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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)

Monday, October 22, 2018  
WELL WORK PERMIT  
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC  
380 SOUTHPOINTE BLVD

CANONSBURG, PA 15317

Re: Permit approval for KEITH STERN S-8HM  
47-051-02103-00-00

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: KEITH STERN S-8HM  
Farm Name: TH EXPLORATION, LLC  
U.S. WELL NUMBER: 47-051-02103-00-00  
Horizontal 6A New Drill  
Date Issued: 10/22/2018

Promoting a healthy environment.



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Austin Caperton, Cabinet Secretary  
dep.wv.gov

**ORDER  
ISSUED UNDER  
WEST VIRGINIA CODE, CHAPTER 22, ARTICLE 6A**

TO: Tug Hill Operating  
380 Southpointe Boulevard, Plaza II, Suite 200  
Cannonsburg, Pa 15317

DATE: July 25, 2018  
ORDER NO.: 2018-W-4

**INTRODUCTION**

This Order (hereinafter "Order") is issued by the Office of Oil and Gas (hereinafter "OOG"), by and through its Chief, pursuant to the authority of W. Va. Code §§ 22-1-1, 22-6-1 and 22-6A-1 *et seq.* to Tug Hill Operating (hereinafter "Tug Hill" or "Operator"), collectively the "Parties."

**FINDINGS OF THE CHIEF**

In support of this Order, the Chief hereby finds the following:

1. OOG, an office within the West Virginia Department of Environmental Protection, is the agency with the duty and authority to execute and enforce W. Va. Code §22-6-1 and §22-6A-1 *et seq.*, and the rules and regulations promulgated thereunder.
2. Tug Hill is a "person" as defined by W. Va. Code §22-6-1(n), with a corporate address as 380 Southpointe Boulevard, Plaza II, Suite 200, Cannonsburg, Pa 15317
3. On May 5, 2018 Tug Hill submitted a well work permit application identified as API# 47-051-02041. The proposed well is to be located on the Keith Stern Pad in the Meade District of Marshall County, West Virginia.
4. On May 5, 2018 Tug Hill requested a waiver for Perennial Stream S1, Wetland W1 and Wetland W2 outlined in Attachment 1, from well location restriction requirements in W. Va. Code §22-6A-12(b) for the well work permit application identified as API# 47-051-02041.

## CONCLUSIONS OF LAW

1. West Virginia Code §22-1-6(d) requires, in part, that “in addition to other powers, duties and responsibilities granted and assigned to the secretary by this chapter, the secretary is authorized and empowered to... (3) Enter private lands to make surveys and inspections for environmental protection purposes; to investigate for violations of statutes or rules which the Office of Oil and Gas is charged with enforcing; to serve and execute warrants and processes; to make arrests; issue orders, which for the purposes of this chapter include consent agreements; and to otherwise enforce the statutes or rules which the Office of Oil and Gas is charged with enforcing.”
2. West Virginia Code §22-6A-2(a)(6) requires, in part, that “Concomitant with the broad powers to condition the issuance of well work permits, the secretary should also have broad authority to waive certain minimum requirements of this article when, in his or her discretion, such waiver is appropriate: *Provided*, That the secretary shall submit a written report of the number of waivers granted to the Legislature commencing January 1, 2013, and each year thereafter.”
3. West Virginia Code §22-6A-12(b) requires, in part, that “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 Office of Oil and Gas 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 Office of Oil and Gas 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.”

## **ORDER**

West Virginia Code §22-6A-12(b) requires, in part, that “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. The Office of Oil and Gas grants the request for a waiver for Perennial Stream S1, Wetland W1 and Wetland W2 from well location restriction requirements in W. Va. Code §22-6A-12(b) for the well work permit application identified as API# 47-051-02041. The Office of Oil and Gas hereby **ORDERS** that Tug Hill shall meet the following site construction and operational requirements for the Keith Stern Well Pad:

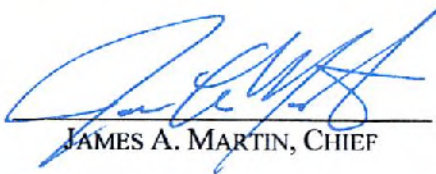
- a. A berm shall be constructed around the perimeter of the pad to contain any potential spills and storm water runoff. Berm is to be at least twenty-four inches (24”) in height;
- b. Erosion control blankets shall be installed on all slopes and down gradient locations of the pad as erosion and sediment controlling BMPs;
- c. Stream 1 shall be protected by twenty-four-inch (24”) compost filter sock and super silt fence. SedCatch inlet protection for existing culverts shall also be provided. This along with temporary and permanent vegetative cover will prevent sediment from reaching the stream.
- d. Wetlands W1 and W2 shall be protected by twenty-four-inch (24”) compost filter sock and super silt fence. This along with temporary and permanent vegetative cover will prevent sediment from reaching the wetlands
- e. Disturbed areas not used for operations shall be seeded and mulched per the seeding tables in the WVDEP-OOG Erosion and Sediment Control Manual;
- f. Drill cuttings and associated drilling mud shall be disposed of in a permitted landfill;
- g. Waste generated by the flowback treatment systems shall be sent to offsite disposal at a permitted landfill;
- h. Weekly site inspections shall be conducted to monitor and maintain the integrity of the BMP storm water controls;
- i. Weekly storm water and spill prevention inspections shall be conducted focusing on storm water and spill prevention BMPs and maintenance of these BMPs;
- j. Inspections of the storm water and spill prevention measures shall be conducted after any major storm event defined as a half inch (½”) rain within any twenty-four (24) hour period;
- k. Pad inspections shall be conducted no less than once a week to identify and mitigate potential deficiencies;
- l. All records from inspections shall be maintained on site for the life of the project and be available upon request.

Thus ORDERED, the 25th day of July, 2018.

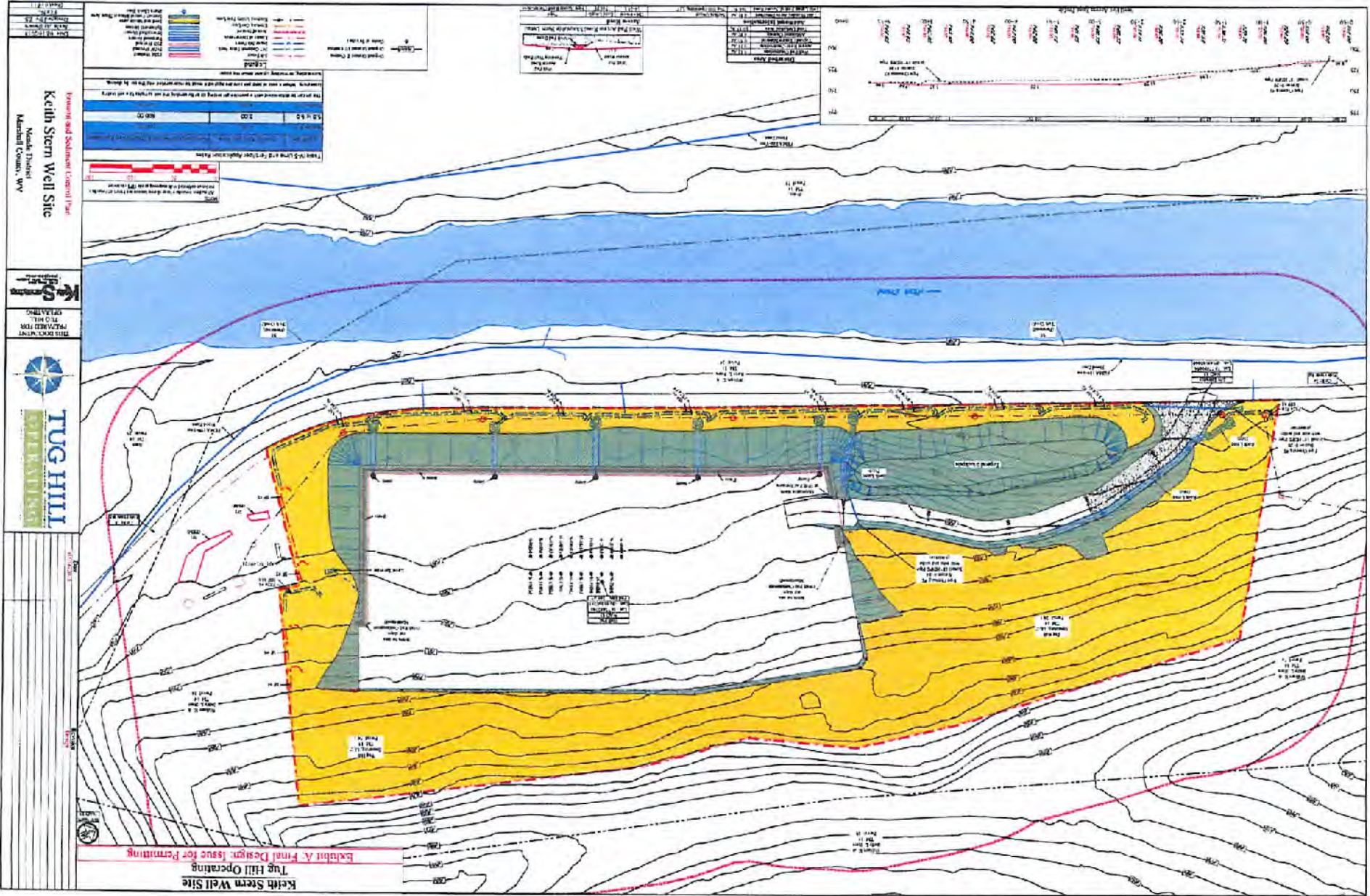
IN THE NAME OF THE STATE OF WEST VIRGINIA:

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

By:



JAMES A. MARTIN, CHIEF



Keith Stern Well Site  
Tug Hill Operating  
Exhibit A Final Design Issue for Permitting

Permitting and Production Control Plan  
Keith Stern Well Site  
Meadow District  
Marshall County, WV



THIS DOCUMENT IS THE PROPERTY OF TUG HILL OPERATING. IT IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED HEREIN. IT IS NOT TO BE REPRODUCED, COPIED, OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF TUG HILL OPERATING.

# 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.

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

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

2) Operator's Well Number: Keith Stern S-8HM Well Pad Name: Keith Stern

3) Farm Name/Surface Owner: TH Exploration, LLC Public Road Access: Fish Creek Road (County Route 74)

4) Elevation, current ground: 741.50' Elevation, proposed post-construction: 744.65'

5) Well Type (a) Gas  Oil  Underground Storage

Other \_\_\_\_\_

(b) If Gas Shallow  Deep

Horizontal  \_\_\_\_\_

*Handwritten signature and date: 8/1/18*

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Marcellus is the target formation at a depth of 8248' - 8299', thickness of 51' and an anticipated approximate pressure of 3800 ps.

8) Proposed Total Vertical Depth: 6399'

9) Formation at Total Vertical Depth: Onondaga

10) Proposed Total Measured Depth: 14,754'

11) Proposed Horizontal Leg Length: 7,694.71'

12) Approximate Fresh Water Strata Depths: 70'; 460'

13) Method to Determine Fresh Water Depths: Use shallow offset wells to determine deepest freshwater, or determine using pre-drill tests, testlogs while drilling or petrophysical evaluation of resistivity.

14) Approximate Saltwater Depths: 1,740'

15) Approximate Coal Seam Depths: Sewickley Coal - 369' and Pittsburgh Coal - 454'

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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WW-6B  
(04/15)

API NO. 47- 051 -  
OPERATOR WELL NO. Keith Stern S-81M  
Well Pad Name: Keith Stern

18) CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	30"	NEW	BW	BW	120'	120'	259ft^3(CTS)
Fresh Water	13 3/8"	NEW	J55	54.5#	560'	560'	739ft^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	560'	560'	739ft^3(CTS)
Intermediate	9 5/8"	NEW	J55	36#	2,220'	2,200'	718ft^3(CTS)
Production	5 1/2"	NEW	P110	20#	14,754'	14,754'	3778ft^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#	7,151'		
Liners							

*JS*  
*8/1/18*

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	13 3/8"	17.5"	.33	2,740	2,192	SEE #24	1.2
Coal	13 3/8"	17.5"	.33	2,740	2,192	SEE #24	1.2
Intermediate	9 5/8"	12 1/4"	.352	3,520	2,816	SEE #24	1.19
Production	5 1/2"	8 7/8" _ 8 3/4"	.361	12,640	10,112	SEE #24	1.17/1.19
Tubing	2 3/8"		.19	11,200	8,960		
Liners							

PACKERS

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

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WW-6B  
(10/14)

4705102103  
API NO. 47-051 -  
OPERATOR WELL NO. Keith Stern S-8HM  
Well Pad Name: Keith Stern

*JS*  
*5/1/18*

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

Drill through the Marcellus tagging less than 100' from the top of the Onondaga to get depths and log data. Plug back to proposed kick off point. Drill the horizontal section to planned and proposed TD. Run casing and cement to surface. Run Bond Log from app. 60 deg to surface. Make clean out run and stimulate.

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

Well to completed with approximately 19,232,500 lb. proppant and 297,348 barrels of water.  
Max rate = 80bpm; max psi = 9,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 10.35 acres

22) Area to be disturbed for well pad only, less access road (acres): 4.32 acres

23) Describe centralizer placement for each casing string:

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

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

\*See attachment

25) Proposed borehole conditioning procedures:

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

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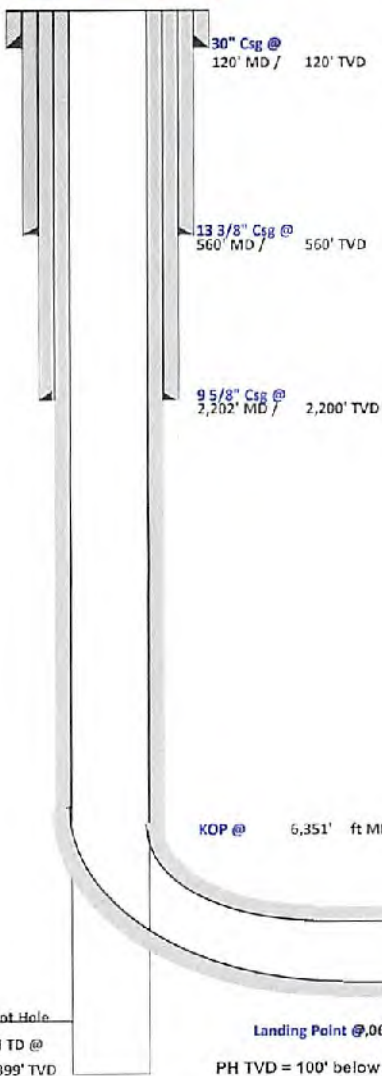
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\*Note: Attach additional sheets as needed.



**WELL NAME:** Keith Stern S-8HM  
**STATE:** WV      **COUNTY:** Marshall  
**DISTRICT:** Meade  
**DF Elev:** 744'      **GL Elev:** 744'  
**TD:** 14,754'  
**TH Latitude:** 39.77473749  
**TH Longitude:** -80.69222317  
**BH Latitude:** 39.750783  
**BH Longitude:** -80.661015



FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	460
Sewickley Coal	369
Pittsburgh Coal	454
Big Lime	1611
Weir	1924
Berea	2116
Gordon	2381
Rhinestreet	5592
Genesee/Burkett	6106
Tully	6137
Hamilton	6172
Marcellus	6248
Landing Depth	6288
Onondaga	6299
Pilot Hole Depth	6399

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	120'	120'	BW	BW	Surface
Surface	17.5	13 3/8	560'	560'	54.5	J55	Surface
Intermediate 1	12 1/4	9 5/8	2,202'	2,200'	36	J55	Surface
Production	8 7/8 x 8 3/4	5 1/2	14,754'	6,422'	20	CYHP110	Surface

CEMENT SUMMARY			DRILLING DETAILS		
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	721	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	725	A	15	Air	1 Centralizer every other jt
Production	3,339	A	14.5	Air / SOBMM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc

Pilot Hole  
 PH TD @  
 6,399' TVD

Landing Point @ 9,061' MD / 6,288' TVD  
 PH TVD = 100' below Onondaga Top

Lateral TD @ 14,754' ft MD  
 6,422' ft TVD

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 Environmental Protection

*Handwritten signature and date: 8/1/18*

4705102103



## Tug Hill Operating, LLC Casing and Cement Program

### Keith Stern S-8HM

#### Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	13 3/8"	J55	17 1/2"	580'	CTS
Intermediate	9 5/8"	J55	12 1/4"	2,202'	CTS
Production	5 1/2"	CYHP110	8 7/8 x 8 3/4"	14,754'	CTS

#### Cement

Conductor:	Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Conductor Cement mixed at 15.6 ppg, Y=1.2
Surface:	Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Surface Cement mixed at 15.6 ppg, Y=1.2
Intermediate:	Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.19
Kick Off Plug:	Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L - KOP Plug
Production:	50:50 Poz: Premium NE-1 + .1% bwoc ASA-301 + 60lb/sk ASCA-1 + .35% bwoc BA-10A + .25% bwoc MPA-170, 44 lb sack + .5% bwoc R-3 + .75 gals/100sk FP-13L – Production Cement mixed at 15.2ppg, Y = 1.19

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Well: Keith Stern S-08 HM (slot B)  
 Site: Keith Stern  
 Project: Marshall County, West Virginia  
 Design: rev1

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N+S	+E+W	Dleg	TFace	V Sect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1400.00	0.00	0.00	1400.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2°/100' build
3	1650.00	5.00	225.00	1649.68	-7.71	-7.71	2.00	225.00	4.60	Begin 5.00° tangent
4	3105.86	5.00	225.00	3100.00	-97.43	-97.43	0.00	0.00	58.11	Begin 3°/100' build/turn
5	4020.21	32.07	204.53	3959.35	-351.27	-228.91	3.00	-23.75	251.47	Begin 32.07° tangent
6	5350.73	32.07	204.53	5934.33	-1476.79	-742.67	0.00	0.00	1132.55	Begin 10°/100' build/turn
7	7061.05	89.00	150.31	6288.00	-2029.46	-530.26	10.00	-59.07	1690.25	Begin 89.00° lateral section
8	14754.35	89.00	150.31	6422.00	-6711.45	3160.22	0.00	0.00	9273.78	PBHLTD 14754.34 MD/6422.00 TVD

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

System Datum: Mean Sea Level  
 Depth Reference: GL @ 744.00usft

Northing 14444856.48 Easting 1726892.50 Latitude 39.77478748 Longitude -80.89222317

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.81°



Azimuths to Grid North  
 True North: -0.20°  
 Magnetic North: -8.81°

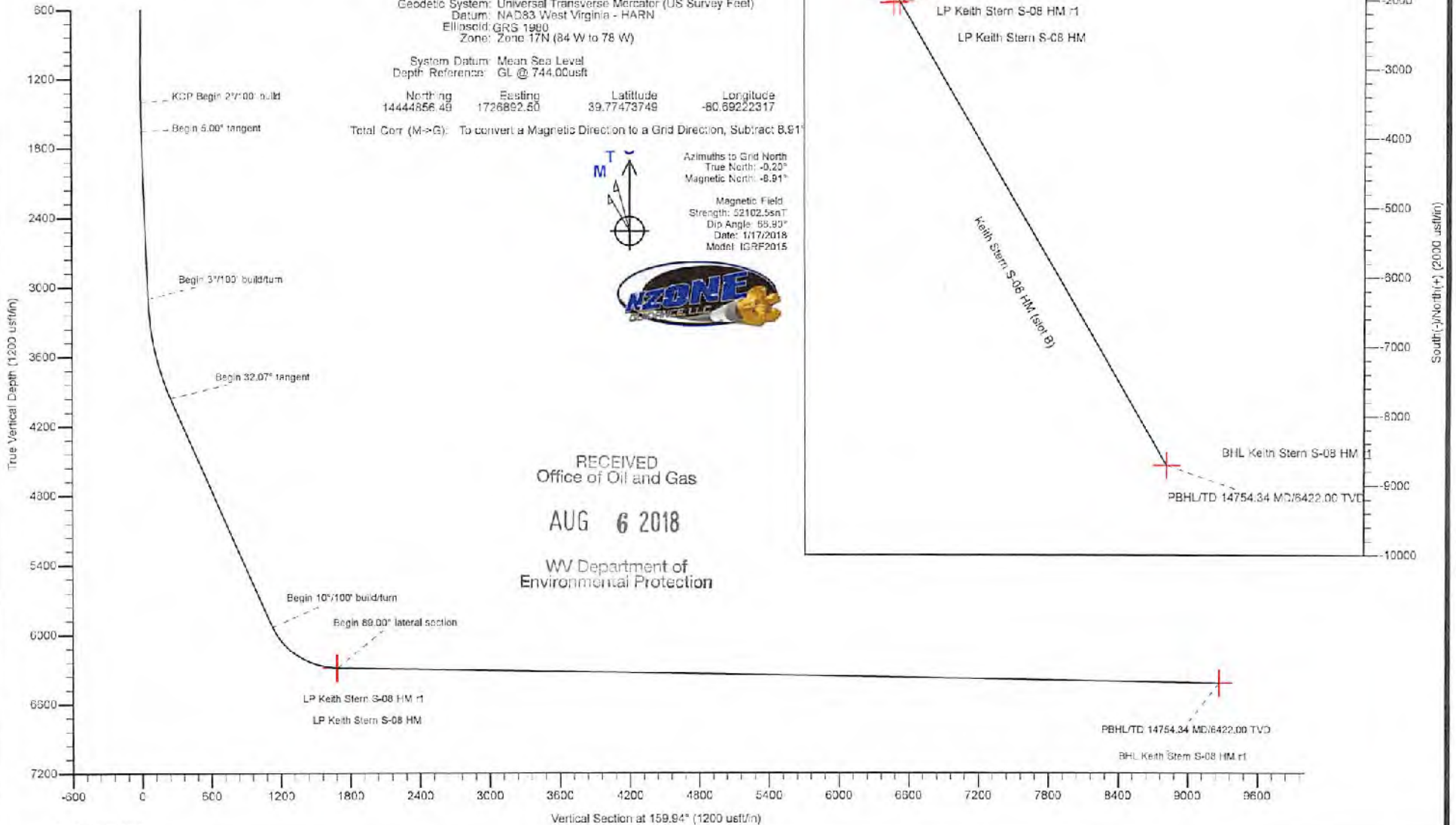
Magnetic Field  
 Strength: 52102.5nT  
 Dip Angle: 66.89°  
 Date: 1/17/2018  
 Model: IGRF2015



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Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Keith Stern S-08 HM (slot B)
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL @ 744.00usft
<b>Project:</b>	Marshall County, West Virginia	<b>MD Reference:</b>	GL @ 744.00usft
<b>Site:</b>	Keith Stern	<b>North Reference:</b>	Grid
<b>Well:</b>	Keith Stern S-08 HM (slot B)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev1		

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<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)		

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<b>Site</b>	Keith Stern				
<b>Site Position:</b>	<b>Northing:</b>	14,444,890.33 usft	<b>Latitude:</b>	39.77463004	
<b>From:</b> Lat/Long	<b>Easting:</b>	1,728,932.47 usft	<b>Longitude:</b>	-80.89208048	
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.20 °

<b>Well</b>	Keith Stern S-08 HM (slot B)					
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	14,444,856.49 usft	<b>Latitude:</b>	39.77473749
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	1,728,892.49 usft	<b>Longitude:</b>	-80.89222317
<b>Position Uncertainty</b>	0.00 usft	<b>Wellhead Elevation:</b>		<b>Ground Level:</b>	744.00 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	1/17/2018	-8.71	66.90	52,102.47667723

<b>Design</b>	rev1			
<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	159.94

<b>Plan Survey Tool Program</b>	<b>Date</b>	7/21/2018		
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>
1	0.00	14,754.35 rev1 (Original Hole)	MWD	MWD - Standard

<b>Plan Sections</b>										
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	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,650.00	5.00	225.00	1,649.68	-7.71	-7.71	2.00	2.00	0.00	225.00	
3,105.66	5.00	225.00	3,100.00	-97.43	-97.43	0.00	0.00	0.00	0.00	
4,020.21	32.07	204.54	3,959.35	-351.27	-228.91	3.00	2.86	-2.24	-23.76	
6,350.73	32.07	204.54	5,934.33	-1,476.79	-742.67	0.00	0.00	0.00	0.00	
7,061.05	89.00	150.31	6,288.00	-2,029.46	-630.28	10.00	8.02	-7.63	-59.07	LP Keith Stern S-08 H
14,754.35	89.00	150.31	6,422.00	-8,711.45	3,180.22	0.00	0.00	0.00	0.00	BHL Keith Stern S-08



Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Keith Stern S-08 HM (slot B)
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL @ 744.00usft
<b>Project:</b>	Marshall County, West Virginia	<b>MD Reference:</b>	GL @ 744.00usft
<b>Site:</b>	Keith Stern	<b>North Reference:</b>	Grid
<b>Well:</b>	Keith Stern S-08 HM (slot B)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev1		

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Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.00	0.00	0.00	0.00	14,444,856.49	1,726,892.49	39.77473749	-80.69222317	
100.00	0.00	0.00	100.00	0.00	0.00	14,444,856.49	1,726,892.49	39.77473749	-80.69222317	
200.00	0.00	0.00	200.00	0.00	0.00	14,444,856.49	1,726,892.49	39.77473749	-80.69222317	
300.00	0.00	0.00	300.00	0.00	0.00	14,444,856.49	1,726,892.49	39.77473749	-80.69222317	
400.00	0.00	0.00	400.00	0.00	0.00	14,444,856.49	1,726,892.49	39.77473749	-80.69222317	
500.00	0.00	0.00	500.00	0.00	0.00	14,444,856.49	1,726,892.49	39.77473749	-80.69222317	
600.00	0.00	0.00	600.00	0.00	0.00	14,444,856.49	1,726,892.49	39.77473749	-80.69222317	
700.00	0.00	0.00	700.00	0.00	0.00	14,444,856.49	1,726,892.49	39.77473749	-80.69222317	
800.00	0.00	0.00	800.00	0.00	0.00	14,444,856.49	1,726,892.49	39.77473749	-80.69222317	
900.00	0.00	0.00	900.00	0.00	0.00	14,444,856.49	1,726,892.49	39.77473749	-80.69222317	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,444,856.49	1,726,892.49	39.77473749	-80.69222317	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,444,856.49	1,726,892.49	39.77473749	-80.69222317	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,444,856.49	1,726,892.49	39.77473749	-80.69222317	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,444,856.49	1,726,892.49	39.77473749	-80.69222317	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,444,856.49	1,726,892.49	39.77473749	-80.69222317	
<b>KOP Begin 2°/100' build</b>										
1,500.00	2.00	225.00	1,499.88	-1.23	-1.23	14,444,855.25	1,726,891.26	39.77473411	-80.69222758	
1,600.00	4.00	225.00	1,599.83	-4.93	-4.93	14,444,851.55	1,726,887.56	39.77472399	-80.69224079	
1,650.00	5.00	225.00	1,649.68	-7.71	-7.71	14,444,848.78	1,726,884.79	39.77471640	-80.69225070	
<b>Begin 5.00° tangent</b>										
1,700.00	5.00	225.00	1,699.49	-10.79	-10.79	14,444,845.70	1,726,881.70	39.77470798	-80.69226170	
1,800.00	5.00	225.00	1,799.11	-18.95	-18.95	14,444,839.54	1,726,875.54	39.77469110	-80.69228371	
1,900.00	5.00	225.00	1,898.73	-23.12	-23.12	14,444,833.37	1,726,869.38	39.77467423	-80.69230572	
2,000.00	5.00	225.00	1,998.35	-29.28	-29.28	14,444,827.21	1,726,863.22	39.77465736	-80.69232773	
2,100.00	5.00	225.00	2,097.97	-35.44	-35.44	14,444,821.05	1,726,857.05	39.77464050	-80.69234974	
2,200.00	5.00	225.00	2,197.59	-41.60	-41.60	14,444,814.88	1,726,850.89	39.77462363	-80.69237175	
2,300.00	5.00	225.00	2,297.20	-47.77	-47.77	14,444,808.72	1,726,844.73	39.77460676	-80.69239376	
2,400.00	5.00	225.00	2,396.82	-53.93	-53.93	14,444,802.56	1,726,838.58	39.77458990	-80.69241577	
2,500.00	5.00	225.00	2,496.44	-60.09	-60.09	14,444,796.40	1,726,832.40	39.77457303	-80.69243778	
2,599.99	5.00	225.00	2,596.06	-66.26	-66.26	14,444,790.23	1,726,826.24	39.77455616	-80.69245979	
2,699.99	5.00	225.00	2,695.68	-72.42	-72.42	14,444,784.07	1,726,820.08	39.77453930	-80.69248180	
2,799.99	5.00	225.00	2,795.30	-78.58	-78.58	14,444,777.91	1,726,813.91	39.77452243	-80.69250380	
2,899.99	5.00	225.00	2,894.92	-84.74	-84.74	14,444,771.74	1,726,807.75	39.77450556	-80.69252581	
2,999.99	5.00	225.00	2,994.54	-90.91	-90.91	14,444,765.58	1,726,801.59	39.77448870	-80.69254782	
3,099.99	5.00	225.00	3,094.16	-97.07	-97.07	14,444,759.42	1,726,795.42	39.77447183	-80.69256983	
3,105.88	5.00	225.00	3,100.00	-97.43	-97.43	14,444,759.06	1,726,795.06	39.77447084	-80.69257112	
<b>Begin 3°/100' build/turn</b>										
3,199.99	7.87	216.45	3,193.56	-105.39	-104.06	14,444,751.10	1,726,788.43	39.77444906	-80.69259483	
3,299.99	10.59	212.15	3,292.28	-118.54	-112.92	14,444,737.95	1,726,779.57	39.77441302	-80.69262651	
3,399.99	13.55	209.70	3,390.06	-136.50	-123.62	14,444,719.99	1,726,768.87	39.77436379	-80.69266481	
3,499.99	16.52	208.12	3,486.62	-159.22	-136.13	14,444,697.27	1,726,756.36	39.77430151	-80.69270961	
3,599.99	19.50	207.01	3,581.71	-186.64	-150.42	14,444,669.85	1,726,742.08	39.77422835	-80.69276079	
3,699.99	22.49	206.19	3,675.06	-218.88	-168.44	14,444,637.81	1,726,726.05	39.77413852	-80.69281822	
3,799.99	25.48	205.55	3,766.42	-255.25	-184.16	14,444,601.24	1,726,708.33	39.77403824	-80.69289173	
3,899.99	28.47	205.04	3,855.53	-298.26	-203.53	14,444,560.23	1,726,688.97	39.77392591	-80.69295115	
3,999.99	31.46	204.61	3,942.16	-341.59	-224.48	14,444,514.90	1,726,668.01	39.77380152	-80.69302629	
4,020.21	32.07	204.54	3,959.35	-351.27	-228.91	14,444,505.22	1,726,663.56	39.77377498	-80.69304216	
<b>Begin 32.07° tangent</b>										
4,099.99	32.07	204.54	4,026.96	-389.80	-246.50	14,444,466.69	1,726,646.00	39.77366933	-80.69310523	
4,199.99	32.07	204.54	4,111.70	-438.09	-268.54	14,444,418.40	1,726,623.95	39.77353691	-80.69318427	
4,299.99	32.07	204.54	4,195.44	-488.39	-290.59	14,444,370.10	1,726,601.91	39.77340449	-80.69326332	
4,399.99	32.07	204.54	4,281.19	-534.66	-312.63	14,444,321.81	1,726,579.86	39.77327207	-80.69334237	
4,499.99	32.07	204.54	4,365.93	-582.98	-334.68	14,444,273.51	1,726,557.82	39.77313954	-80.69342141	
4,599.99	32.07	204.54	4,450.68	-631.27	-356.72	14,444,225.22	1,726,535.77	39.77300722	-80.69350046	



Planning Report - Geographic

**Database:** DB\_Jul2216dt\_v14  
**Company:** Tug Hill Operating LLC  
**Project:** Marshall County, West Virginia  
**Site:** Keith Stern  
**Well:** Keith Stern S-08 HM (slot B)  
**Wellbore:** Original Hole  
**Design:** rev1

**Local Co-ordinate Reference:** Well Keith Stern S-08 HM (slot B)  
**TVD Reference:** GL @ 744.00usft  
**MD Reference:** GL @ 744.00usft  
**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
4,699.99	32.07	204.54	4,535.42	-679.56	-378.77	14,444,176.92	1,726,513.73	39.77287480	-80.69357950
4,799.99	32.07	204.54	4,620.17	-727.86	-400.81	14,444,128.63	1,726,491.88	39.77274237	-80.69365855
4,899.99	32.07	204.54	4,704.91	-776.15	-422.86	14,444,080.33	1,726,469.64	39.77260995	-80.69373759
4,999.99	32.07	204.54	4,789.65	-824.45	-444.90	14,444,032.04	1,726,447.59	39.77247753	-80.69381664
5,099.99	32.07	204.54	4,874.40	-872.74	-466.95	14,443,983.74	1,726,425.55	39.77234510	-80.69389568
5,199.99	32.07	204.54	4,959.14	-921.04	-488.99	14,443,935.45	1,726,403.50	39.77221268	-80.69397472
5,299.99	32.07	204.54	5,043.89	-969.33	-511.04	14,443,887.15	1,726,381.46	39.77208026	-80.69405377
5,399.99	32.07	204.54	5,128.63	-1,017.63	-533.08	14,443,838.86	1,726,359.41	39.77194783	-80.69413281
5,499.99	32.07	204.54	5,213.38	-1,065.92	-555.13	14,443,790.57	1,726,337.37	39.77181541	-80.69421185
5,599.99	32.07	204.54	5,298.12	-1,114.22	-577.17	14,443,742.27	1,726,315.32	39.77168299	-80.69429089
5,699.99	32.07	204.54	5,382.86	-1,162.51	-599.22	14,443,693.98	1,726,293.28	39.77155056	-80.69436994
5,799.99	32.07	204.54	5,467.61	-1,210.81	-621.26	14,443,645.68	1,726,271.23	39.77141814	-80.69444898
5,899.99	32.07	204.54	5,552.35	-1,259.10	-643.31	14,443,597.39	1,726,249.19	39.77128571	-80.69452802
5,999.99	32.07	204.54	5,637.10	-1,307.40	-665.35	14,443,549.09	1,726,227.14	39.77115329	-80.69460706
6,099.99	32.07	204.54	5,721.84	-1,355.69	-687.40	14,443,500.80	1,726,205.10	39.77102087	-80.69468610
6,199.99	32.07	204.54	5,806.59	-1,403.99	-709.44	14,443,452.50	1,726,183.05	39.77088844	-80.69476514
6,299.99	32.07	204.54	5,891.33	-1,452.28	-731.49	14,443,404.21	1,726,161.01	39.77075602	-80.69484418
6,350.73	32.07	204.54	5,934.33	-1,478.79	-742.67	14,443,379.70	1,726,149.82	39.77068882	-80.69488429
<b>Begin 10°/100' build/turn</b>									
6,399.99	34.83	197.12	5,975.45	-1,502.14	-752.25	14,443,354.35	1,726,140.25	39.77061929	-80.69491868
6,499.99	41.53	185.07	6,054.12	-1,562.80	-763.81	14,443,293.88	1,726,128.88	39.77045334	-80.69495988
6,599.99	49.19	176.00	6,124.40	-1,633.56	-763.91	14,443,222.93	1,726,128.59	39.77025848	-80.69495177
6,699.99	57.41	168.88	6,184.16	-1,712.85	-753.12	14,443,143.64	1,726,139.37	39.77004063	-80.69492433
6,799.99	65.96	162.98	6,231.58	-1,798.07	-731.58	14,443,058.42	1,726,160.92	39.76980639	-80.69484870
6,899.99	74.71	157.83	6,265.21	-1,886.63	-699.93	14,442,969.86	1,726,192.56	39.76958290	-80.69473717
6,999.99	83.57	153.10	6,284.04	-1,975.83	-659.15	14,442,880.66	1,726,233.34	39.76931755	-80.69459312
7,061.05	89.00	150.31	6,288.00	-2,029.45	-630.28	14,442,827.03	1,726,262.22	39.76917001	-80.69449100
<b>Begin 89.00° lateral section</b>									
7,099.99	89.00	150.31	6,288.68	-2,063.27	-610.99	14,442,793.22	1,726,281.50	39.76907695	-80.69442278
7,199.99	89.00	150.31	6,290.42	-2,150.13	-561.46	14,442,708.36	1,726,331.03	39.76883786	-80.69424757
7,299.99	89.00	150.31	6,292.16	-2,236.99	-511.93	14,442,619.51	1,726,380.56	39.76859897	-80.69407238
7,399.99	89.00	150.31	6,293.90	-2,323.83	-462.40	14,442,532.85	1,726,430.09	39.76835998	-80.69389716
7,499.99	89.00	150.31	6,295.65	-2,410.69	-412.87	14,442,445.90	1,726,479.62	39.76812099	-80.69372195
7,599.99	89.00	150.31	6,297.39	-2,497.54	-363.34	14,442,358.94	1,726,529.15	39.76788200	-80.69354674
7,699.99	89.00	150.31	6,299.13	-2,584.40	-313.81	14,442,272.09	1,726,578.68	39.76764301	-80.69337154
7,799.99	89.00	150.31	6,300.87	-2,671.25	-264.28	14,442,185.24	1,726,628.21	39.76740402	-80.69319634
7,899.99	89.00	150.31	6,302.61	-2,758.11	-214.75	14,442,098.38	1,726,677.74	39.76716503	-80.69302113
7,999.99	89.00	150.31	6,304.35	-2,844.96	-165.22	14,442,011.53	1,726,727.27	39.76692604	-80.69284593
8,099.99	89.00	150.31	6,306.10	-2,931.82	-115.69	14,441,924.67	1,726,776.80	39.76668704	-80.69267073
8,199.99	89.00	150.31	6,307.84	-3,018.67	-66.16	14,441,837.82	1,726,826.33	39.76644805	-80.69249553
8,299.99	89.00	150.31	6,309.58	-3,105.53	-16.63	14,441,750.96	1,726,875.86	39.76620906	-80.69232034
8,399.99	89.00	150.31	6,311.32	-3,192.38	32.90	14,441,664.11	1,726,925.39	39.76597007	-80.69214514
8,499.99	89.00	150.31	6,313.06	-3,279.23	82.43	14,441,577.25	1,726,974.92	39.76573107	-80.69196995
8,599.99	89.00	150.31	6,314.80	-3,366.09	131.96	14,441,490.40	1,727,024.45	39.76549208	-80.69179475
8,699.99	89.00	150.31	6,316.55	-3,452.94	181.49	14,441,403.54	1,727,073.98	39.76525309	-80.69161956
8,799.99	89.00	150.31	6,318.29	-3,539.80	231.02	14,441,316.69	1,727,123.51	39.76501409	-80.69144437
8,899.99	89.00	150.31	6,320.03	-3,626.65	280.55	14,441,229.84	1,727,173.04	39.76477510	-80.69126918
8,999.99	89.00	150.31	6,321.77	-3,713.51	330.08	14,441,142.98	1,727,222.57	39.76453610	-80.69109399
9,099.99	89.00	150.31	6,323.51	-3,800.36	379.61	14,441,056.13	1,727,272.10	39.76429711	-80.69091880
9,199.99	89.00	150.31	6,325.26	-3,887.22	429.14	14,440,969.27	1,727,321.63	39.76405811	-80.69074362
9,299.99	89.00	150.31	6,327.00	-3,974.07	478.67	14,440,882.42	1,727,371.16	39.76381912	-80.69056843
9,399.99	89.00	150.31	6,328.74	-4,060.93	528.20	14,440,795.56	1,727,420.69	39.76358012	-80.69039325
9,499.99	89.00	150.31	6,330.48	-4,147.78	577.73	14,440,708.71	1,727,470.22	39.76334113	-80.69021806
9,599.99	89.00	150.31	6,332.22	-4,234.63	627.26	14,440,621.85	1,727,519.75	39.76310213	-80.69004288





Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Keith Stern S-08 HM (slot B)
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL @ 744.00usft
<b>Project:</b>	Marshall County, West Virginia	<b>MD Reference:</b>	GL @ 744.00usft
<b>Site:</b>	Keith Stern	<b>North Reference:</b>	Grid
<b>Well:</b>	Keith Stern S-08 HM (slot B)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rav1		

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Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
9,699.98	89.00	150.31	6,333.96	-4,321.49	676.79	14,440,535.00	1,727,569.28	39.76286313	-80.68986770	
9,799.98	89.00	150.31	6,335.71	-4,408.34	726.32	14,440,448.14	1,727,618.81	39.76262414	-80.68989252	
9,899.98	89.00	150.31	6,337.45	-4,495.20	775.85	14,440,361.29	1,727,668.34	39.76238514	-80.68951735	
9,999.98	89.00	150.31	6,339.19	-4,582.05	825.38	14,440,274.44	1,727,717.87	39.76214614	-80.68934217	
10,099.98	89.00	150.31	6,340.93	-4,668.91	874.91	14,440,187.58	1,727,767.40	39.76190715	-80.68916699	
10,199.98	89.00	150.31	6,342.67	-4,755.76	924.44	14,440,100.73	1,727,816.93	39.76166815	-80.68899182	
10,299.98	89.00	150.31	6,344.42	-4,842.62	973.97	14,440,013.87	1,727,866.46	39.76142815	-80.68881655	
10,399.98	89.00	150.31	6,346.16	-4,929.47	1,023.50	14,439,927.02	1,727,915.99	39.76119015	-80.68864147	
10,499.98	89.00	150.31	6,347.90	-5,016.33	1,073.03	14,439,840.16	1,727,965.52	39.78095115	-80.68846630	
10,599.98	89.00	150.31	6,349.64	-5,103.18	1,122.56	14,439,753.31	1,728,015.05	39.76071215	-80.68829113	
10,699.98	89.00	150.31	6,351.38	-5,190.03	1,172.09	14,439,666.45	1,728,064.58	39.76047316	-80.68811597	
10,799.98	89.00	150.31	6,353.12	-5,276.89	1,221.62	14,439,579.60	1,728,114.11	39.76023416	-80.68794080	
10,899.98	89.00	150.31	6,354.87	-5,363.74	1,271.15	14,439,492.74	1,728,163.64	39.75999516	-80.68776553	
10,999.98	89.00	150.31	6,356.61	-5,450.60	1,320.68	14,439,405.89	1,728,213.17	39.75975616	-80.68759047	
11,099.98	89.00	150.31	6,358.35	-5,537.45	1,370.21	14,439,319.04	1,728,262.70	39.75951716	-80.68741530	
11,199.98	89.00	150.31	6,360.09	-5,624.31	1,419.74	14,439,232.18	1,728,312.23	39.75927816	-80.68724014	
11,299.98	89.00	150.31	6,361.83	-5,711.16	1,469.27	14,439,145.33	1,728,361.76	39.75903915	-80.68706498	
11,399.98	89.00	150.31	6,363.57	-5,798.02	1,518.80	14,439,058.47	1,728,411.29	39.75880015	-80.68688982	
11,499.98	89.00	150.31	6,365.32	-5,884.87	1,568.33	14,438,971.62	1,728,460.82	39.75856115	-80.68671466	
11,599.98	89.00	150.31	6,367.06	-5,971.73	1,617.86	14,438,884.76	1,728,510.35	39.75832215	-80.68653951	
11,699.98	89.00	150.31	6,368.80	-6,058.58	1,667.39	14,438,797.91	1,728,559.88	39.75808315	-80.68636435	
11,799.98	89.00	150.31	6,370.54	-6,145.43	1,716.92	14,438,711.05	1,728,609.41	39.75784415	-80.68618919	
11,899.98	89.00	150.31	6,372.28	-6,232.29	1,766.45	14,438,624.20	1,728,658.94	39.75760514	-80.68601404	
11,999.98	89.00	150.31	6,374.03	-6,319.14	1,815.98	14,438,537.35	1,728,708.47	39.75736614	-80.68583889	
12,099.98	89.00	150.31	6,375.77	-6,406.00	1,865.51	14,438,450.49	1,728,758.00	39.75712714	-80.68566374	
12,199.98	89.00	150.31	6,377.51	-6,492.85	1,915.04	14,438,363.64	1,728,807.53	39.75688814	-80.68548859	
12,299.98	89.00	150.31	6,379.25	-6,579.71	1,964.57	14,438,276.78	1,728,857.06	39.75664913	-80.68531344	
12,399.98	89.00	150.31	6,380.99	-6,666.56	2,014.10	14,438,189.93	1,728,906.59	39.75641013	-80.68513829	
12,499.98	89.00	150.31	6,382.73	-6,753.42	2,063.63	14,438,103.07	1,728,956.12	39.75617112	-80.68496314	
12,599.98	89.00	150.31	6,384.48	-6,840.27	2,113.16	14,438,016.22	1,729,005.65	39.75593212	-80.68478800	
12,699.97	89.00	150.31	6,386.22	-6,927.13	2,162.69	14,437,929.36	1,729,055.18	39.75569312	-80.68461285	
12,799.97	89.00	150.31	6,387.96	-7,013.98	2,212.22	14,437,842.51	1,729,104.71	39.75545411	-80.68443771	
12,899.97	89.00	150.31	6,389.70	-7,100.83	2,261.75	14,437,755.65	1,729,154.24	39.75521511	-80.68426257	
12,999.97	89.00	150.31	6,391.44	-7,187.69	2,311.28	14,437,668.80	1,729,203.77	39.75497610	-80.68408743	
13,099.97	89.00	150.31	6,393.18	-7,274.54	2,360.81	14,437,581.95	1,729,253.30	39.75473710	-80.68391229	
13,199.97	89.00	150.31	6,394.93	-7,361.40	2,410.34	14,437,495.09	1,729,302.83	39.75449809	-80.68373715	
13,299.97	89.00	150.31	6,396.67	-7,448.25	2,459.87	14,437,408.24	1,729,352.36	39.75425908	-80.68356202	
13,399.97	89.00	150.31	6,398.41	-7,535.11	2,509.39	14,437,321.38	1,729,401.89	39.75402008	-80.68338688	
13,499.97	89.00	150.31	6,400.15	-7,621.96	2,558.92	14,437,234.53	1,729,451.42	39.75378107	-80.68321175	
13,599.97	89.00	150.31	6,401.89	-7,708.82	2,608.45	14,437,147.67	1,729,500.95	39.75354206	-80.68303661	
13,699.97	89.00	150.31	6,403.64	-7,795.67	2,657.98	14,437,060.82	1,729,550.48	39.75330306	-80.68286148	
13,799.97	89.00	150.31	6,405.38	-7,882.53	2,707.51	14,436,973.96	1,729,600.01	39.75306405	-80.68268635	
13,899.97	89.00	150.31	6,407.12	-7,969.38	2,757.04	14,436,887.11	1,729,649.54	39.75282504	-80.68251122	
13,999.97	89.00	150.31	6,408.86	-8,056.23	2,806.57	14,436,800.25	1,729,699.07	39.75258603	-80.68233609	
14,099.97	89.00	150.31	6,410.60	-8,143.09	2,856.10	14,436,713.40	1,729,748.60	39.75234702	-80.68216095	
14,199.97	89.00	150.31	6,412.34	-8,229.94	2,905.63	14,436,626.55	1,729,798.13	39.75210802	-80.68198584	
14,299.97	89.00	150.31	6,414.09	-8,316.80	2,955.16	14,436,539.69	1,729,847.66	39.75186901	-80.68181071	
14,399.97	89.00	150.31	6,415.83	-8,403.65	3,004.69	14,436,452.84	1,729,897.19	39.75163000	-80.68163559	
14,499.97	89.00	150.31	6,417.57	-8,490.51	3,054.22	14,436,365.98	1,729,946.72	39.75139099	-80.68146047	
14,599.97	89.00	150.31	6,419.31	-8,577.36	3,103.75	14,436,279.13	1,729,996.25	39.75115198	-80.68128535	
14,699.97	89.00	150.31	6,421.05	-8,664.22	3,153.28	14,436,192.27	1,730,045.78	39.75091297	-80.68111023	
14,754.34	89.00	150.31	6,422.00	-8,711.44	3,180.21	14,436,145.05	1,730,072.71	39.75078302	-80.68101501	
<b>PBHL/TD 14754.34 MD/6422.00 TVD</b>										
14,754.35	89.00	150.31	6,422.00	-8,711.45	3,180.22	14,436,145.04	1,730,072.71	39.75078300	-80.68101500	

WV Department of Environmental Protection



Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Keith Stern S-08 HM (slot B)
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL @ 744.00usft
<b>Project:</b>	Marshall County, West Virginia	<b>MD Reference:</b>	GL @ 744.00usft
<b>Site:</b>	Keith Stern	<b>North Reference:</b>	Grid
<b>Well:</b>	Keith Stern S-08 HM (slot B)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev1		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
LP Keith Stern S-08 HM - plan hits target center - Point	0.00	0.00	6,288.00	-2,029.46	-630.28	14,442,827.03	1,726,262.22	39.76917000	-80.69449100
LP Keith Stern S-08 HM - plan misses target center by 86.61usft at 7038.54usft MD (8267.21 TVD, -2009.81 N, -641.25 E) - Point	0.00	0.00	6,288.00	-2,050.82	-717.53	14,442,805.66	1,726,174.97	39.76911213	-80.69480177
BHL Keith Stern S-08 HM - plan hits target center - Point	0.00	0.01	6,422.00	-8,711.45	3,180.22	14,436,145.04	1,730,072.71	39.75078300	-80.68101500

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,400.00	1,400.00	0.00	0.00	KOP Begin 2°/100' build
1,650.00	1,649.68	-7.71	-7.71	Begin 5.00° tangent
3,105.66	3,100.00	-97.43	-97.43	Begin 3°/100' build/turn
4,020.21	3,959.35	-351.27	-228.91	Begin 32.07° tangent
6,350.73	5,934.33	-1,476.79	-742.67	Begin 10°/100' build/turn
7,061.05	6,288.00	-2,029.45	-630.26	Begin 69.00° lateral section
14,754.34	6,422.00	-8,711.44	3,180.21	PBHL/TD 14754.34 MD/6422.00 TVD

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Form WW-9

Operator's Well No. Keith Stern S-8HM

**Tug Hill Operating, LLC**

Proposed Revegetation Treatment: Acres Disturbed 19.18 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 Unikel*

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

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Title: Oil and Gas Inspector

Date: 8/1/18

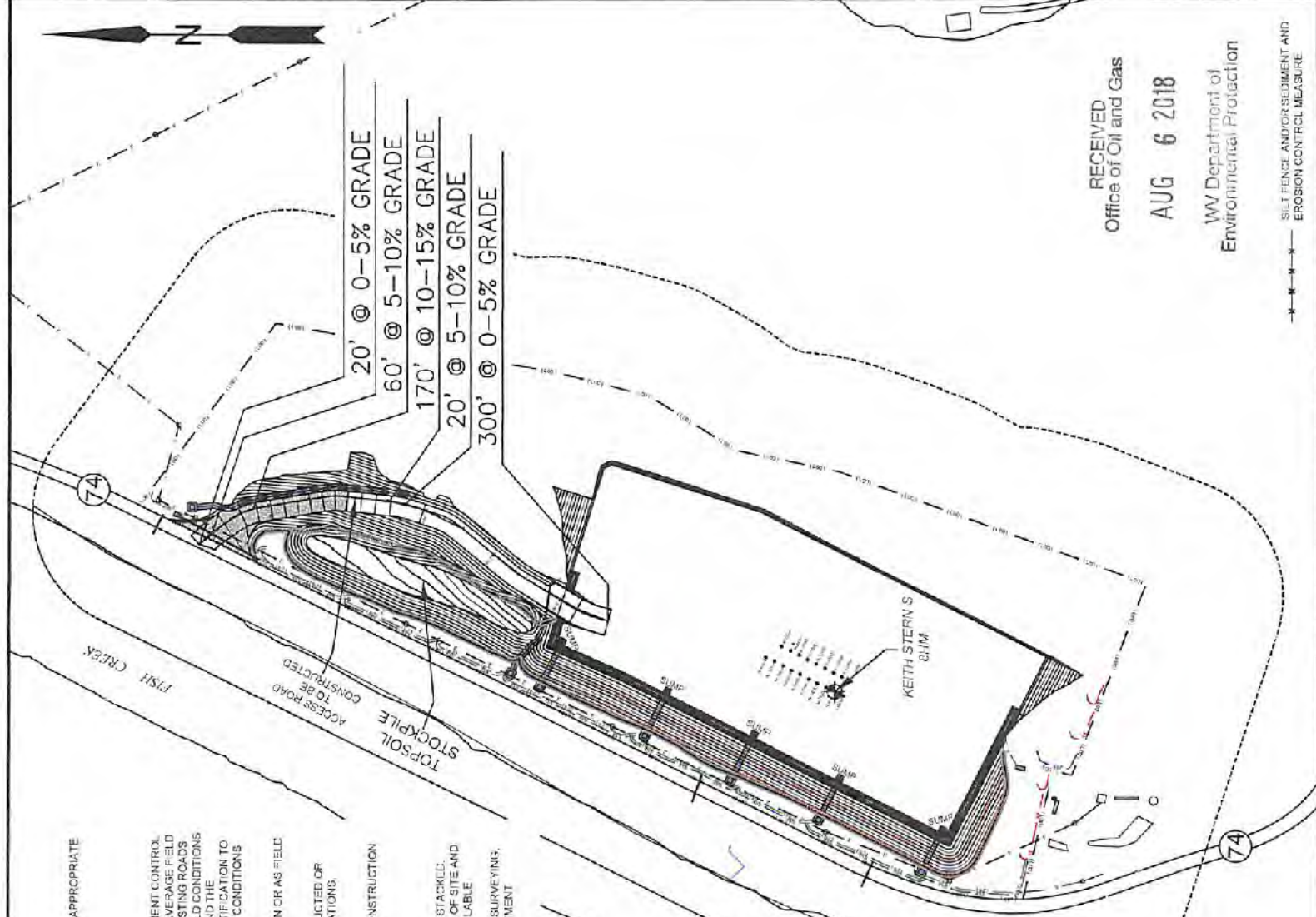
Field Reviewed?  Yes  No

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# PROPOSED KEITH STERN S - 8HM

**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 W.V. D.E.P. OFFICE OF OIL & GAS, "EROSION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BMPs FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES AND THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION TO THE INSPECTOR AND THE OPERATOR SHOULD THESE CONDITIONS OCCUR.
4. INSTALL CULVERTS AS SHOWN OR RECLAMATION PLAN OR AS FIELD CONDITIONS REQUIRE.
5. ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH W.V. 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 KEITH STERN'S SITE PLAN PREPARED BY KELLEY SURVEYING FOR COMPLETE CONSTRUCTION & EROSION AND SEDIMENT CONTROL DETAILS.



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SOIL FENCE ANCHORING AND  
EROSION CONTROL MEASURE



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[www.slsurveys.com](http://www.slsurveys.com)



**TUG HILL**  
**OPERATING**

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'	COUNTY	PREPARED FOR:	TUG HILL OPERATING, LLC
MARSHALL	DISTRICT	380 SOUTHPOINTE BLVD	SUITE 200
DFAWN EY	MEADE	CANONSBURG, PA 15317	
K.G.M.	JOB NO.	DATE	SCALE
	8811	07/31/2018	NONE



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

*ju*  
*8/1/18*

Well Name: Keith Stern S-8HM

Pad Location: Keith Stern Pad

Marshall County, West Virginia

UTM meters , NADD83, Zone 17:

Northing: 4,402,801.06

Easting: 526,357.89

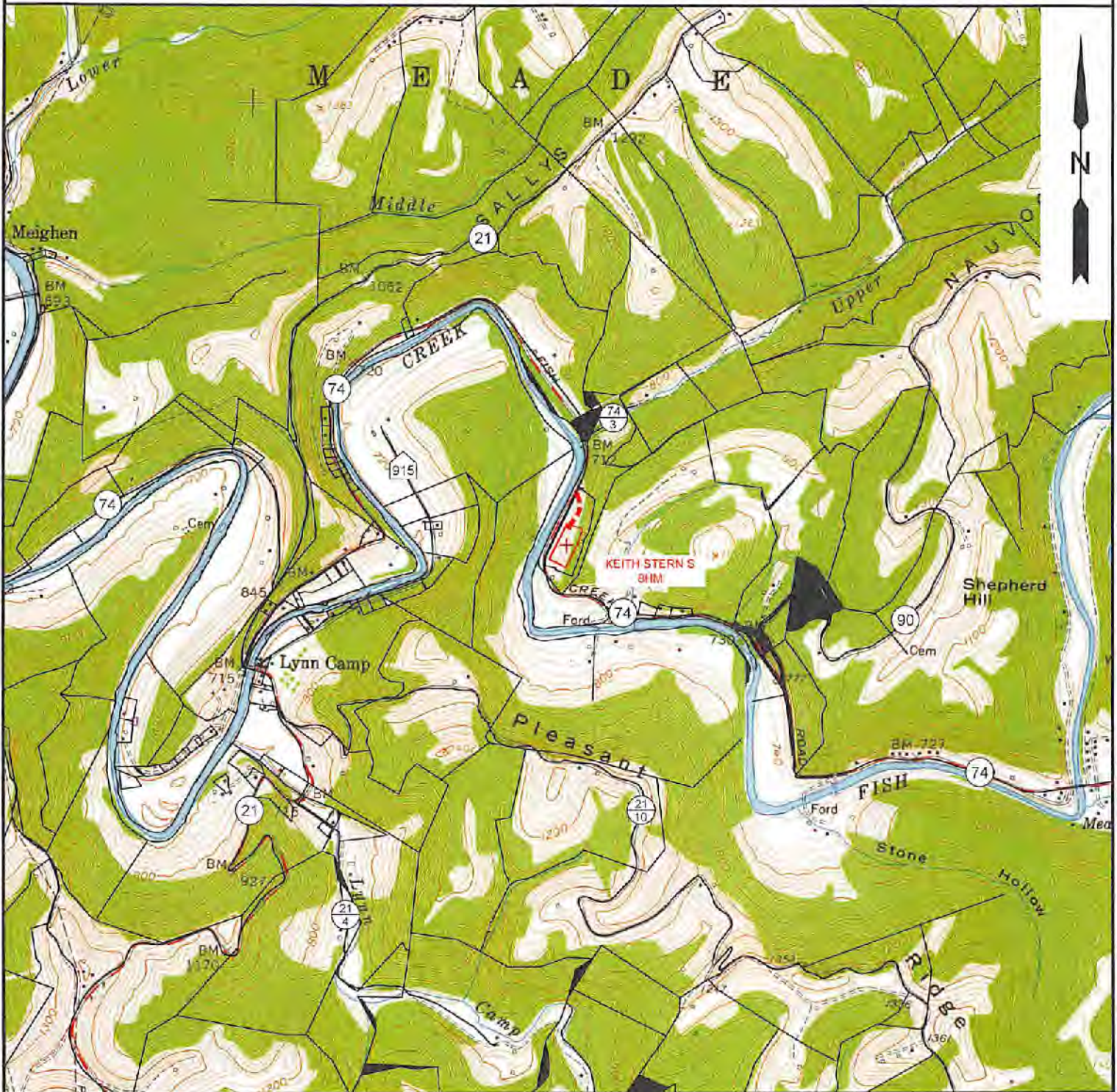
August 2018

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AUG 6 2018

WV Department of  
Environmental Protection

**PROPOSED  
KEITH STERN S - 8HM**



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

LAT: 39.7137712  
LON: -80.8258327  
LOCATED: S 60°11'49" W AT 43,719.31' FROM THE CENTER OF KEITH STERN S WELL PAD LOCATION.



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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.	8811	07/31/2018	1" = 2000'



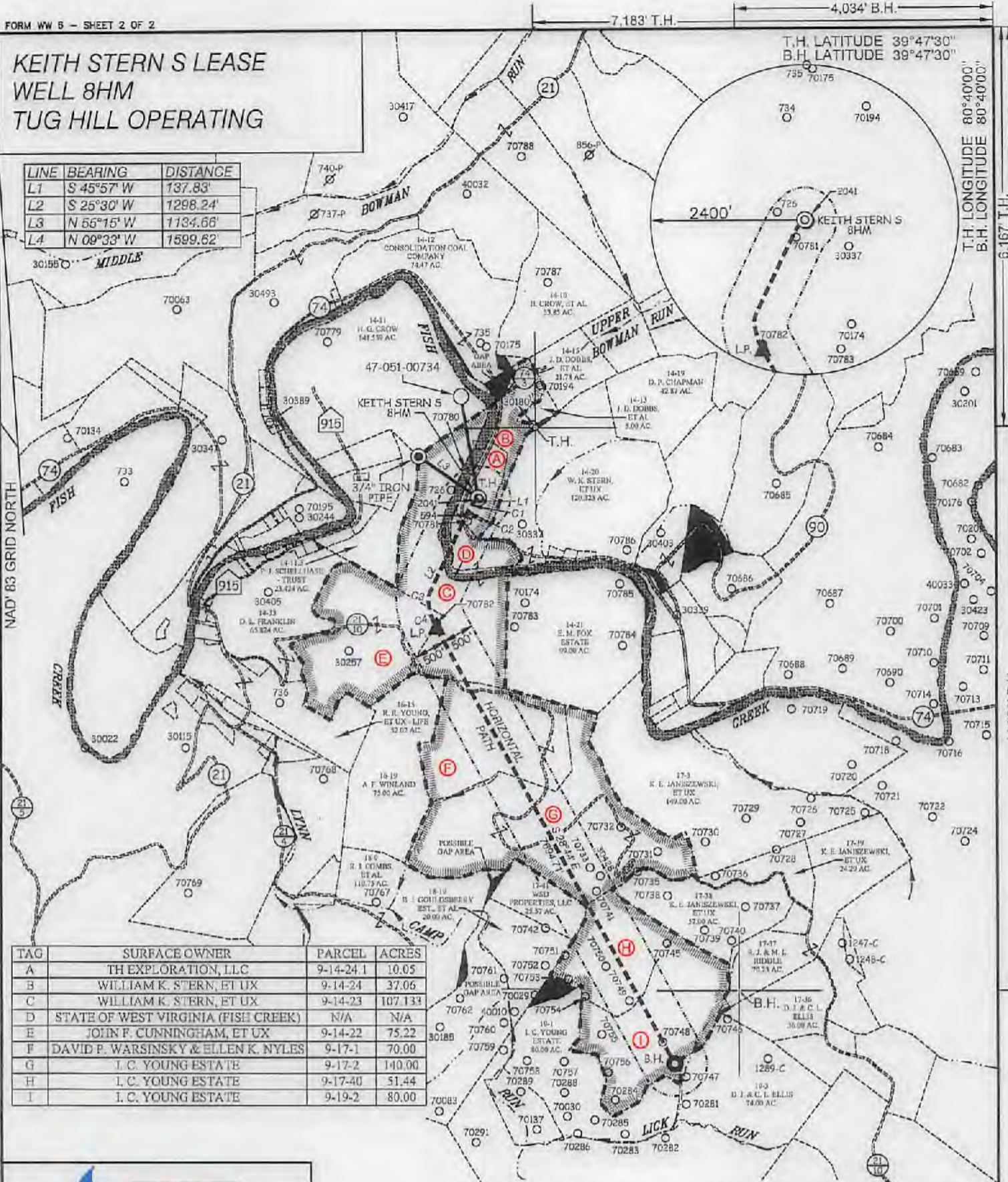
**TUG HILL  
OPERATING**

**KEITH STERN S LEASE  
WELL 8HM  
TUG HILL OPERATING**

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

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

LINE	BEARING	DISTANCE
L1	S 45°57' W	137.83'
L2	S 25°30' W	1298.24'
L3	N 55°15' W	1134.66'
L4	N 09°33' W	1599.62'



TAG	SURFACE OWNER	PARCEL	ACRES
A	TH EXPLORATION, LLC	9-14-24.1	10.05
B	WILLIAM K. STERN, ET UX	9-14-24	37.06
C	WILLIAM K. STERN, ET UX	9-14-23	107.133
D	STATE OF WEST VIRGINIA (FISH CREEK)	N/A	N/A
E	JOHN F. CUNNINGHAM, ET UX	9-14-22	75.22
F	DAVID P. WARSINSKY & ELLEN K. NYLES	9-17-1	70.00
G	I. C. YOUNG ESTATE	9-17-2	140.00
H	I. C. YOUNG ESTATE	9-17-40	51.44
I	I. C. YOUNG ESTATE	9-19-2	80.00

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	47.13'	249.83'	S 34°47' W	47.06'
C2	178.72'	2590.51'	S 27°32' W	178.69'
C3	159.70'	343.81'	S 08°40' W	158.27'
C4	421.11'	994.83'	S 17°42' E	417.97'

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(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)  
 NAD/83 S.P.C.(FT) N. 466,522.29 E. 1,633,416.76  
 NAD/83 GEO. LAT.(N) 39.774737 LONG.(W) 80.692223  
 NAD/83 UTM (M) N. 4,402,801.06 E. 526,357.89

**LANDING POINT**  
 NAD/83 S.P.C.(FT) N. 464,503.0 E. 1,632,752.4  
 NAD/83 GEO. LAT.(N) 39.769170 LONG.(W) 80.694491  
 NAD/83 UTM (M) N. 4,402,182.5 E. 526,165.8

**BOTTOM HOLE**  
 NAD/83 S.P.C.(FT) N. 457,766.0 E. 1,636,452.0  
 NAD/83 GEO. LAT.(N) 39.750783 LONG.(W) 80.681015  
 NAD/83 UTM (M) N. 4,400,145.8 E. 527,327.2

**GREGORY A. SMITH**  
 LICENSED  
 No. 677  
 STATE OF  
 WEST VIRGINIA  
 PROFESSIONAL SURVEYOR

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

P.S. 677  
*Gregory A. Smith*

**LEGEND**

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

SCALE 1" = 2000' FILE NO. 8811P8HMv2.dwg  
 DATE JULY 31, 20 18  
 REVISED \_\_\_\_\_, 20 \_\_\_\_\_  
 OPERATORS WELL NO. KEITH STERN S-8HM  
 API WELL NO. 47-051-02103  
 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  
 ADDRESS CT CORPORATION SYSTEM 5400 D BIG TYLER ROAD CHARLESTON, WV 25313

COUNTY NAME  
 PERMIT



7,183' T.H. 4,034' B.H.

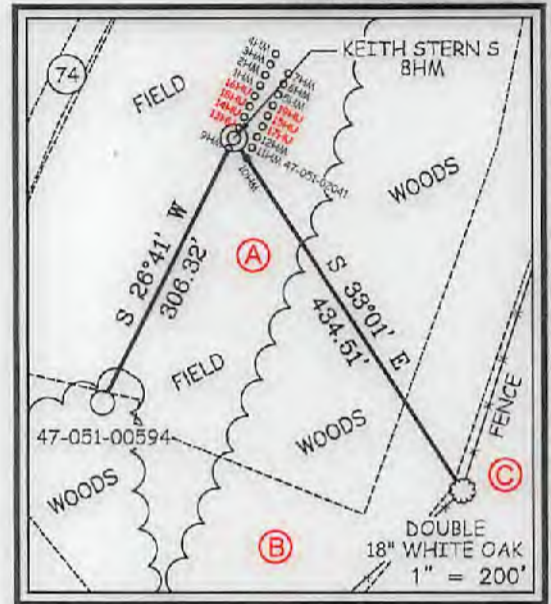
**KEITH STERN S LEASE  
WELL 8HM  
TUG HILL OPERATING**

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

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)		
NAD'83 S.P.C.(FT)	N. 466,522.29	E. 1,633,416.76
NAD'83 GEO.	LAT-(N) 39.774737	LONG-(W) 80.692223
NAD'83 UTM (M)	N. 4,402,801.06	E. 526,357.89
LANDING POINT		
NAD'83 S.P.C.(FT)	N. 464,508.0	E. 1,632,752.4
NAD'83 GEO.	LAT-(N) 39.789170	LONG-(W) 80.694491
NAD'83 UTM (M)	N. 4,402,162.5	E. 526,165.8
BOTTOM HOLE		
NAD'83 S.P.C.(FT)	N. 457,756.0	E. 1,636,452.0
NAD'83 GEO.	LAT-(N) 39.750783	LONG-(W) 80.681015
NAD'83 UTM (M)	N. 4,400,145.8	E. 527,327.2

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

**REFERENCES**



**NOTES ON SURVEY**

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'



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

P.S. 677 *Gregory A. Smith*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.  
 DATE JULY 31, 20 18  
 REVISED \_\_\_\_\_, 20 \_\_\_\_  
 OPERATORS WELL NO. KEITH STERN S-8HM  
 API WELL NO. 47 - 051 - 02103  
 STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8811P8HMv2.dwg  
 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: ELEVATION GROUND = 737.70' PROPOSED = 744.65' WATERSHED FISH CREEK (HUC 10)  
 DISTRICT MEADE COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'

SURFACE OWNER TH EXPLORATION, LLC ACREAGE 10.05±  
 ROYALTY OWNER ISAAC CROW, ET AL - SEE WW-6A1 ACREAGE 10.05±  
 PROPOSED WORK: LEASE NO. SEE WW-6A1  
 DRILL  CONVERT \_\_\_\_\_ DRILL DEEPER \_\_\_\_\_ REDRILL \_\_\_\_\_ FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION \_\_\_\_\_ PERFORATE NEW FORMATION \_\_\_\_\_ PLUG AND ABANDON \_\_\_\_\_ CLEAN OUT AND REPLUG \_\_\_\_\_ OTHER \_\_\_\_\_  
 PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_ TARGET FORMATION MARCELLUS  
 ESTIMATED DEPTH TVD: 6,399' / TMD: 14,754'

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

COUNTY NAME PERMIT

WW-6A1  
(5/13)

Operator's Well No. Keith Stern S-8HM

**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

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**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 *amy miller*  
 Its: Permitting Specialist - Appalachia Region



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 Eeases 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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WV-AGIR-0009

## 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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## 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

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")

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Tract No. \_\_\_\_\_ Fish Creek - Marshall County  
Sale \_\_\_\_\_ 156 Ac M/L  
Lease No. \_\_\_\_\_

**THE STATE OF WEST VIRGINIA OIL AND GAS LEASE  
NO SURFACE USE  
(4 YEAR PAID-UP LEASE)**

This Oil and Gas Lease (this "Lease") is dated and effective as of 25th September 2018, (the "Effective Date"), by and between the **WEST VIRGINIA DIVISION OF NATURAL RESOURCES**, a division of the West Virginia Department of Commerce, whose address is **324 Fourth Avenue, South Charleston, West Virginia 25303**, party of the first part, hereinafter designated as **LESSOR**, and **TH EXPLORATION, LLC**, a Texas limited liability company, whose address is 1320 S. University Drive, Suite 500, Fort Worth, Texas 76107, party of the second part, hereinafter designated as **LESSEE**.

UNDER AND PURSUANT TO THE PROVISIONS OF THE CONSTITUTION AND LAWS OF THE STATE OF WEST VIRGINIA RELATING TO LEASING PUBLIC LANDS BELONGING TO THE STATE OF WEST VIRGINIA, WITNESSETH:

- 1. Grant of Lease.** In consideration of the bonus of Six Thousand One Hundred and Eleven Dollars (\$6,111.00) per acre, which shall be due and paid-in-full to Lessor upon the execution of this Lease; the royalties to be paid as required by this Lease; and the covenants, obligations, stipulations and conditions as set forth herein, Lessor does hereby demise, lease and let unto the Lessee the following described tracts of land for the sole purpose and with the exclusive right of exploring, drilling, completing, operating for, and producing oil, gas, and other liquid or gaseous hydrocarbons (including, by way of example and not limitation, any and all natural gas liquids such as butane, ethane, isobutane, natural gasolines, pentanes, propane, and similar liquids or byproducts) produced in association with the oil or gas in or underlying the Leased Premises (the "Granted Minerals"), situated in County, West Virginia, and being more particularly described as follows:

**LEGAL DESCRIPTION**

The Granted Minerals underlay Fish Creek located in Franklin and Meade District, Marshall County, West Virginia, being the area underlying the said Creek from the ordinary low water marks on each side of the stream, starting at Latitude 39.789879, Longitude 80.749702 and ending upstream at Latitude 39.7657111, Longitude 80.678471, containing One Hundred and Fifty Six Acres (156.0 acres), more or less (the "Leased Premises") as shown on the map attached hereto as Exhibit A and incorporated herein. Lessor represents and warrants to Lessee that the West Virginia Division of Natural Resources is the proper agency or instrumentality of the State of West Virginia to enter into this Lease for the purpose of leasing the Granted Minerals and Leased Premises to Lessee on the terms set forth herein, and that the Director of the West Virginia Division of Natural Resources is vested with the full legal authority and is duly authorized to execute this Lease on behalf of the Lessor and the State of West Virginia.

Marshall County  
Jan Pest, Clerk  
Instrument 1446408  
10/05/2018 @ 12:30:05 PM  
OIL & GAS LEASE  
Book 1019 @ Page 373  
Pages Recorded 14  
Recording Cost \$ 21.0

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	
10*15605	9-14-24.1	A	ISAAC CROW ET UX	JOHN G CRAWFORD	18+	74 394	N/A	N/A	N/A	The Wheeling Natural gas Company to The Manufacturers L&H Co: 148/389	The Manufacturers L&H Co. to Union Gasoline & Oil Corp: 197/120	Union Gasoline & Oil Corp to The Preston Oil Co: 2/136	The Preston Oil Co to The Manufacturers L&H Co: 2/225	Merger - The Manufacturers L&H Co into Columbia Gas Transmission Corp: 422/204	Columbia Gas Transmission Corp to Columbia Natural Resources Inc: 537/518	Cert. of Conversion - Columbia Natural Resources Inc to Columbia Natural Resources LLC: 19/398	Columbia Natural Resources LLC to Chesapeake Appalachia LLC: 650/63	Chesapeake Appalachia LLC to Statoil Hydro USA Onshore Properties Inc: 675/279	Name Change - Statoilhydro USA Onshore Properties Inc to Statoil USA Onshore Properties Inc - Online datavase 11/30/2009	Statoil USA Onshore Properties Inc to Chevron USA Inc: 30/427	Chesapeake Appalachia LLC to Chevron USA Inc: 30/461	Chevron USA Inc to TH Exploration LLC: 36/148
10*15605	9-14-24	B	ISAAC CROW ET UX	JOHN G CRAWFORD	1/8+	74 394	N/A	N/A	N/A	The Wheeling Natural gas Company to The Manufacturers L&H Co: 148/389	The Manufacturers L&H Co. to Union Gasoline & Oil Corp: 197/120	Union Gasoline & Oil Corp to The Preston Oil Co: 2/136	The Preston Oil Co to The Manufacturers L&H Co: 2/225	Merger - The Manufacturers L&H Co into Columbia Gas Transmission Corp: 422/204	Columbia Gas Transmission Corp to Columbia Natural Resources Inc: 537/518	Cert. of Conversion - Columbia Natural Resources Inc to Columbia Natural Resources LLC: 19/398	Columbia Natural Resources LLC to Chesapeake Appalachia LLC: 650/63	Chesapeake Appalachia LLC to Statoil Hydro USA Onshore Properties Inc: 675/279	Name Change - Statoilhydro USA Onshore Properties Inc to Statoil USA Onshore Properties Inc - Online datavase 11/30/2009	Statoil USA Onshore Properties Inc to Chevron USA Inc: 30/427	Chesapeake Appalachia LLC to Chevron USA Inc: 30/461	Chevron USA Inc to TH Exploration LLC: 36/148
10*16436	9-14-23	C	REAGAN D YEATTS AND CHRISTOPHER M YEATTS	TH EXPLORATION LLC	1/8+	961 339	N/A	N/A	N/A	N/A	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*18269	9-14-23	C	GENELDA MASON	TH EXPLORATION LLC	1/8+	942 460	N/A	N/A	N/A	N/A	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*18299	9-14-23	C	CAROL L BOBBY AND DONALD J BOBBY	TH EXPLORATION LLC	1/8+	929 281	N/A	N/A	N/A	N/A	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*18354	9-14-23	C	DEBORAH L TURLEY	TH EXPLORATION LLC	1/8+	931 352	N/A	N/A	N/A	N/A	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*18355	9-14-23	C	JUDITH F TEMPLE AND LOUIS I TEMPLE	TH EXPLORATION LLC	1/8+	931 350	N/A	N/A	N/A	N/A	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*18356	9-14-23	C	LARRY W ALLEY	TH EXPLORATION LLC	1/8+	931 348	N/A	N/A	N/A	N/A	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*18357	9-14-23	C	DEBORAH SUE KYLE	TH EXPLORATION LLC	1/8+	931 346	N/A	N/A	N/A	N/A	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*18358	9-14-23	C	SHARLA ROLLINS AND GARY ROLLINS	TH EXPLORATION LLC	1/8+	931 358	N/A	N/A	N/A	N/A	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*18419	9-14-23	C	CARLA MAE ALLEY	TH EXPLORATION LLC	1/8+	932 539	N/A	N/A	N/A	N/A	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*18420	9-14-23	C	VICTOR E ALLEY JR AND DEBRA A ALLEY	TH EXPLORATION LLC	1/8+	932 582	N/A	N/A	N/A	N/A	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*18421	9-14-23	C	DONNA JUNE STRAIT AND GARY E STRAIT	TH EXPLORATION LLC	1/8+	932 588	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
10*18429	9-14-23	C	GEORGE L DUNN AND NANCY MARIE DUNN	TH EXPLORATION LLC	1/8+	932 601	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18430	9-14-23	C	JAMES DUNN AND DONNA K DUNN	TH EXPLORATION LLC	1/8+	932 604	N/A	N/A	N/A	N/A	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*18432	9-14-23	C	ROSEMARIE BERISFORD	TH EXPLORATION LLC	1/8+	932 572	N/A	N/A	N/A	N/A	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*18484	9-14-23	C	BRENDA REED	TH EXPLORATION LLC	1/8+	933 107	N/A	N/A	N/A	N/A	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*18485	9-14-23	C	BARBARA JO BEVERIDGE	TH EXPLORATION LLC	1/8+	933 109	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
10*18490	9-14-23	C	STACY I BARNHART	TH EXPLORATION LLC	1/8+	933 123	N/A	N/A	N/A	N/A	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*18491	9-14-23	C	LORI A FARMER AND DANIEL K FARMER	TH EXPLORATION LLC	1/8+	933 131	N/A	N/A	N/A	N/A	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*18512	9-14-23	C	CHRISTINA NESTELL AND CHARLES E NESTELL III	TH EXPLORATION LLC	1/8+	933 565	N/A	N/A	N/A	N/A	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*18515	9-14-23	C	WILLIAM P DAUBE	TH EXPLORATION LLC	1/8+	933 573	N/A	N/A	N/A	N/A	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*18518	9-14-23	C	SUSAN I BAKER	TH EXPLORATION LLC	1/8+	933 580	N/A	N/A	N/A	N/A	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*18520	9-14-23	C	CHRISTOPHER SAUDERS	TH EXPLORATION LLC	1/8+	933 584	N/A	N/A	N/A	N/A	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*18612	9-14-23	C	NANNETTE BERLETCH	TH EXPLORATION LLC	1/8+	932 542	N/A	N/A	N/A	N/A	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*18617	9-14-23	C	SHEILA SIMMONS AND JEFFREY R SIMMONS	TH EXPLORATION LLC	1/8+	934 613	N/A	N/A	N/A	N/A	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*18644	9-14-23	C	FRANK A STORCH JR AND SUSAN STORCH	TH EXPLORATION LLC	1/8+	936 149	N/A	N/A	N/A	N/A	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*18645	9-14-23	C	SANDRA SUE HALL AND DAVID HALL	TH EXPLORATION LLC	1/8+	936 155	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
10*18647	9-14-23	C	PETER G STORCH AND LAURIE L STORCH	TH EXPLORATION LLC	1/8+	936 152	N/A	N/A	N/A	N/A	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*18648	9-14-23	C	LAWRENCE E CHIAPPETTA AND PATRICIA A CHIAPPETTA	TH EXPLORATION LLC	1/8+	936 161	N/A	N/A	N/A	N/A	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*18649	9-14-23	C	RODNEY K BANE AND CATHIE J BANE	TH EXPLORATION LLC	1/8+	936 164	N/A	N/A	N/A	N/A	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*18652	9-14-23	C	BECKY LANDRIS	TH EXPLORATION LLC	1/8+	936 172	N/A	N/A	N/A	N/A	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*18653	9-14-23	C	DALE R ALLEY	TH EXPLORATION LLC	1/8+	936 174	N/A	N/A	N/A	N/A	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*18673	9-14-23	C	RACHEL THORNE AND FRED THORNE JR	TH EXPLORATION LLC	1/8+	938 574	N/A	N/A	N/A	N/A	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*18674	9-14-23	C	JOHN T CRISWELL AND CATHERINE A CRISWELL	TH EXPLORATION LLC	1/8+	938 579	N/A	N/A	N/A	N/A	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*18675	9-14-23	C	JEFFREY BRYAN CRISWELL	TH EXPLORATION LLC	1/8+	938 582	N/A	N/A	N/A	N/A	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*18676	9-14-23	C	JENNIFER SHAWN GLOVER	TH EXPLORATION LLC	1/8+	938 576	N/A	N/A	N/A	N/A	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*18677	9-14-23	C	PATRICIA DOFKA	TH EXPLORATION LLC	1/8+	938 585	N/A	N/A	N/A	N/A	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*18678	9-14-23	C	WILLIAM LINSLEY CRISWELL	TH EXPLORATION LLC	1/8+	938 588	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
10*18763	9-14-23	C	LINDA M HONE AND VAUGHN HONE SR	TH EXPLORATION LLC	1/8+	938 225	N/A	N/A	N/A	N/A	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*18766	9-14-23	C	TOM ALLEY	TH EXPLORATION LLC	1/8+	938 223	N/A	N/A	N/A	N/A	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*18797	9-14-23	C	DORETTA RUSH	TH EXPLORATION LLC	1/8+	937 622	N/A	N/A	N/A	N/A	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*18808	9-14-23	C	PATRICIA KIRCHNER	TH EXPLORATION LLC	1/8+	937 644	N/A	N/A	N/A	N/A	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*18809	9-14-23	C	JUDITH C LORADITCH	TH EXPLORATION LLC	1/8+	937 647	N/A	N/A	N/A	N/A	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*19392	9-14-23	C	RODNEY W RUSH AND CRYSTAL D RUSH	TH EXPLORATION LLC	1/8+	940 336	N/A	N/A	N/A	N/A	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*19400	9-14-23	C	BULA F YOST	TH EXPLORATION LLC	1/8+	940 342	N/A	N/A	N/A	N/A	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*19405	9-14-23	C	ANN MARIE STEVENS AND CURTIS STEVENS	TH EXPLORATION LLC	1/8+	939 287	N/A	N/A	N/A	N/A	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*19417	9-14-23	C	SYLVIA R SPALENY AND ROBERT A SPALENY	TH EXPLORATION LLC	1/8+	939 595	N/A	N/A	N/A	N/A	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*19423	9-14-23	C	KEITH W STORCH AND DEBORAH A STORCH	TH EXPLORATION LLC	1/8+	934 600	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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10*22501	9-14-23	C	LUNDA K AND MICHAEL HUMES	AMERICAN PETROLEUM PARTNERS LLC	1/8+	948 372	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Petroleum Partners Operating LLC to TH Exploration LLC: 42/109	
10*22502	9-14-23	C	JAMES P MILLER	AMERICAN PETROLEUM PARTNERS LLC	1/8+	946 215	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Petroleum Partners Operating LLC to TH Exploration LLC: 42/109	
10*22328	9-14-23	C	SUSAN L GOLDSBERRY	TH EXPLORATION LLC	1/8+	962 549	N/A	N/A	N/A	N/A	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*22329	9-14-23	C	SALLY M COTEREL-CHANEY	TH EXPLORATION LLC	1/8+	962 547	N/A	N/A	N/A	N/A	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*15812	9-14-23	C	WILLIAM K STERN AND BETTY L STERN	CHESAPEAKE APPALACHIA LLC	1/8+	687 220	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 22/506	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
11-17-1/25-1986	FISH CREEK	D	WV DEPT OF COMMERCE, DIVISION OF NATURAL RESOURCES	TH EXPLORATION LLC	N/A	NOT RECORDED	N/A	N/A	N/A	N/A	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*16479	9-14-22	E	JOHN F CUNNINGHAM AND BERNEICE K CUNNINGHAM	FOSSIL CREEK OHIO, LLC	1/8+	826 88	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Fossil Creek Ohio, LLC to Gulfport Energy Corp: 32/105	Fossil Creek Ohio, LLC to TH Exploration LLC: 36/535	
10*17135	9-17-1	F	ELLEN K NYLES	TH EXPLORATION LLC	1/8+	919 525	N/A	N/A	N/A	N/A	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*17136	9-17-1	F	DAVID P WARSINSKY	TH EXPLORATION LLC	1/8+	919 527	N/A	N/A	N/A	N/A	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*15894	9-17-2	G	MARK A WALKER	CHESAPEAKE APPALACHIA LLC	1/8+	699 326	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/479	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15895	9-17-2	G	MICHAEL A WALKER	CHESAPEAKE APPALACHIA LLC	1/8+	699 324	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15896	9-17-2	G	CHAD A YOUNG	CHESAPEAKE APPALACHIA LLC	1/8+	699 322	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15897	9-17-2	G	ERIC J YOUNG	CHESAPEAKE APPALACHIA LLC	1/8+	699 320	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15898	9-17-2	G	RONALD R YOUNG AND GERALDINE YOUNG	CHESAPEAKE APPALACHIA LLC	1/8+	699 318	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455

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10*15899	9-17-2	G	ALICE F WINLAND	CHESAPEAKE APPALACHIA LLC	1/8+	699 316	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15900	9-17-2	G	RONALD W YOUNG	CHESAPEAKE APPALACHIA LLC	1/8+	699 314	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15901	9-17-2	G	MARCUS B YOUNG	CHESAPEAKE APPALACHIA LLC	1/8+	699 312	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/512	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15902	9-17-2	G	BETTY R. OTT	CHESAPEAKE APPALACHIA LLC	1/8+	701 45	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/512	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15903	9-17-2	G	CLARA SUE YOUNG	CHESAPEAKE APPALACHIA LLC	1/8+	701 307	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/512	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15904	9-17-2	G	PHYLLIS ELAINE YOUNG	CHESAPEAKE APPALACHIA LLC	1/8+	701 305	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/512	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15905	9-17-2	G	NEIL ROBERT YOUNG	CHESAPEAKE APPALACHIA LLC	1/8+	701 18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/512	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15906	9-17-2	G	LOIS ELAINE WICKHAM	CHESAPEAKE APPALACHIA LLC	1/8+	701 317	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/512	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15907	9-17-2	G	LELAND SINCLAIR YOUNG	CHESAPEAKE APPALACHIA LLC	1/8+	702 298	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455

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10*15908	9-17-2	G	EUGENE YOUNG	CHESAPEAKE APPALACHIA LLC	1/8+	701 41	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/512	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15909	9-17-2	G	DONALD EARL YOUNG	CHESAPEAKE APPALACHIA LLC	1/8+	701 315	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/512	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15910	9-17-2	G	SHIRLEY KOONTZ	CHESAPEAKE APPALACHIA LLC	1/8+	701 303	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15911	9-17-2	G	ROBERT W. GRAY	CHESAPEAKE APPALACHIA LLC	1/8+	715 441	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15912	9-17-2	G	DELORES I RICHTER	CHESAPEAKE APPALACHIA LLC	1/8+	715 448	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15913	9-17-2	G	LILA MCGUIRE	CHESAPEAKE APPALACHIA LLC	1/8+	715 449	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15914	9-17-2	G	JUDY CALLOWAY	CHESAPEAKE APPALACHIA LLC	1/8+	715 450	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15915	9-17-2	G	JUDY WARNER	CHESAPEAKE APPALACHIA LLC	1/8+	715 451	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15916	9-17-2	G	CHRISTI LYNN CLAYTON	CHESAPEAKE APPALACHIA LLC	1/8+	715 452	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455

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10*15917	9-17-2	G	CINDY LOU SMITH	CHESAPEAKE APPALACHIA LLC	1/8+	715 453	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15918	9-17-2	G	ARTHUR EMORY	CHESAPEAKE APPALACHIA LLC	1/8+	715 457	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/67	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15919	9-17-2	G	CAROLYN SUE HENRY	CHESAPEAKE APPALACHIA LLC	1/8+	715 454	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15920	9-17-2	G	DENNIS KOTKE	CHESAPEAKE APPALACHIA LLC	1/8+	715 458	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/67	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*17233	9-17-2	G	TIMOTHY MCDOWELL	CHESAPEAKE APPALACHIA LLC	1/8+	713 355	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc to TH Exploration LLC: 41/248	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17234	9-17-2	G	GAREN P. MCDOWELL	CHESAPEAKE APPALACHIA LLC	1/8+	716 280	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc to TH Exploration LLC: 41/248	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17235	9-17-2	G	WINONA RIDDLE	CHESAPEAKE APPALACHIA LLC	1/8+	715 353	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc to TH Exploration LLC: 41/248	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17236	9-17-2	G	TELYN L. MILLER	CHESAPEAKE APPALACHIA LLC	1/8+	716 270	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc to TH Exploration LLC: 41/248	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17237	9-17-2	G	JENNIFER WHEATON	CHESAPEAKE APPALACHIA LLC	1/8+	715 610	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc to TH Exploration LLC: 41/248	SWN Production Company LLC to TH Exploration LLC: 41/256

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10*17238	9-17-2	G	LISA ANN MCDOWELL	CHESAPEAKE APPALACHIA LLC	1/8+	715 341	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/204	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc to TH Exploration LLC: 41/248	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17239	9-17-2	G	ANITA RAE MILLER	CHESAPEAKE APPALACHIA LLC	1/8+	715 336	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/204	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc to TH Exploration LLC: 41/248	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17240	9-17-2	G	BONNIE GRISELL	CHESAPEAKE APPALACHIA LLC	1/8+	715 331	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc to TH Exploration LLC: 41/248	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17241	9-17-2	G	BARBARA K BURLEY	CHESAPEAKE APPALACHIA LLC	1/8+	716 290	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/204	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc to TH Exploration LLC: 41/248	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17242	9-17-2	G	GERALD R MILLER	CHESAPEAKE APPALACHIA LLC	1/8+	716 285	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/204	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc to TH Exploration LLC: 41/248	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17243	9-17-2	G	DAVID MCDOWELL	CHESAPEAKE APPALACHIA LLC	1/8+	717 26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc to TH Exploration LLC: 41/248	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17244	9-17-2	G	KAREN CECIL	CHESAPEAKE APPALACHIA LLC	1/8+	716 295	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc to TH Exploration LLC: 41/248	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17245	9-17-2	G	CHAD E LONGFELLOW	CHESAPEAKE APPALACHIA LLC	1/8+	833 218	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 33/47	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc to TH Exploration LLC: 41/248	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17666	9-17-2	G	LILA FAYE BONAR SNODGRASS AND DONALD T SNODGRASS	TH EXPLORATION LLC	1/8+	949 172	N/A	N/A	N/A	N/A	N/A	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*17673	9-17-2	G	JAMES PERRY COCHRAN	TH EXPLORATION LLC	1/8+	932 567	N/A	N/A	N/A	N/A	N/A	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*17707	9-17-2	G	JACQUELYN S FERRARI AND JOHN C FERRARI	TH EXPLORATION LLC	1/8+	949 177	N/A	N/A	N/A	N/A	N/A	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*17709	9-17-2	G	CAROL GONGOLA	TH EXPLORATION LLC	1/8+	949 167	N/A	N/A	N/A	N/A	N/A	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*17981	9-17-2	G	MICHAEL E SWIFT AND MELODY A SWIFT	TH EXPLORATION LLC	1/8+	925 372	N/A	N/A	N/A	N/A	N/A	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*18099	9-17-2	G	RAE ELLEN FLOYD AND KENNETH FLOYD	TH EXPLORATION LLC	1/8+	927 233	N/A	N/A	N/A	N/A	N/A	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*18107	9-17-2	G	ANITA MAE MASON	TH EXPLORATION LLC	1/8+	927 238	N/A	N/A	N/A	N/A	N/A	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*18167	9-17-2	G	NEIL CALL AND MELINDA CALL	TH EXPLORATION LLC	1/8+	927 492	N/A	N/A	N/A	N/A	N/A	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*18168	9-17-2	G	SANDRA YAHAGAWA	TH EXPLORATION LLC	1/8+	927 498	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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10*18169	9-17-2	G	KAREN K WILLIAMS	TH EXPLORATION LLC	1/8+	927 628	N/A	N/A	N/A	N/A	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*18192	9-17-2	G	STEPHEN S MASON AND CAROLE K MASON	TH EXPLORATION LLC	1/8+	928 625	N/A	N/A	N/A	N/A	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*18193	9-17-2	G	CAROLYN LEE FUREY AND MARTIN J FUREY	TH EXPLORATION LLC	1/8+	949 158	N/A	N/A	N/A	N/A	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*18194	9-17-2	G	PAMELA BEYLER AND CHAD R BEYLER	TH EXPLORATION LLC	1/8+	928 630	N/A	N/A	N/A	N/A	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*18198	9-17-2	G	MARY THERESA SOLEAU AND THOMAS SOLEAU	TH EXPLORATION LLC	1/8+	928 643	N/A	N/A	N/A	N/A	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*18199	9-17-2	G	LAWRENCE J VAUGHN AND GAIL L VAUGHN	TH EXPLORATION LLC	1/8+	928 532	N/A	N/A	N/A	N/A	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*18259	9-17-2	G	JENNIFER WHEATON	TH EXPLORATION LLC	1/8+	929 3	N/A	N/A	N/A	N/A	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*18260	9-17-2	G	GEMMA RUDY AND TIMOTHY RUDY	TH EXPLORATION LLC	1/8+	928 584	N/A	N/A	N/A	N/A	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*18261	9-17-2	G	TIMOTHY MCDOWELL AND CYNTHIA MCDOWELL	TH EXPLORATION LLC	1/8+	928 553	N/A	N/A	N/A	N/A	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*18262	9-17-2	G	KAREN MCDOWELL CECIL AND JAMES E CECIL	TH EXPLORATION LLC	1/8+	928 555	N/A	N/A	N/A	N/A	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*18263	9-17-2	G	LISA ANN MCDOWELL AND ROBERT JOSEPH HILL	TH EXPLORATION LLC	1/8+	928 551	N/A	N/A	N/A	N/A	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*18264	9-17-2	G	DAVID MCDOWELL AND CRYSTAL MCDOWELL	TH EXPLORATION LLC	1/8+	928 549	N/A	N/A	N/A	N/A	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*18295	9-17-2	G	THOMAS R BAKER AND VICKIE L BAKER	TH EXPLORATION LLC	1/8+	929 262	N/A	N/A	N/A	N/A	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*18417	9-17-2	G	CHEVEL L HILL	TH EXPLORATION LLC	1/8+	932 577	N/A	N/A	N/A	N/A	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*18487	9-17-2	G	NANCY L STANGEL AND JOHN J STANGEL	TH EXPLORATION LLC	1/8+	933 113	N/A	N/A	N/A	N/A	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*18488	9-17-2	G	CHARLINE M ENGLE AND KEVIN E ENGLE	TH EXPLORATION LLC	1/8+	933 118	N/A	N/A	N/A	N/A	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*18508	9-17-2	G	PATRICIA LUANNE BONAR	TH EXPLORATION LLC	1/8+	925 351	N/A	N/A	N/A	N/A	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*18517	9-17-2	G	LORI SHANAHAN AND PATRICK SHANAHAN	TH EXPLORATION LLC	1/8+	933 575	N/A	N/A	N/A	N/A	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*18655	9-17-2	G	PATRICIA L LEHN	TH EXPLORATION LLC	1/8+	936 95	N/A	N/A	N/A	N/A	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*18656	9-17-2	G	PAMELA CALL	TH EXPLORATION LLC	1/8+	936 100	N/A	N/A	N/A	N/A	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*18658	9-17-2	G	ELIZABETH JANE KELLER	TH EXPLORATION LLC	1/8+	936 107	N/A	N/A	N/A	N/A	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*18762	9-17-2	G	TRACY L BARNBY	TH EXPLORATION LLC	1/8+	938 481	N/A	N/A	N/A	N/A	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*19373	9-17-2	G	JESSICA WHEATON	TH EXPLORATION LLC	1/8+	931 411	N/A	N/A	N/A	N/A	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*19508	9-17-2	G	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	941 446	N/A	N/A	N/A	N/A	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*19532	9-17-2	G	CYNTHIA K KIRCHHOFF	TH EXPLORATION LLC	1/8+	942 637	N/A	N/A	N/A	N/A	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*19624	9-17-2	G	JOHN T YINGLING	TH EXPLORATION LLC	1/8+	944 209	N/A	N/A	N/A	N/A	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*19713	9-17-2	G	MARSHA BERISFORD	TH EXPLORATION LLC	1/8+	944 452	N/A	N/A	N/A	N/A	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*19879	9-17-2	G	MARY V GILSON AND WALTER M GILSON	TH EXPLORATION LLC	1/8+	945 588	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
10*19933	9-17-2	G	MARY ANN GRIFFITH	TH EXPLORATION LLC	1/8+	948 555	N/A	N/A	N/A	N/A	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*21400	9-17-2	G	DENNIS REASBECK AND BARBARA REASBECK	TH EXPLORATION LLC	1/8+	956 645	N/A	N/A	N/A	N/A	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*21487	9-17-2	G	FLOYD D ANDERSON & CAROLYN SUE ANDERSON	TH EXPLORATION LLC	1/8+	957 294	N/A	N/A	N/A	N/A	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*21842	9-17-2	G	JOSEPH NOKOVICH	TH EXPLORATION LLC	1/8+	959 635	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	N/A	N/A
10*21844	9-17-2	G	ROBERTA YOUNG	TH EXPLORATION LLC	1/8+	959 629	N/A	N/A	N/A	N/A	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*21927	9-17-2	G	BLACK GOLD GROUP LTD	TH EXPLORATION LLC	1/8+	964 474	N/A	N/A	N/A	N/A	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*21928	9-17-2	G	JOHN D COX AND CONNIE J COX	TH EXPLORATION LLC	1/8+	953 511	N/A	N/A	N/A	N/A	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*21940	9-17-2	G	ALYSA JORDAN & TERRY M JORDAN	TH EXPLORATION LLC	1/8+	953 346	N/A	N/A	N/A	N/A	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*21967	9-17-2	G	ROGER G ALLEN AND DONNA KAY ALLEN	TH EXPLORATION LLC	1/8+	960 571	N/A	N/A	N/A	N/A	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*21970	9-17-2	G	CHRISTOPHER DAUGHERTY & JENNIFER R DAUGHERTY	TH EXPLORATION LLC	1/8+	960 578	N/A	N/A	N/A	N/A	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*21971	9-17-2	G	MARY LOU KITTELBERGER AND FREDERICK W KITTELBERGER	TH EXPLORATION LLC	1/8+	960 580	N/A	N/A	N/A	N/A	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*21975	9-17-2	G	RAYMOND A KUDERSKI AND KELLI J KUDERSKI	TH EXPLORATION LLC	1/8+	960 582	N/A	N/A	N/A	N/A	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*21984	9-17-2	G	SANFORD METZ	TH EXPLORATION LLC	1/8+	960 576	N/A	N/A	N/A	N/A	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*21986	9-17-2	G	RONALD D KOONTZ & BETH ANN KOONTZ	TH EXPLORATION LLC	1/8+	960 569	N/A	N/A	N/A	N/A	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*22088	9-17-2	G	BRANNEN DAUGHERTY	TH EXPLORATION LLC	1/8+	961 345	N/A	N/A	N/A	N/A	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*22154	9-17-2	G	DONALD EUGENE ANDERSON	TH EXPLORATION LLC	1/8+	953 509	N/A	N/A	N/A	N/A	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*22599	9-17-2	G	BRYANT R SWIFT AND KATHY SWIFT	TH EXPLORATION LLC	1/8+	966 456	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	N/A	N/A
10*22600	9-17-2	G	AIDEN BOYD YOUNG JENNIFER A YOUNG, PETITIONER	TH EXPLORATION LLC	1/8+	966 462	N/A	N/A	N/A	N/A	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*22776	9-17-2	G	GAMES ROBERT WELLS	TH EXPLORATION LLC	1/8+	970 19	N/A	N/A	N/A	N/A	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*22849	9-17-2	G	NEIL MCELROY AND SUE MASON MCELROY	TH EXPLORATION LLC	1/8+	977 44	N/A	N/A	N/A	N/A	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*22851	9-17-2	G	JOHN J HELLSTERN AND LYNN D HELLSTERN	TH EXPLORATION LLC	1/8+	977 39	N/A	N/A	N/A	N/A	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*22853	9-17-2	G	ROMALD LEE HENSLEY AND MARY ANN HENSLEY	TH EXPLORATION LLC	1/8+	977 34	N/A	N/A	N/A	N/A	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*23076	9-17-2	G	JACK R BERISFORD	TH EXPLORATION LLC	1/8+	984 43	N/A	N/A	N/A	N/A	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*23260	9-17-2	G	IDA M TRAVIS ET AL	TH EXPLORATION LLC	1/8+	988 73	N/A	N/A	N/A	N/A	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*23194	9-17-40	H	ALBERT AND CHRISTOPHER HARTLEY	J S ROGERS	1/8+	60 160																
10*18610	9-19-2	I	NEIL ROBERT YOUNG	TH EXPLORATION LLC	1/8+	934 636	N/A	N/A	N/A	N/A	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*18614	9-19-2	I	MICHAEL A WALKER	TH EXPLORATION LLC	1/8+	934 607	N/A	N/A	N/A	N/A	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*18615	9-19-2	I	MARK A WALKER	TH EXPLORATION LLC	1/8+	934 609	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	N/A	N/A
10*18616	9-19-2	I	CHAD A YOUNG	TH EXPLORATION LLC	1/8+	934 611	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	N/A	N/A

South Penn Natural Gas Company to Dallis Snyder and Sam Beren: 239/81 - Working Agreement between South Penn Oil Company & Hope Natural Gas Company-ARTI in/to the gas leasehold rights of subject leasehold.

Unrecorded transfer - South Penn Oil Company to South Penn Natural Gas Company: 209/552

J S Rogers to South Penn Oil Company: 60/162

South Penn Oil Company to South Penn Natural Gas Company: 209/552

Dallis Snyder, et ux & Sam Beren et ux, et al to John H. Robinson and George F. Eagon: 1/443

John H. Robinson and Charles F. Eagon Estate, et al to Elva Robinson & Mary Ellen Davis to Andrew L. Henry, Charles E. Reed & Harry R. Cronin Jr: 3/495

Elva Robinson & Mary Ellen Davis to Andrew L. Henry, Charles E. Reed & Harry R. Cronin Jr: 4/35

Katherine A. Henry & Harry E. Cronin Jr. to Charles E. Reed & Kathryn C. Reed: 397/495

Kathryn C. Reed, widow to Carl Perkins: 434/441

Carl D. Perkins & Dorothy Louise Perkins to Perkins Oil and Gas Co: 484/281

Hope Natural Gas Company to Consolidated Gas Supply Corp: 374/234

CNG Development Company merged into CNG Producing Company

CNG Producing Company merged its name to Dominion Exploration and Production Inc. effective 4/11/2000

Dominion Exploration and Production Inc changed its name to Consol Gas Company: 19/546

Consol Gas Company merged into CNX Gas Company LLC: 11/415

CNX Gas Company LLC to TH Exploration LLC: 42/149

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Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Dead Book/Pages	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	
10*18625	9-19-2	I	LOIS ELAINE WICKHAM	TH EXPLORATION LLC	1/8+	934 632	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	N/A	N/A
10*18626	9-19-2	I	CLARA SUE YOUNG	TH EXPLORATION LLC	1/8+	934 634	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	N/A	N/A
10*19409	9-19-2	I	CAROLYN J YOUNG	TH EXPLORATION LLC	1/8+	939 291	N/A	N/A	N/A	N/A	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*19667	9-19-2	I	ERIC J YOUNG	TH EXPLORATION LLC	1/8+	937 375	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	N/A	N/A
10*19669	9-19-2	I	RONALD W YOUNG	TH EXPLORATION LLC	1/8+	937 373	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	N/A	N/A
10*19670	9-19-2	I	RONALD R YOUNG AND GERALDINE YOUNG	TH EXPLORATION LLC	1/8+	937 368	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	N/A	N/A
10*19671	9-19-2	I	MELISSA D FLETCHER & SCOTT A FLETCHER	TH EXPLORATION LLC	1/8+	938 316	N/A	N/A	N/A	N/A	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*21343	9-19-2	I	LELAND YOUNG BY HIS AIF	TH EXPLORATION LLC	1/8+	945 649	N/A	N/A	N/A	N/A	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*21489	9-19-2	I	ALEXA B YOUNG	TH EXPLORATION LLC	1/8+	957 299	N/A	N/A	N/A	N/A	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*21518	9-19-2	I	SUSAN C YOUNG	TH EXPLORATION LLC	1/8+	949 203	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	N/A	N/A
10*21568	9-19-2	I	LARRY R BONAR AND DEBRA L BONAR	TH EXPLORATION LLC	1/8+	957 399	N/A	N/A	N/A	N/A	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*21573	9-19-2	I	CARLA J SIMMS	TH EXPLORATION LLC	1/8+	957 397	N/A	N/A	N/A	N/A	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*21576	9-19-2	I	AUCE F WINLAND	TH EXPLORATION LLC	1/8+	957 395	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	N/A	N/A
10*21577	9-19-2	I	MICHAEL S OTT AND SYBIL OTT	TH EXPLORATION LLC	1/8+	957 446	N/A	N/A	N/A	N/A	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*21739	9-19-2	I	CRYSTAL DAWN YOUNG	TH EXPLORATION LLC	1/8+	957 413	N/A	N/A	N/A	N/A	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*21740	9-19-2	I	HOLLY A YOUNG	TH EXPLORATION LLC	1/8+	957 415	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	N/A	N/A
10*21742	9-19-2	I	GRANT D RICHARDS AND KERRI S RICHARDS	TH EXPLORATION LLC	1/8+	957 456	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	N/A	N/A
10*21743	9-19-2	I	SHIRLEY KOONTZ POA KELLI KOONTZ BENLINE	TH EXPLORATION LLC	1/8+	957 454	N/A	N/A	N/A	N/A	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*22022	9-19-2	I	PENNY YODER AND KEVIN LYNN YODER	TH EXPLORATION LLC	1/8+	952 356	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	N/A	N/A
10*22057	9-19-2	I	RONALD R YOUNG	TH EXPLORATION LLC	1/8+	960 584	N/A	N/A	N/A	N/A	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*22600	9-19-2	I	AIDEN BOYD YOUNG JENNIFER A YOUNG, PETITIONER	TH EXPLORATION LLC	1/8+	966 462	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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AUG 6 2018

WV Department of  
Environmental Protection



TUG HILL

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✓

August 3, 2018

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

RE: Keith Stern S-8HM

Subject: Road Crossing Letter

Dear Laura:

Tug Hill Operating, LLC will not be drilling, extracting or producing any minerals under any WV County or State Routes in the area reflected on the Keith Stern S-8HM well plat.

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

Sincerely,

Amy L. Miller  
Permitting Specialist – Appalachia Region

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WV Department of  
Environmental Protection

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

Date of Notice Certification: 08/03/2018

API No. 47- 051 - \_\_\_\_\_

Operator's Well No. Keith Stern S-8HM

Well Pad Name: Keith Stern

**Notice has been given:**

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

State: <u>West Virginia</u>	UTM NAD 83	Easting: <u>526,357.89</u>
County: <u>Marshall</u>		Northing: <u>4,402,801.06</u>
District: <u>Meade</u>	Public Road Access: <u>Fish Creek Road (County Route 74)</u>	
Quadrangle: <u>Glen Easton 7.5'</u>	Generally used farm name: <u>TH Exploration, LLC</u>	
Watershed: <u>Fish Creek (HUC 10)</u>		

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

Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:  *PLEASE CHECK ALL THAT APPLY  <input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED  <input checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED  <input type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or  <input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)  <input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION  <input checked="" type="checkbox"/> 5. PUBLIC NOTICE  <input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION		<b>OOG OFFICE USE ONLY</b>  <input type="checkbox"/> RECEIVED/ NOT REQUIRED  <input type="checkbox"/> RECEIVED  <input type="checkbox"/> RECEIVED/ NOT REQUIRED   <input type="checkbox"/> RECEIVED  <input type="checkbox"/> RECEIVED  <input type="checkbox"/> RECEIVED
RECEIVED Office of Oil and Gas  <b>AUG 6 2018</b>  WV Department of Environmental Protection		

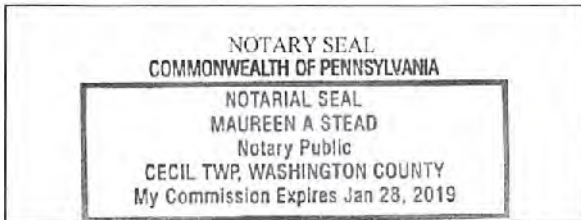
**Required Attachments:**

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

**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>300 Southpointe Boulevard, Plaza II, Suite 200</u>
By:	<u>Amy L. Miller <i>Amy L. Miller</i></u>		<u>Canonsburg, PA 15317</u>
Its:	<u>Permitting Specialist - Appalachia Region</u>	Facsimile:	<u>724-338-2030</u>
Telephone:	<u>724-749-8388</u>	Email:	<u>amiller@tug-hilop.com</u>



Subscribed and sworn before me this 3 day of AUG. 2018  
Maureen A Stead Notary Public  
 My Commission Expires 1/28/19

**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).

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WV Department of  
Environmental Protection

**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:** 8/2/2018    **Date Permit Application Filed:** 8/3/2018

**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: TH Exploration, LLC (Access Road and Well Pad)  
Address: 380 Southpointe Boulevard, Plaza II, Suite 200  
Canonsburg, PA 15318

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

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

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

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

SURFACE OWNER(s) (Impoundments or Pits)

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

COAL OWNER OR LESSEE  
Name: CONSOL Energy, Inc. Attn: Casey Saunders  
Address: 1000 CONSOL Energy Drive  
Canonsburg, PA 15317

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

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

Name: \*See attached list  
Address: \_\_\_\_\_

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

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

\*Please attach additional forms if necessary

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WW-6A  
(8-13)

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API NO. 47- 007 -  
OPERATOR WELL NO. Keith Stern S-011M  
Well Pad Name: Keith Stern

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Environmental Protection

**Notice is hereby given:**

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

**This Notice Shall Include:**

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

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

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

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

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

**Well Location Restrictions**

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

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

**Water Well Testing:**

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

**Water Testing Laboratories:**

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

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

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

**Written Comment:**

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

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

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



**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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Environmental Protection

WW-6A  
(8-13)

API NO. 47- 051 -  
OPERATOR WELL NO. Keith Stern S-6HM  
Well Pad Name: Keith Stern

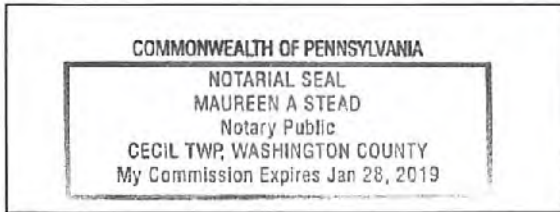
**Notice is hereby given by:**

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

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).



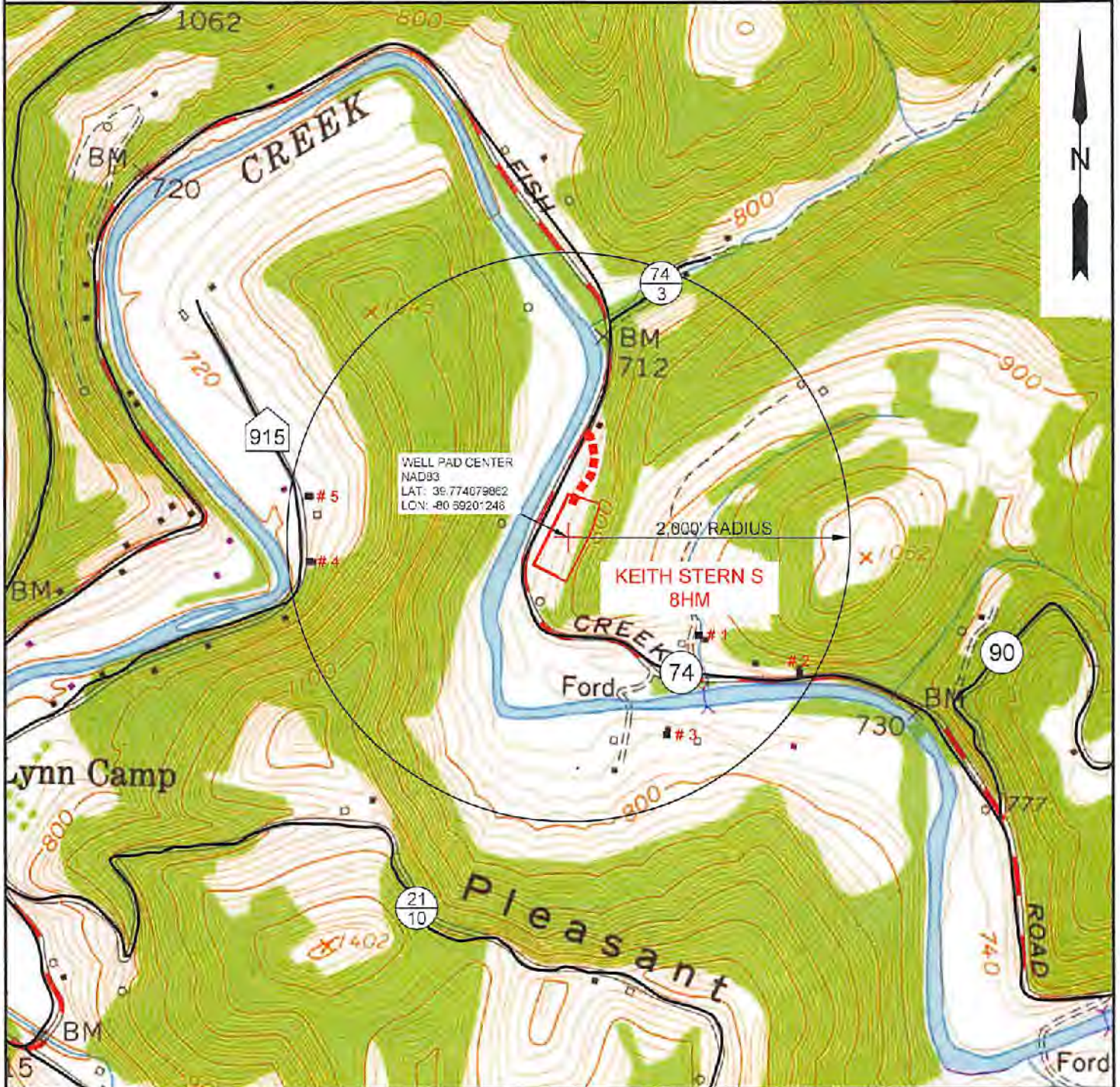
Subscribed and sworn before me this 2 day of Aug. 2018.

Maureen A Stead Notary Public

My Commission Expires 1/28/19

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**PROPOSED  
KEITH STERN S - 8HM**



NOTE: THERE APPEARS TO BE FIVE (5) POSSIBLE WATER SOURCES WITHIN 2,000'.

**SLS**  
Land & Energy Development  
Solutions from the ground up.  
P.O. Box 150 • 12 Vanhorn Drive • Glenville, WV 26035 • (304) 462-9034  
www.slsurveys.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.	8811	07/31/2018	1" = 1000'

**TUG HILL  
OPERATING**

**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: KEITH STERN S – 8HM  
 District: Meade (House #'s 1-5)  
 State: WV

There are five (5) residences, no businesses, no churches, no schools or no emergency facilities within two-thousand feet (2,000') of the above referenced well location.

<p><b>House 1</b>            TM 14 Pcl. 20            William K. Stern, Et Ux            Phone: 304-843-1478 (Per Address – Keith, Betty &amp; Ginger Sue Stern)  <b>Physical Address:</b>            14912 Fish Creek Rd.            Glen Easton, WV 26039  <b>Tax Address:</b>            Same</p>	<p><b>House 2</b>            TM 14 Pcl. 20.1            William K. Stern, Et Ux            Phone: 304-843-1478 (Per Address – Keith, Betty &amp; Ginger Sue Stern)  <b>Physical Address:</b>            15056 Fish Creek Rd.            Glen Easton, WV 26039  <b>Tax Address:</b>            14912 Fish Creek Rd.            Glen Easton, WV 26039</p>	<p><b>House 3</b>            TM 14 Pcl. 21            Eleanore M. Fox Est.            Phone: 304-845-6016 (Per Tax Address – Thomas Fox)  <b>Physical Address:</b>            None Found – Appears to be an old home.  <b>Tax Address:</b>            100 Lynn Camp Ln.            Glen Easton, WV 26039-9707</p>
<p><b>House 4</b>            TM 14 Pcl. 27            Patrick J. Shellhase            Phone: 304-845-0742; 304-810-0758  <b>Physical Address:</b>            593 Crow Dr.            Glen Easton, WV 26039  <b>Tax Address:</b>            2300 7<sup>th</sup> St.            Moundsville, WV 26041</p>	<p><b>House 5</b>            TM 14 Pcl. 25            Patricia A. Dugas            Phone: None Found  <b>Physical Address:</b>            681 Crow Dr.            Glen Easton, WV 26039  <b>Tax Address:</b>            Same</p>	

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WW-70  
Rev. 7/01

Affidavit of Personal Service

State Of Pennsylvania

County Of Washington

The undersigned, being first duly sworn, says that the undersigned served a true and complete copy of all sides of--

- (1) Notice on Form WW-2(A) \_\_\_ / WW-3(A) \_\_\_ / WW-4(A) \_\_\_ / WW-5(A) \_\_\_ / WW-6(A) X, WW-6A5
- (2) Application on Form WW-2(B) \_\_\_ / WW-3(B) \_\_\_ / WW-4(B) \_\_\_ / WW-5(B) \_\_\_ / WW-6(B) \_\_\_
- (3) Plat showing the well location on Form WW-6, and
- (4) Construction and Reclamation Plan on Form WW-9

--all with respect to operator's Well No. Keith Stern S-8HM located in Meade District, Marshall County, West Virginia, upon the person or organization named--

TH Exploration, LLC

--by delivering the same in Washington County, State of Pennsylvania on the 3rd day of August, 2018 in the manner specified below.

[COMPLETE THE APPROPRIATE SECTION]

For an individual:

Handing it to him \_\_\_ / her \_\_\_ / or, because he \_\_\_ / she \_\_\_ / refused to take it when offered it, by leaving it in his \_\_\_ / her \_\_\_ / presence.

Handing it to a member of his or her family above the age of 16 years named \_\_\_\_\_ who resides at the usual place of abode of the person to be served, and asking the family member to give it to the person to be served as soon as possible.

For a partnership:

Handing it to \_\_\_\_\_, a partner of the partnership or, because the partner refused to take it when I handed it over, by leaving it in the presence of the partner.

For a limited partnership:

Handing it to the general partner, named \_\_\_\_\_, or, because the general partner refused to take it when I tried to hand it over, by leaving it in the presence of the general partner.

For a corporation:

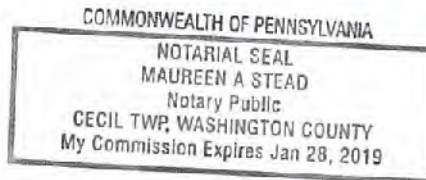
Handing it to the corporation's employee X / officer \_\_\_ / director \_\_\_ / attorney in fact \_\_\_ / named David Delallo.

amy miller  
(Signature of person executing service)

Taken, subscribed and sworn before me this 3 day of Aug. 2018.  
My commission expires 1/28/19

Maureen A Stead  
Notary Public

(AFFIX SEAL IF NOTARIZED OUTSIDE THE STATE)



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WW-6A3  
(1/12)

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

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

**Date of Notice:** 12/11/17      **Date of Planned Entry:** 12/18/17

**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: TH Exploration, LLC (Access Road and Well Pad)  
 Address: 380 Southpointe Boulevard, Plaza II, Suite 200  
Canonsburg, PA 15318

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

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

COAL OWNER OR LESSEE

Name: Consol Energy, Inc. /  
 Address: CNX Center, 1000 Consol Energy Drive  
Canonsburg, PA 15317

MINERAL OWNER(s)

Name: William K. and Betty L. Stern /  
 Address: 14912 Fish Creek 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>39.7748867; -80.6920362</u>
County: <u>Marshall</u>	Public Road Access: <u>Fish Creek Road (County Route 74)</u>
District: <u>Meade</u>	Watershed: <u>Fish Creek (HUC 10)</u>
Quadrangle: <u>Glen Easton 7.5'</u>	Generally used farm name: <u>TH Exploration, LLC</u>

Copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450). Copies of such documents or additional information related to horizontal drilling may be obtained from the Secretary by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Notice is hereby given by:**

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

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

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WV Department of  
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).

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: 08/02/2018 Date Permit Application Filed: 08/03/2018

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

CERTIFIED MAIL RETURN RECEIPT REQUESTED  HAND DELIVERY

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

Notice is hereby provided to the SURFACE OWNER(s)  
(at the address listed in the records of the sheriff at the time of notice):

Name: TH Exploration, LLC Address: 380 Southpointe Boulevard, Plaza II, Suite 200  
Canonsburg, PA 15318

Notice is hereby given:

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

State: West Virginia UTM NAD 83 Easting: 526,357.89  
County: Marshall Northing: 4,402,801.06  
District: Meade Public Road Access: Fish Creek Road (County Route 74)  
Quadrangle: Glen Easton 7.5' Generally used farm name: TH Exploration, LLC  
Watershed: Fish Creek (HUC 10)

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 Address: 380 Southpointe Boulevard, Plaza II, Suite 200  
Telephone: 724-749-0368 Canonsburg, PA 15317  
Email: amiller@tug-hill-op.com Facsimile: 724-338-2030

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AUG 6 2018

WV Department of  
Environmental Protection

WW-70  
Rev. 7/01

Affidavit of Personal Service

State Of Pennsylvania

County Of Washington

The undersigned, being first duly sworn, says that the undersigned served a true and complete copy of all sides of--

- (1) Notice on Form WW-2(A)    / WW-3(A)    / WW-4(A)    / WW-5(A)    / WW-6(A) X, WW-6A5
- (2) Application on Form WW-2(B)    / WW-3(B)    / WW-4(B)    / WW-5(B)    / WW-6(B) X
- (3) Plat showing the well location on Form WW-6, and
- (4) Construction and Reclamation Plan on Form WW-9

--all with respect to operator's Well No. Keith Stem N-6HM located in Meade District, Marshall County, West Virginia, upon the person or organization named--

TH Exploration, LLC

--by delivering the same in Washington County, State of Pennsylvania on the 3rd day of August, 2018 in the manner specified below.

[COMPLETE THE APPROPRIATE SECTION]

For an individual:

Handing it to him    / her    / or, because he    / she    / refused to take it when offered it, by leaving it in his    / her    / presence.

Handing it to a member of his or her family above the age of 16 years named    who resides at the usual place of abode of the person to be served, and asking the family member to give it to the person to be served as soon as possible.

For a partnership:

Handing it to   , a partner of the partnership or, because the partner refused to take it when I handed it over, by leaving it in the presence of the partner.

For a limited partnership:

Handing it to the general partner, named   , or, because the general partner refused to take it when I tried to hand it over, by leaving it in the presence of the general partner.

For a corporation:

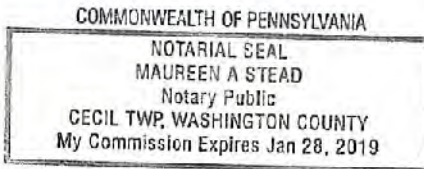
Handing it to the corporation's employee    / officer    / director    / attorney in fact    / named David Delallo.

amy hiller  
(Signature of person executing service)

Taken, subscribed and sworn before me this 3 day of AUG. 2018.  
My commission expires 1/28/19

Maureen A Stead  
Notary Public

(AFFIX SEAL IF NOTARIZED OUTSIDE THE STATE)



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WV Department of  
Environmental Protection





## WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

## Division of Highways

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

Thomas J. Smith, P. E.  
Secretary of Transportation/  
Commissioner of Highways

February 20, 2018

Jill M. Newman  
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 Keith Stern Pad, Marshall County

Keith Stern 1HM	Keith Stern 2HM	Keith Stern 3HM	Keith Stern 4HM
Keith Stern 5HM	Keith Stern 6HM	Keith Stern 7HM	Keith Stern 8HM
Keith Stern 9HM	Keith Stern 10HM	Keith Stern 11HM	Keith Stern 12HM
Keith Stern 13HU	Keith Stern 14HU	Keith Stern 15HU	Keith Stern 16HU
Keith Stern 17HU	Keith Stern 18HU	Keith Stern 19HU	

Dear Mr. Martin,

This well pad will be accessed from a DOH permit #06-2018-0068 which has been issued to Tug Hill Operating, LLC for access to the State Road for well sites located off of Marshall County Route 74 SLS.

The operator has signed a STATEWIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

Very Truly Yours,

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

Cc: Jonathan White  
Tug Hill Operating, LLC  
CH, OM, D-6  
File

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

Well No. Keith Stern S-8HM

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

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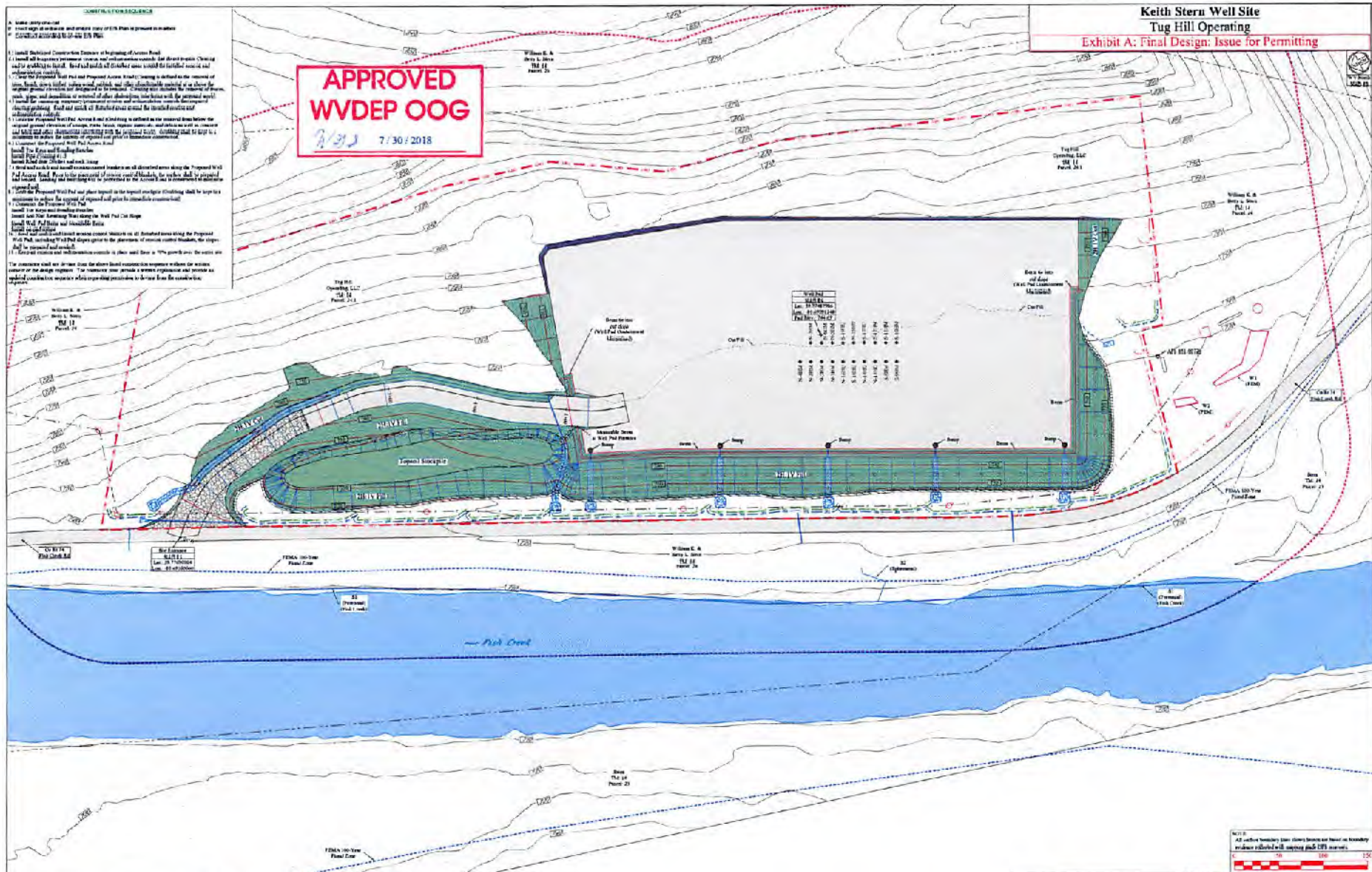
WV Department of  
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**Keith Stern Well Site  
Tug Hill Operating**

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

**APPROVED  
WVDEP OOG**  
7/30/2018



Disturbed Area	Access Road																																																																																																																																																																																																																																																																																																						
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W-017	Production	100	100	100	100	Active																																																																																																																																																																																																																																																																																																	
W-018	Production	100	100	100	100	Active																																																																																																																																																																																																																																																																																																	
W-019	Production	100	100	100	100	Active																																																																																																																																																																																																																																																																																																	
W-020	Production	100	100	100	100	Active																																																																																																																																																																																																																																																																																																	

**Legend**

- Original Contour 2' Contour
- Original Contour 10' Contour
- Proposed 2' Contour
- Proposed 10' Contour
- Access Road Design 2' Contour
- Access Road Design 10' Contour
- Gravel Area
- 1" Pipe
- 2" Pipe
- 4" Pipe
- 6" Pipe
- 8" Pipe
- 10" Pipe
- 12" Pipe
- 14" Pipe
- 16" Pipe
- 18" Pipe
- 20" Pipe
- 24" Diameter Filter Back
- Light Oil Pits
- Light Oil Storage
- Light Oil Transfer
- Light Oil Line
- Lighting Pole
- Lighting Pole Line
- Lighting Pole
- Filter Wellhead
- 2" Wellhead
- 4" Wellhead
- 6" Wellhead
- 8" Wellhead
- 10" Wellhead
- 12" Wellhead
- 14" Wellhead
- 16" Wellhead
- 18" Wellhead
- 20" Wellhead
- 24" Wellhead
- 26" Wellhead
- 28" Wellhead
- 30" Wellhead
- 32" Wellhead
- 34" Wellhead
- 36" Wellhead
- 38" Wellhead
- 40" Wellhead
- 42" Wellhead
- 44" Wellhead
- 46" Wellhead
- 48" Wellhead
- 50" Wellhead
- 52" Wellhead
- 54" Wellhead
- 56" Wellhead
- 58" Wellhead
- 60" Wellhead
- 62" Wellhead
- 64" Wellhead
- 66" Wellhead
- 68" Wellhead
- 70" Wellhead
- 72" Wellhead
- 74" Wellhead
- 76" Wellhead
- 78" Wellhead
- 80" Wellhead
- 82" Wellhead
- 84" Wellhead
- 86" Wellhead
- 88" Wellhead
- 90" Wellhead
- 92" Wellhead
- 94" Wellhead
- 96" Wellhead
- 98" Wellhead
- 100" Wellhead

**TUG HILL OPERATING**

THIS DOCUMENT PREPARED FOR TUG HILL OPERATING

**KeyS** Engineering & Construction

Dynamic Plan View  
**Keith Stern Well Site**  
Meadow District  
Marshall County, WV

Date: 02/07/2018  
Scale: As Shown  
Revised By: JZ  
Sheet: 2 of 2