OOG  
ACCEPTED AS-BUILT**

*WJ* 10/8/2019

**Knob Creek 1 Site**  
Site Design, Construction Plan, &  
Erosion and Sediment Control Plans  
Tug Hill Operating  
Marshall County  
Meade District  
Latitude 39.77005962°  
Longitude -80.70545789°  
Middle Fish Creek Watershed

**Pertinent Site Information**  
Knob Creek 1 Site  
Emergency Number: 304-845-1920  
Meade District, Marshall County, WV  
Watershed: Middle Fish Creek Watershed  
Tug Hill Contact Number: 1-817-632-3400

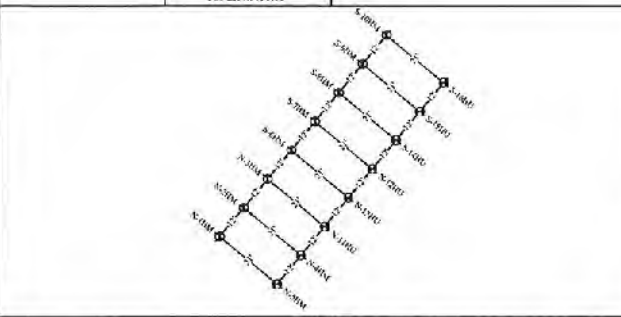
Property Owner Information - Knob Creek 1 Site

Owner	TM - Parcel	Well Pad	Pond	Access Road	Topsoil Storage	ADD. Clearing	Total Disturbed
David L. Franklin	14-11	5-35	1-18	1-42	0-78	1-81	11-24
Don J. Franklin	14-11	0-00	1-00	0-15	0-94	1-21	1-19
<b>Sub Totals (Sub)</b>		<b>5-35</b>	<b>1-18</b>	<b>1-57</b>	<b>0-72</b>	<b>2-02</b>	<b>12-43</b>

**Exhibit A: Final Design: Issue for Permitting**

Site Features

Center of Well Pad	Center of Well Pad
WV-N NAD 83 E: 464593.91 WV-N NAD 83 E: 163285.21 WV-N NAD 27 N: 464583.65 WV-N NAD 27 E: 166772.29 Lat. NAD 83: 39.7691389 Long. NAD 83: -80.7045343 Lat. NAD 27: 39.7691389 Long. NAD 27: -80.7045343 UTM 17 NAD 83 E: 440217.34 UTM 17 NAD 83 E: 325113.39	WV-N NAD 83 E: 464883.16 WV-N NAD 83 E: 162861.10 WV-N NAD 27 N: 464811.46 WV-N NAD 27 E: 165111.43 Lat. NAD 83: 39.7705962 Long. NAD 83: -80.7053219 Lat. NAD 27: 39.7695918 Long. NAD 27: -80.7054894 UTM 17 NAD 83 E: 440227.07 UTM 17 NAD 83 E: 325205.17 Pad Elev: 825.5M



S-11M

WV-N NAD 83 E: 464903.40 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464957.71 WV-N NAD 27 E: 166129.97 Lat. NAD 83: 39.7701597 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053800 UTM 17 NAD 83 (m) E: 440229.29 UTM 17 NAD 83 (m) E: 325211.35
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WV State Plane Coordinate System  
North Zone, NAD 83  
Elevation Based on NAVD 83  
Established by Survey Grade GPS  
and CP175 Post-Processor

Access Road

Surface Owner	TM - Parcel	Road Length	Type
David L. Franklin	14-11	14.29	New Access Road (Construction)

Disturbed Area

Well Pad Construction	5.55 Ac
Collection Pond Construction	0.18 Ac
Access Road Construction	1.41 Ac
Topsoil Storage Material	1.72 Ac
Additional Clearing	4.04 Ac
<b>Total Disturbed Area</b>	<b>12.99 ac</b>
<b>Additional Information</b>	
Total Wooded Acres Disturbed	1.41 Ac
Total Linear Feet of Access Road	434.27

Knob Creek 1 Site Quantities

Description	CU (CY)	Fill (CY)	Spill (CY)	Brom (CY)	Max. Slope	Length of Slope
Well Pad	56,618.17	48,114.99	8,503.18	N/A	N/A	N/A
Well Pad Access Road	691.75	2,924.36	2,299.81	10,665.5	211.34	N/A
Collection Pond	928.28	18,227	308.61	N/A	N/A	N/A
County Road Right-of-Way	1,091.99	116	1,091.99	N/A	N/A	N/A
Topsoil Storage Material Stockpile	0.00	17,196.01	1,395.43	19,499.84	N/A	N/A
Sub	22,351.79	88,452.83	10,997.61			
Total Spill (CY)			10,997.61			

Well Table

S-11M	S-12M	S-13M	S-14M	S-15M	S-16M	S-17M	S-18M	S-19M	S-20M	S-21M	S-22M	S-23M	S-24M	S-25M	S-26M	S-27M	S-28M	S-29M	S-30M	S-31M	S-32M	S-33M	S-34M	S-35M	S-36M	S-37M	S-38M	S-39M	S-40M	S-41M	S-42M	S-43M	S-44M	S-45M	S-46M	S-47M	S-48M	S-49M	S-50M	S-51M	S-52M	S-53M	S-54M	S-55M	S-56M	S-57M	S-58M	S-59M	S-60M	S-61M	S-62M	S-63M	S-64M	S-65M	S-66M	S-67M	S-68M	S-69M	S-70M	S-71M	S-72M	S-73M	S-74M	S-75M	S-76M	S-77M	S-78M	S-79M	S-80M	S-81M	S-82M	S-83M	S-84M	S-85M	S-86M	S-87M	S-88M	S-89M	S-90M	S-91M	S-92M	S-93M	S-94M	S-95M	S-96M	S-97M	S-98M	S-99M	S-100M
WV-N NAD 83 E: 464806.64 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464811.43 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464816.32 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464821.21 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464826.10 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464831.00 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464835.89 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464840.78 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464845.67 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464850.56 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464855.45 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464860.34 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464865.23 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464870.12 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464875.01 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464879.90 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464884.79 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464889.68 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464894.57 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464899.46 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464904.35 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464909.24 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464914.13 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464919.02 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464923.91 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. 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NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464963.03 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long. NAD 83: -80.7053066 Lat. NAD 27: 39.7700813 Long. NAD 27: -80.7053066 UTM 17 NAD 83 (m) E: 440217.34 UTM 17 NAD 83 (m) E: 325113.39	WV-N NAD 83 E: 464967.92 WV-N NAD 83 E: 162968.21 WV-N NAD 27 N: 464819.95 WV-N NAD 27 E: 166108.87 Lat. NAD 83: 39.7700813 Long																																																								

