



west virginia department of environmental protection

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

Austin Caperton, Cabinet Secretary
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-9HM
47-051-02102-00-00

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-9HM
Farm Name: TH EXPLORATION LLC
U.S. WELL NUMBER: 47-051-02102-00-00
Horizontal 6A New Drill
Date Issued: 10/22/2018



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**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:

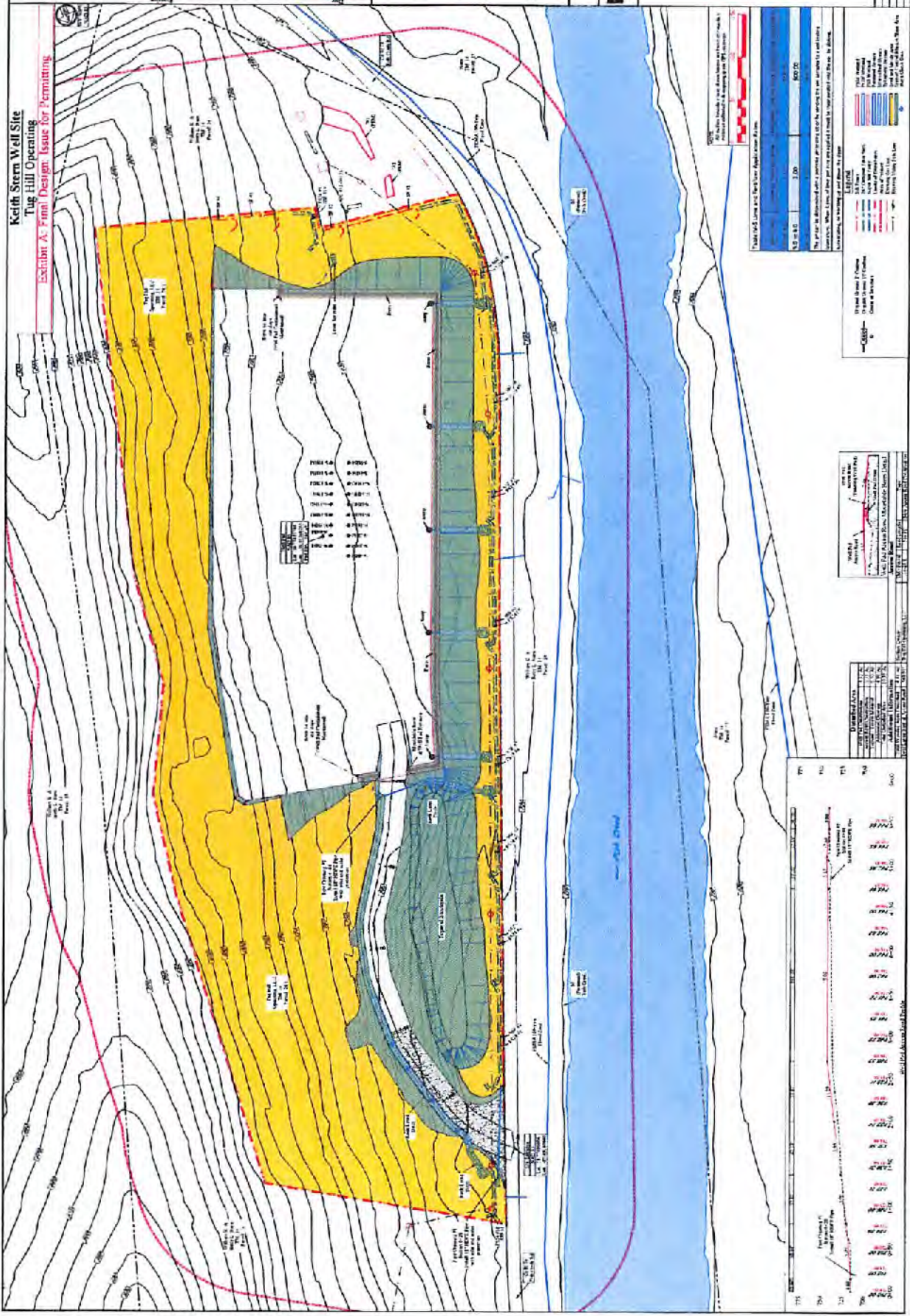
OFFICE OF OIL AND GAS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
STATE OF WEST VIRGINIA

By:



JAMES A. MARTIN, CHIEF

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



Keith Stern Well Site
 Meade County, WV
 Reclamation and Sediment Control Plan

TUG HILL
 OPERATING

K&S
 CONSULTANTS
 1000 WEST MAIN STREET
 TUG HILL, WV 26108
 (304) 785-1234
 www.kandconsultants.com

Symbol	Description
[Red line]	Proposed Well Line
[Blue line]	Proposed Driveway
[Green area]	Type 3 Structure
[Yellow area]	Well Field
[Black line]	Property Line
[Black line]	Adjacent Property

Color	Description
Red	Proposed Well Line
Blue	Proposed Driveway
Green	Type 3 Structure
Yellow	Well Field
Black	Property Line
Black	Adjacent Property

Well ID	Well Depth (ft)	Well Diameter (in)	Well Construction
Well 1A	100	12	Concrete
Well 1B	110	12	Concrete
Well 1C	120	12	Concrete
Well 1D	130	12	Concrete
Well 1E	140	12	Concrete
Well 1F	150	12	Concrete
Well 1G	160	12	Concrete
Well 1H	170	12	Concrete
Well 1I	180	12	Concrete

Scale: 1" = 200'
 Date: 06/15/2023
 Drawing No: KS-2023-001

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 Powhatan Point 7
Operator ID County District Quadrangle

2) Operator's Well Number: Keith Stern S-9HM 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

6) Existing Pad: Yes or No No

JS
8/1/18

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus is the target formation at a depth of 6251' - 6302', thickness of 51' and an anticipated approximate pressure of 3800 psi.

8) Proposed Total Vertical Depth: 6402'

9) Formation at Total Vertical Depth: Onondaga

10) Proposed Total Measured Depth: 14,241'

11) Proposed Horizontal Leg Length: 7,429.76'

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, testing 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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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#	14,241'	14,241'	3778ft^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#	6,894'		
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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*JS
8/1/18*

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 18,570,000 lb. proppant and 287,106 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.

*Note: Attach additional sheets as needed.

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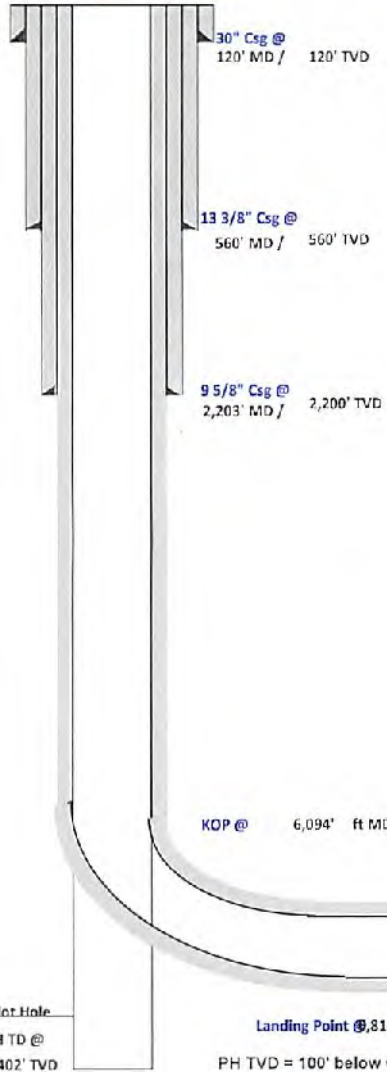


WELL NAME: Keith Stern S-9HM
 STATE: WV COUNTY: Marshall
 DISTRICT: Meade
 DF Elev: 744' GL Elev: 744'
 TD: 14,241'
 TH Latitude: 39.77470796
 TH Longitude: -80.6922421
 BH Latitude: 39.75238
 BH Longitude: -80.679299

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
Geneseo/Burkett	6106
Tully	6137
Hamilton	6172
Marcellus	6251
Landing Depth	6291
Onondaga	6302
Pilot Hole Depth	6402

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	2,203'	2,200'	36	J55	Surface
Production	8 7/8 x 8 3/4	5 1/2	14,241'	6,420'	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	3,221	A	14.5	Air / SOBMM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc



Ju
8/11/18

Pilot Hole
PH TD @
6,402' TVD

Landing Point @ 8,812' MD / 5,291' TVD
PH TVD = 100' below Onondaga Top

Lateral TD @ 14,241' ft MD
6,420' ft TVD

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4705102102



Tug Hill Operating, LLC Casing and Cement Program

Keith Stern S-9HM

Casing

	String	Grade	Bit Size	Depth (Measurc)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	13 3/8"	J55	17 1/2"	560'	CTS
Intermediate	9 5/8"	J55	12 1/4"	2,203'	CTS
Production	5 1/2"	CYHP110	8 7/8 x 8 3/4	14,241'	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-09 HM (slot A)
Site: Keith Stern
Project: Marshall County, West Virginia
Design: rev1

SECTION DETAILS

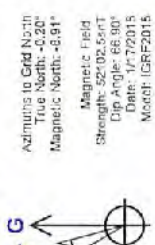
Sec	MD	Inc	Azi	TVD	+N/S	+E/W	Diag	T/Face	V-Sect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1300.00	0.00	0.00	1300.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2'100' build
3	1550.00	5.00	200.00	1549.68	0.00	-3.73	2.00	200.00	7.80	Begin 5.00° tangent
4	3105.24	5.00	200.00	3100.00	-137.70	-50.12	0.00	0.00	104.87	Begin 3'100' build
5	3405.24	14.00	200.00	3395.58	-184.18	-67.04	3.00	0.00	140.27	Begin 3'100' build
6	3694.10	21.75	197.29	3659.44	-269.97	-95.75	3.00	-32.89	210.76	Begin 21.75° tangent
7	6094.05	21.75	197.29	5896.50	-1152.22	-199.64	0.00	0.00	960.36	Begin 10'100' build
8	6812.18	99.00	150.31	6291.00	-1965.05	-12.73	10.00	-39.28	1512.26	Begin 89.00° lateral section
9	14240.57	99.00	150.31	6420.00	-3117.44	9665.73	0.00	0.00	3903.76	FBH/UD 14240.57 MD/6420.00 TVD

Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: NAD83 West Virginia - HARN
 Ellipsoid: GRS 1990
 Zone: Zone 17N (84 W to 78 W)

System Datum: Mean Sea Level
 Depth Reference: GL @ 744.03usft

Northing: 444845.71
 Easting: 172887.21
 Latitude: 38.77470786
 Longitude: -80.69224210

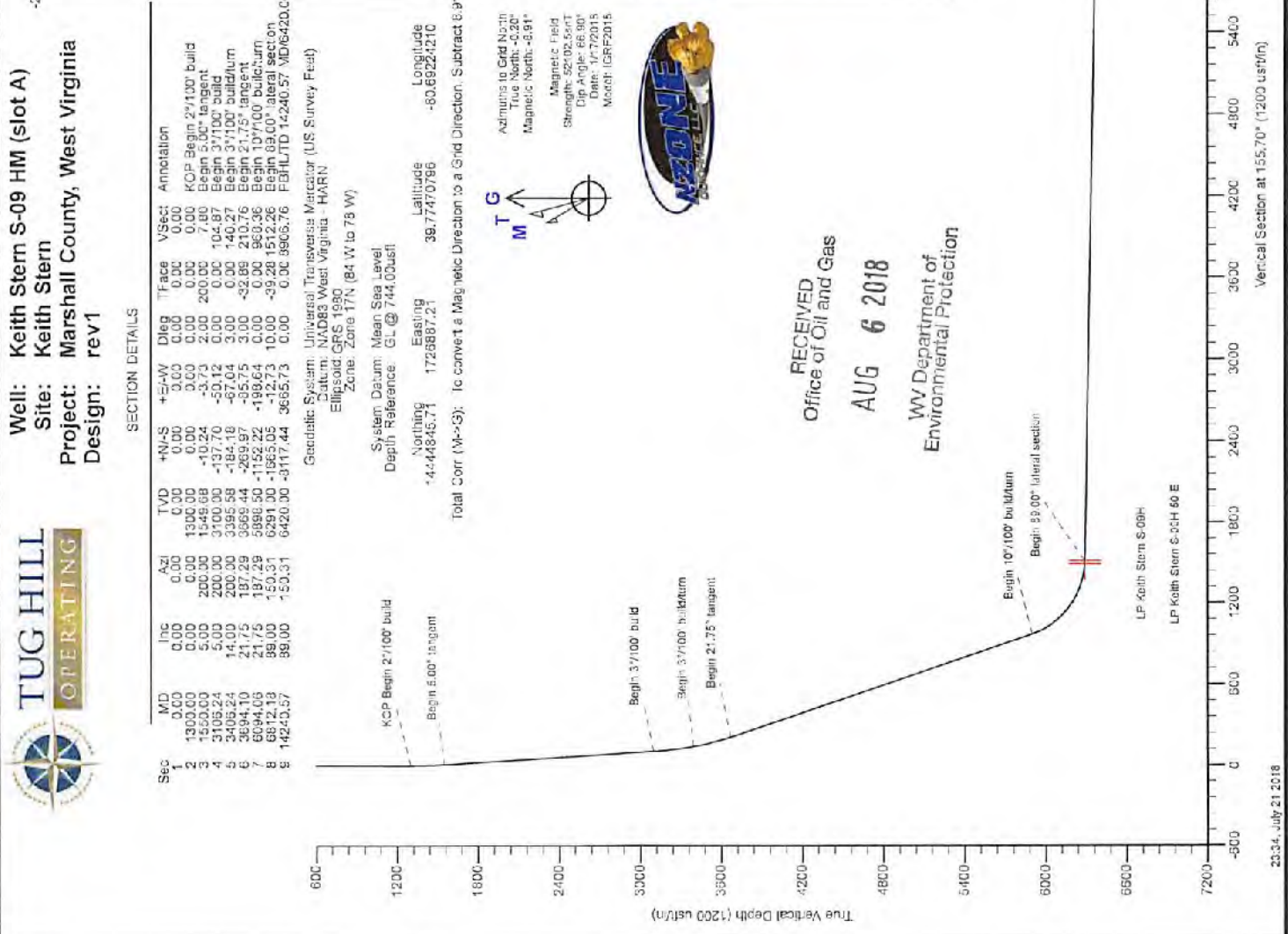
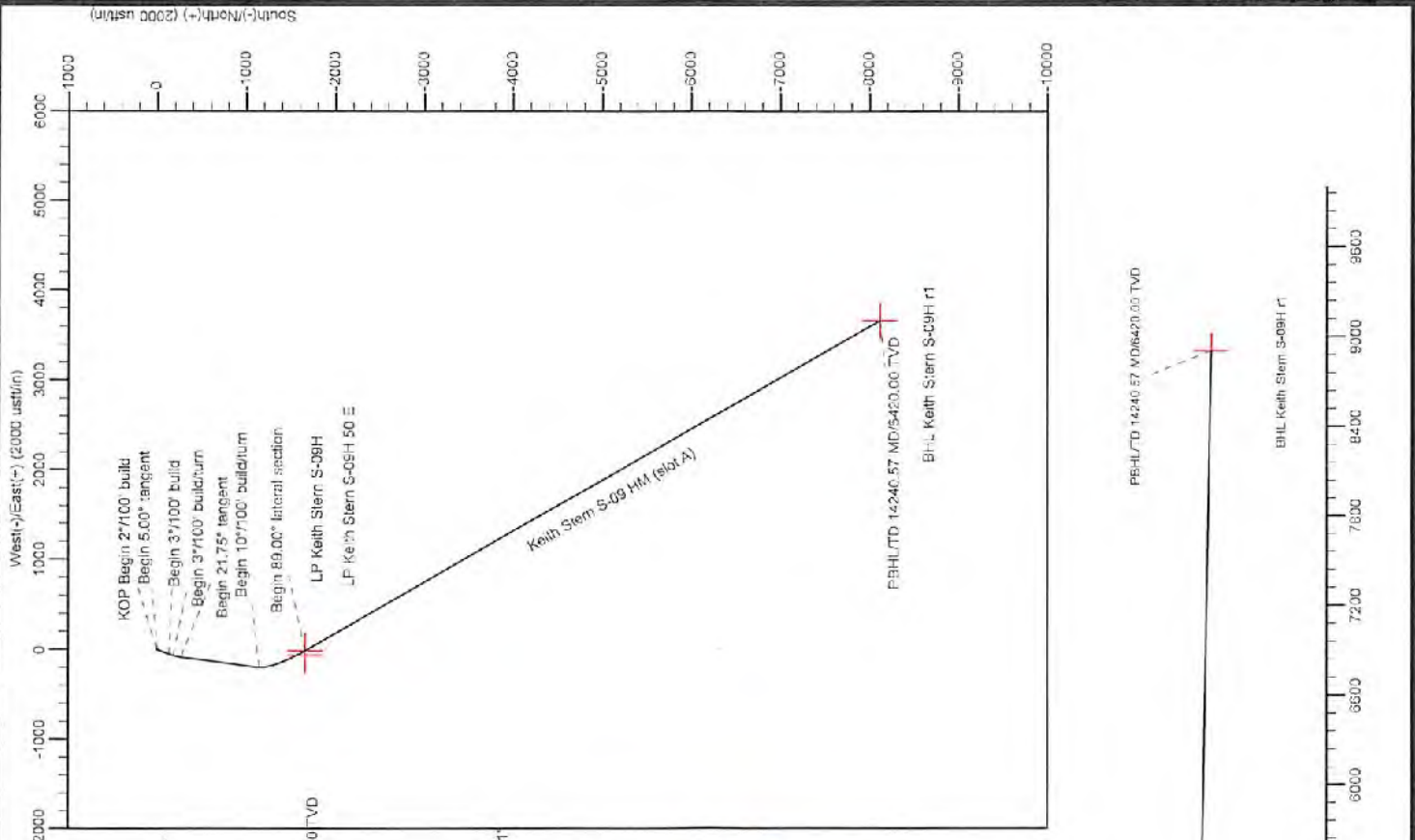
Total Corr (W--S): To convert a Magnetic Direction to a Grid Direction, Subtract 8.91°



Azimuth to Grid North
 True North: -0.20°
 Magnetic North: -8.91°
 Magnetic Field
 Strength: 52,002.5nT
 Dip Angle: 66.90°
 Date: 11/7/2015
 Model: IGRF2015



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Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Keith Stern S-09 HM (slot A)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 744.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 744.00usft
Site:	Keith Stern	North Reference:	Grid
Well:	Keith Stern S-09 HM (slot A)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

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

Site	Keith Stern				
Site Position:		Northing:	14,444,890.33 usft	Latitude:	39.77483004
From:	Lat/Long	Easting:	1,726,932.47 usft	Longitude:	-80.69208048
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.20 °

Well	Keith Stern S-09 HM (slot A)					
Well Position	+N/-S	0.00 usft	Northing:	14,444,845.72 usft	Latitude:	39.77470796
	+E/-W	0.00 usft	Easting:	1,726,887.21 usft	Longitude:	-80.69224210
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	744.00 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	1/17/2018	-8.71	66.90	52,102.46383429

Design	rev1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	155.70

Plan Survey Tool Program	Date	7/21/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	14,240.57 rev1 (Original Hole)	MWD	MWD - Standard

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Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,550.00	5.00	200.00	1,549.68	-10.24	-3.73	2.00	2.00	0.00	200.00	
3,106.24	5.00	200.00	3,100.00	-137.70	-50.12	0.00	0.00	0.00	0.00	
3,406.24	14.00	200.00	3,395.58	-184.18	-67.04	3.00	3.00	0.00	0.00	
3,694.10	21.75	187.29	3,669.44	-269.97	-85.75	3.00	2.89	-4.41	-32.89	
6,094.06	21.75	187.29	5,898.50	-1,152.22	-198.64	0.00	0.00	0.00	0.00	
6,812.18	89.00	150.31	6,291.00	-1,665.05	-12.73	10.00	9.37	-5.15	-39.28	LP Keith Stern S-09H
14,240.57	89.00	150.31	6,420.00	-8,117.44	3,655.73	0.00	0.00	0.00	0.00	BHL Keith Stern S-09



Planning Report - Geographic

Database: DB_Jul2218dt_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Keith Stern
 Well: Keith Stern S-09 HM (slot A)
 Wellbore: Original Hole
 Design: rev1

Local Co-ordinate Reference: Wall Keith Stern S-09 HM (slot A)
 TVD Reference: GL @ 744.00usft
 MD Reference: GL @ 744.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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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	14,444,845.72	1,726,887.21	39.77470796	-80.69224210
100.00	0.00	0.00	100.00	0.00	0.00	14,444,845.72	1,726,887.21	39.77470796	-80.69224210
200.00	0.00	0.00	200.00	0.00	0.00	14,444,845.72	1,726,887.21	39.77470796	-80.69224210
300.00	0.00	0.00	300.00	0.00	0.00	14,444,845.72	1,726,887.21	39.77470796	-80.69224210
400.00	0.00	0.00	400.00	0.00	0.00	14,444,845.72	1,726,887.21	39.77470796	-80.69224210
500.00	0.00	0.00	500.00	0.00	0.00	14,444,845.72	1,726,887.21	39.77470796	-80.69224210
600.00	0.00	0.00	600.00	0.00	0.00	14,444,845.72	1,726,887.21	39.77470796	-80.69224210
700.00	0.00	0.00	700.00	0.00	0.00	14,444,845.72	1,726,887.21	39.77470796	-80.69224210
800.00	0.00	0.00	800.00	0.00	0.00	14,444,845.72	1,726,887.21	39.77470796	-80.69224210
900.00	0.00	0.00	900.00	0.00	0.00	14,444,845.72	1,726,887.21	39.77470796	-80.69224210
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,444,845.72	1,726,887.21	39.77470796	-80.69224210
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,444,845.72	1,726,887.21	39.77470796	-80.69224210
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,444,845.72	1,726,887.21	39.77470796	-80.69224210
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,444,845.72	1,726,887.21	39.77470796	-80.69224210
KOP Begin 2°/100' build									
1,400.00	2.00	200.00	1,399.98	-1.64	-0.60	14,444,844.08	1,726,886.62	39.77470346	-80.69224424
1,500.00	4.00	200.00	1,499.83	-6.56	-2.39	14,444,839.18	1,726,884.83	39.77468898	-80.69225068
1,550.00	5.00	200.00	1,549.68	-10.24	-3.73	14,444,835.47	1,726,883.48	39.77467986	-80.69225550
Begin 5.00° tangent									
1,600.00	5.00	200.00	1,599.49	-14.34	-5.22	14,444,831.38	1,726,881.99	39.77466663	-80.69226085
1,700.00	5.00	200.00	1,699.11	-22.53	-8.20	14,444,823.19	1,726,879.01	39.77464617	-80.69227156
1,800.00	5.00	200.00	1,798.73	-30.72	-11.18	14,444,815.00	1,726,876.03	39.77462371	-80.69228227
1,900.00	5.00	200.00	1,898.35	-38.91	-14.16	14,444,806.81	1,726,873.05	39.77460124	-80.69229298
2,000.00	5.00	200.00	1,997.97	-47.10	-17.14	14,444,798.62	1,726,870.07	39.77457878	-80.69230369
2,100.00	5.00	200.00	2,097.59	-55.29	-20.12	14,444,790.43	1,726,867.09	39.77455632	-80.69231440
2,200.00	5.00	200.00	2,197.21	-63.48	-23.10	14,444,782.24	1,726,864.11	39.77453385	-80.69232511
2,300.00	5.00	200.00	2,296.82	-71.67	-26.09	14,444,774.05	1,726,861.13	39.77451139	-80.69233582
2,400.00	5.00	200.00	2,396.44	-79.86	-29.07	14,444,765.86	1,726,858.15	39.77448892	-80.69234652
2,500.00	5.00	200.00	2,496.06	-88.05	-32.05	14,444,757.67	1,726,855.17	39.77446646	-80.69235723
2,599.99	5.00	200.00	2,595.68	-96.24	-35.03	14,444,749.48	1,726,852.18	39.77444400	-80.69236794
2,699.99	5.00	200.00	2,695.30	-104.43	-38.01	14,444,741.29	1,726,849.20	39.77442153	-80.69237865
2,799.99	5.00	200.00	2,794.92	-112.62	-40.99	14,444,733.10	1,726,846.22	39.77439907	-80.69238936
2,899.99	5.00	200.00	2,894.54	-120.81	-43.97	14,444,724.91	1,726,843.24	39.77437661	-80.69240007
2,999.99	5.00	200.00	2,994.16	-129.00	-46.95	14,444,716.72	1,726,840.26	39.77435414	-80.69241078
3,099.99	5.00	200.00	3,093.78	-137.19	-49.93	14,444,708.53	1,726,837.28	39.77433168	-80.69242149
3,106.24	5.00	200.00	3,100.00	-137.70	-50.12	14,444,708.02	1,726,837.09	39.77433028	-80.69242216
Begin 3°/100' build									
3,199.99	7.81	200.00	3,193.16	-147.53	-53.70	14,444,698.19	1,726,833.52	39.77430332	-80.69243501
3,299.99	10.81	200.00	3,291.83	-162.73	-59.23	14,444,682.98	1,726,827.98	39.77426161	-80.69245489
3,399.99	13.81	200.00	3,389.52	-182.77	-66.52	14,444,662.95	1,726,820.69	39.77420666	-80.69248109
3,406.24	14.00	200.00	3,395.58	-184.16	-67.04	14,444,661.54	1,726,820.18	39.77420279	-80.69248294
Begin 3°/100' build/turn									
3,499.99	16.43	194.60	3,488.05	-207.67	-74.26	14,444,638.04	1,726,812.95	39.77413834	-80.69250893
3,599.99	19.14	190.34	3,581.26	-237.49	-80.77	14,444,608.22	1,726,806.45	39.77405651	-80.69253245
3,694.10	21.75	187.29	3,669.44	-269.97	-85.75	14,444,575.75	1,726,801.46	39.77396736	-80.69255059
Begin 21.75° tangent									
3,699.99	21.75	187.29	3,674.91	-272.14	-86.03	14,444,573.58	1,726,801.18	39.77396141	-80.69255160
3,799.99	21.75	187.29	3,767.79	-308.90	-90.73	14,444,536.82	1,726,796.48	39.77386050	-80.69256879
3,899.99	21.75	187.29	3,860.67	-345.66	-95.44	14,444,500.06	1,726,791.78	39.77375859	-80.69258598
3,999.99	21.75	187.29	3,953.55	-382.42	-100.14	14,444,463.30	1,726,787.07	39.77365668	-80.69260317
4,099.99	21.75	187.29	4,046.42	-419.18	-104.84	14,444,426.54	1,726,782.37	39.77355477	-80.69262036
4,199.99	21.75	187.29	4,139.30	-455.94	-109.55	14,444,389.77	1,726,777.67	39.77345286	-80.69263755
4,299.99	21.75	187.29	4,232.18	-492.70	-114.25	14,444,353.01	1,726,772.96	39.77335095	-80.69265474
4,399.99	21.75	187.29	4,325.06	-529.46	-118.95	14,444,316.25	1,726,768.26	39.77325504	-80.69267193



Planning Report - Geographic

Database: DB_Jul2216dt_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Keith Stern
 Well: Keith Stern S-09 HM (slot A)
 Wellbore: Original Hole
 Design: rev1

Local Co-ordinate Reference: Well Keith Stern S-09 HM (slot A)
 TVD Reference: GL @ 744.00usft
 MD Reference: GL @ 744.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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WV Department of
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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
4,499.99	21.75	187.29	4,417.94	-566.23	-123.66	14,444,279.49	1,726,763.55	39.77315413	-80.69268912
4,599.99	21.75	187.29	4,510.82	-602.99	-128.36	14,444,242.73	1,726,758.85	39.77305322	-80.69270631
4,699.99	21.75	187.29	4,603.70	-639.75	-133.07	14,444,205.97	1,726,754.15	39.77295230	-80.69272350
4,799.99	21.75	187.29	4,696.58	-676.51	-137.77	14,444,169.21	1,726,749.44	39.77285139	-80.69274069
4,899.99	21.75	187.29	4,789.46	-713.27	-142.47	14,444,132.45	1,726,744.74	39.77275048	-80.69275788
4,999.99	21.75	187.29	4,882.33	-750.03	-147.18	14,444,095.69	1,726,740.03	39.77264957	-80.69277507
5,099.99	21.75	187.29	4,975.21	-786.79	-151.88	14,444,058.93	1,726,735.33	39.77254866	-80.69279226
5,199.99	21.75	187.29	5,068.09	-823.55	-156.58	14,444,022.17	1,726,730.63	39.77244775	-80.69280945
5,299.99	21.75	187.29	5,160.97	-860.31	-161.29	14,443,985.41	1,726,725.92	39.77234684	-80.69282664
5,399.99	21.75	187.29	5,253.85	-897.07	-165.99	14,443,948.64	1,726,721.22	39.77224593	-80.69284383
5,499.99	21.75	187.29	5,346.73	-933.83	-170.70	14,443,911.88	1,726,716.52	39.77214502	-80.69286102
5,599.99	21.75	187.29	5,439.61	-970.59	-175.40	14,443,875.12	1,726,711.81	39.77204411	-80.69287821
5,699.99	21.75	187.29	5,532.49	-1,007.36	-180.10	14,443,838.36	1,726,707.11	39.77194320	-80.69289540
5,799.99	21.75	187.29	5,625.36	-1,044.12	-184.81	14,443,801.60	1,726,702.40	39.77184229	-80.69291258
5,899.99	21.75	187.29	5,718.24	-1,080.88	-189.51	14,443,764.84	1,726,697.70	39.77174138	-80.69292977
5,999.99	21.75	187.29	5,811.12	-1,117.64	-194.22	14,443,728.08	1,726,693.00	39.77164047	-80.69294696
6,094.06	21.75	187.29	5,898.50	-1,152.22	-196.64	14,443,693.50	1,726,688.57	39.77154554	-80.69296313
Begin 10°/100' build/turn									
6,099.99	22.21	186.30	5,903.99	-1,154.42	-196.90	14,443,691.29	1,726,686.31	39.77153949	-80.69296409
6,199.99	30.86	174.10	5,993.52	-1,198.69	-198.35	14,443,647.03	1,726,688.86	39.77141793	-80.69296268
6,299.99	39.78	166.93	6,075.17	-1,255.35	-188.47	14,443,590.37	1,726,696.74	39.77126222	-80.69292820
6,399.99	49.19	162.10	6,146.45	-1,322.70	-169.56	14,443,523.02	1,726,717.66	39.77107709	-80.69286170
6,499.99	58.76	158.49	6,205.20	-1,398.68	-142.18	14,443,447.04	1,726,745.03	39.77086817	-80.69276520
6,599.99	68.41	155.55	6,249.65	-1,480.98	-107.18	14,443,364.73	1,726,780.04	39.77064181	-80.69264163
6,699.99	78.10	152.99	6,278.42	-1,567.11	-65.61	14,443,278.60	1,726,821.61	39.77040488	-80.69249475
6,799.99	87.82	150.60	6,290.66	-1,654.45	-18.74	14,443,191.27	1,726,868.47	39.77016458	-80.69232902
6,812.18	89.00	150.31	6,291.00	-1,665.06	-12.73	14,443,180.66	1,726,874.48	39.77013540	-80.69230776
Begin 89.00° lateral section									
6,899.99	89.00	150.31	6,292.53	-1,741.33	30.75	14,443,104.39	1,726,917.96	39.76992553	-80.69215395
6,999.99	89.00	150.31	6,294.26	-1,828.19	80.27	14,443,017.53	1,726,967.48	39.76968652	-80.69197879
7,099.99	89.00	150.31	6,296.00	-1,915.05	129.79	14,442,930.67	1,727,017.00	39.76944751	-80.69180362
7,199.99	89.00	150.31	6,297.73	-2,001.91	179.31	14,442,843.81	1,727,066.52	39.76920850	-80.69162846
7,299.99	89.00	150.31	6,299.47	-2,088.77	228.83	14,442,756.95	1,727,116.04	39.76896949	-80.69145330
7,399.99	89.00	150.31	6,301.21	-2,175.63	278.35	14,442,670.09	1,727,165.56	39.76873048	-80.69127814
7,499.99	89.00	150.31	6,302.94	-2,262.49	327.87	14,442,583.23	1,727,215.08	39.76849147	-80.69110298
7,599.99	89.00	150.31	6,304.68	-2,349.35	377.39	14,442,496.36	1,727,264.60	39.76825245	-80.69092782
7,699.99	89.00	150.31	6,306.42	-2,436.21	426.90	14,442,409.50	1,727,314.12	39.76801344	-80.69075267
7,799.99	89.00	150.31	6,308.15	-2,523.07	476.42	14,442,322.64	1,727,363.63	39.76777443	-80.69057751
7,899.99	89.00	150.31	6,309.89	-2,609.94	525.94	14,442,235.78	1,727,413.15	39.76753542	-80.69040236
7,999.99	89.00	150.31	6,311.63	-2,696.80	575.46	14,442,148.92	1,727,462.67	39.76729640	-80.69022720
8,099.99	89.00	150.31	6,313.36	-2,783.66	624.98	14,442,062.06	1,727,512.19	39.76705739	-80.69005205
8,199.99	89.00	150.31	6,315.10	-2,870.52	674.50	14,441,975.20	1,727,561.71	39.76681837	-80.68987690
8,299.99	89.00	150.31	6,316.84	-2,957.38	724.02	14,441,888.34	1,727,611.23	39.76657936	-80.68970175
8,399.99	89.00	150.31	6,318.57	-3,044.24	773.53	14,441,801.48	1,727,660.75	39.76634035	-80.68952660
8,499.99	89.00	150.31	6,320.31	-3,131.10	823.05	14,441,714.62	1,727,710.27	39.76610133	-80.68935146
8,599.99	89.00	150.31	6,322.05	-3,217.96	872.57	14,441,627.75	1,727,759.78	39.76586232	-80.68917631
8,699.99	89.00	150.31	6,323.78	-3,304.82	922.09	14,441,540.89	1,727,809.30	39.76562330	-80.68900117
8,799.99	89.00	150.31	6,325.52	-3,391.68	971.61	14,441,454.03	1,727,858.82	39.76538429	-80.68882602
8,899.99	89.00	150.31	6,327.26	-3,478.55	1,021.13	14,441,367.17	1,727,908.34	39.76514527	-80.68865088
8,999.99	89.00	150.31	6,328.99	-3,565.41	1,070.65	14,441,280.31	1,727,957.86	39.76490625	-80.68847574
9,099.99	89.00	150.31	6,330.73	-3,652.27	1,120.17	14,441,193.45	1,728,007.38	39.76466724	-80.68830060
9,199.99	89.00	150.31	6,332.47	-3,739.13	1,169.69	14,441,106.59	1,728,056.90	39.76442822	-80.68812546
9,299.99	89.00	150.31	6,334.20	-3,825.99	1,219.20	14,441,019.73	1,728,106.42	39.76418920	-80.68795033
9,399.99	89.00	150.31	6,335.94	-3,912.85	1,268.72	14,440,932.87	1,728,155.93	39.76395019	-80.68777519



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 A)
 Wellbore: Original Hole
 Design: rev1

Local Co-ordinate Reference: Well Keith Stern S-09 HM (slot A)
 TVD Reference: GL @ 744.00usft
 MD Reference: GL @ 744.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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Planned Survey

WV Department of
Environmental Protection

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,499.98	89.00	150.31	6,337.68	-3,999.71	1,318.24	14,440,846.01	1,728,205.45	39.76371117	-80.68760006
9,599.98	89.00	150.31	6,339.41	-4,086.57	1,367.76	14,440,759.14	1,728,254.97	39.76347215	-80.68742492
9,699.98	89.00	150.31	6,341.15	-4,173.43	1,417.28	14,440,672.28	1,728,304.49	39.76323313	-80.68724979
9,799.98	89.00	150.31	6,342.89	-4,260.29	1,466.80	14,440,585.42	1,728,354.01	39.76299412	-80.68707466
9,899.98	89.00	150.31	6,344.62	-4,347.16	1,516.32	14,440,498.56	1,728,403.53	39.76275510	-80.68689953
9,999.98	89.00	150.31	6,346.36	-4,434.02	1,565.84	14,440,411.70	1,728,453.05	39.76251608	-80.68672440
10,099.98	89.00	150.31	6,348.10	-4,520.88	1,615.35	14,440,324.84	1,728,502.57	39.76227706	-80.68654927
10,199.98	89.00	150.31	6,349.83	-4,607.74	1,664.87	14,440,237.98	1,728,552.09	39.76203804	-80.68637415
10,299.98	89.00	150.31	6,351.57	-4,694.60	1,714.39	14,440,151.12	1,728,601.60	39.76179902	-80.68619902
10,399.98	89.00	150.31	6,353.31	-4,781.46	1,763.91	14,440,064.26	1,728,651.12	39.76156000	-80.68602390
10,499.98	89.00	150.31	6,355.04	-4,868.32	1,813.43	14,439,977.40	1,728,700.64	39.76132098	-80.68584877
10,599.98	89.00	150.31	6,356.78	-4,955.18	1,862.95	14,439,890.53	1,728,750.16	39.76108196	-80.68567365
10,699.98	89.00	150.31	6,358.51	-5,042.04	1,912.47	14,439,803.67	1,728,799.68	39.76084294	-80.68549853
10,799.98	89.00	150.31	6,360.25	-5,128.90	1,961.99	14,439,716.81	1,728,849.20	39.76060392	-80.68532341
10,899.98	89.00	150.31	6,361.99	-5,215.77	2,011.50	14,439,629.95	1,728,898.72	39.76036490	-80.68514829
10,999.98	89.00	150.31	6,363.72	-5,302.63	2,061.02	14,439,543.09	1,728,948.24	39.76012588	-80.68497318
11,099.98	89.00	150.31	6,365.46	-5,389.49	2,110.54	14,439,456.23	1,728,997.75	39.75988685	-80.68479805
11,199.98	89.00	150.31	6,367.20	-5,476.35	2,160.06	14,439,369.37	1,729,047.27	39.75964783	-80.68462295
11,299.98	89.00	150.31	6,368.93	-5,563.21	2,209.58	14,439,282.51	1,729,096.79	39.75940881	-80.68444783
11,399.98	89.00	150.31	6,370.67	-5,650.07	2,259.10	14,439,195.65	1,729,146.31	39.75916979	-80.68427272
11,499.98	89.00	150.31	6,372.41	-5,736.93	2,308.62	14,439,108.79	1,729,195.83	39.75893076	-80.68409761
11,599.98	89.00	150.31	6,374.14	-5,823.79	2,358.14	14,439,021.92	1,729,245.35	39.75869174	-80.68392250
11,699.98	89.00	150.31	6,375.88	-5,910.65	2,407.66	14,438,935.06	1,729,294.87	39.75845272	-80.68374739
11,799.98	89.00	150.31	6,377.62	-5,997.51	2,457.17	14,438,848.20	1,729,344.39	39.75821369	-80.68357229
11,899.98	89.00	150.31	6,379.35	-6,084.38	2,506.69	14,438,761.34	1,729,393.90	39.75797467	-80.68339718
11,999.98	89.00	150.31	6,381.09	-6,171.24	2,556.21	14,438,674.48	1,729,443.42	39.75773565	-80.68322208
12,099.98	89.00	150.31	6,382.83	-6,258.10	2,605.73	14,438,587.62	1,729,492.94	39.75749662	-80.68304697
12,199.98	89.00	150.31	6,384.56	-6,344.96	2,655.25	14,438,500.76	1,729,542.46	39.75725760	-80.68287187
12,299.98	89.00	150.31	6,386.30	-6,431.82	2,704.77	14,438,413.90	1,729,591.98	39.75701857	-80.68269677
12,399.98	89.00	150.31	6,388.04	-6,518.68	2,754.29	14,438,327.04	1,729,641.50	39.75677955	-80.68252167
12,499.98	89.00	150.31	6,389.77	-6,605.54	2,803.81	14,438,240.18	1,729,691.02	39.75654052	-80.68234657
12,599.98	89.00	150.31	6,391.51	-6,692.40	2,853.32	14,438,153.31	1,729,740.54	39.75630150	-80.68217147
12,699.97	89.00	150.31	6,393.25	-6,779.26	2,902.84	14,438,066.45	1,729,790.06	39.75606247	-80.68199638
12,799.97	89.00	150.31	6,394.98	-6,866.12	2,952.36	14,437,979.59	1,729,839.57	39.75582344	-80.68182128
12,899.97	89.00	150.31	6,396.72	-6,952.99	3,001.88	14,437,892.73	1,729,889.09	39.75558442	-80.68164619
12,999.97	89.00	150.31	6,398.46	-7,039.85	3,051.40	14,437,805.87	1,729,938.61	39.75534539	-80.68147110
13,099.97	89.00	150.31	6,400.19	-7,126.71	3,100.92	14,437,719.01	1,729,988.13	39.75510636	-80.68129601
13,199.97	89.00	150.31	6,401.93	-7,213.57	3,150.44	14,437,632.15	1,730,037.65	39.75486733	-80.68112092
13,299.97	89.00	150.31	6,403.67	-7,300.43	3,199.96	14,437,545.29	1,730,087.17	39.75462831	-80.68094583
13,399.97	89.00	150.31	6,405.40	-7,387.29	3,249.47	14,437,458.43	1,730,136.69	39.75438928	-80.68077074
13,499.97	89.00	150.31	6,407.14	-7,474.15	3,298.99	14,437,371.57	1,730,186.21	39.75415025	-80.68059565
13,599.97	89.00	150.31	6,408.88	-7,561.01	3,348.51	14,437,284.70	1,730,235.72	39.75391122	-80.68042057
13,699.97	89.00	150.31	6,410.61	-7,647.87	3,398.03	14,437,197.84	1,730,285.24	39.75367219	-80.68024548
13,799.97	89.00	150.31	6,412.35	-7,734.73	3,447.55	14,437,110.98	1,730,334.76	39.75343316	-80.68007040
13,899.97	89.00	150.31	6,414.09	-7,821.60	3,497.07	14,437,024.12	1,730,384.28	39.75319414	-80.67989532
13,999.97	89.00	150.31	6,415.82	-7,908.46	3,546.59	14,436,937.26	1,730,433.80	39.75295511	-80.67972024
14,099.97	89.00	150.31	6,417.56	-7,995.32	3,596.11	14,436,850.40	1,730,483.32	39.75271608	-80.67954516
14,199.97	89.00	150.31	6,419.30	-8,082.18	3,645.63	14,436,763.54	1,730,532.84	39.75247705	-80.67937008
14,240.57	89.00	150.31	6,420.00	-8,117.44	3,665.73	14,436,728.27	1,730,552.94	39.75238000	-80.67929900

PBHL/TD 14240.57 MD/6420.00 TVD



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Keith Stern S-09 HM (slot A)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 744.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 744.00usft
Site:	Keith Stern	North Reference:	Grid
Well:	Keith Stern S-09 HM (slot A)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	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-09H - plan misses target center by 43.58usft at 6788.64usft MD (6290.12 TVD, -1644.57 N, -24.28 E) - Point	0.00	0.00	6,291.00	-1,665.05	-62.73	14,443,180.66	1,726,824.48	39.77013588	-80.69248570	
LP Keith Stern S-09H 5C - plan hits target center - Point	0.00	0.01	6,291.00	-1,665.05	-12.73	14,443,180.66	1,726,874.48	39.77013541	-80.69230777	
BHL Keith Stern S-09H r - plan hits target center - Point	0.00	0.00	6,420.00	-8,117.44	3,665.73	14,436,728.27	1,730,552.94	39.75239000	-80.67929900	

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,300.00	1,300.00	0.00	0.00	KOP Begin 2°/100' build
1,550.00	1,549.88	-10.24	-3.73	Begin 5.00° tangent
3,106.24	3,100.00	-137.70	-50.12	Begin 3°/100' build
3,406.24	3,395.58	-184.18	-67.04	Begin 3°/100' build/turn
3,694.10	3,669.44	-269.97	-85.75	Begin 21.75° tangent
6,094.06	5,898.50	-1,152.22	-193.64	Begin 10°/100' build/turn
6,812.18	6,291.00	-1,665.06	-12.73	Begin 69.00° lateral section
14,240.57	6,420.00	-8,117.44	3,665.73	PBHL/TD 14240.57 MD/6420.00 TVD

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Environmental Protection

WW-9
(4/16)

API Number 47 - 051 - 4705 02102
Operator's Well No. Keith Stern S-9HM

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Tug Hill Operating, LLC OP Code 494510851

Watershed (HUC 10) Fish Creek Quadrangle Glen Easton 7.5'

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes No

Will a pit be used? Yes No

If so, please describe anticipated pit waste: AST Tanks with proper containment will be used for staging fresh water for frac and flow back water

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

Proposed Disposal Method For Treated Pit Wastes:

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

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

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

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

Additives to be used in drilling medium? Barite for weight

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

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

-Landfill or offsite name/permit number? Wetzel County Sanitary Landfill (SWF-1021 / WVD109183) and Westmoreland Sanitary Landfill, LLC (SAN1405 / PA DEP EC#1350426)

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

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

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

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

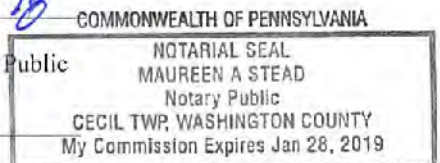
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WV Department of
Environmental Protection

Subscribed and sworn before me this 2 day of Aug., 2018
Maureen A Stead Notary Public

My commission expires 1/28/19



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 Muldoon

Comments: _____

Title: Oil and Gas Inspector

Date: 8/1/18

Field Reviewed? () Yes () No

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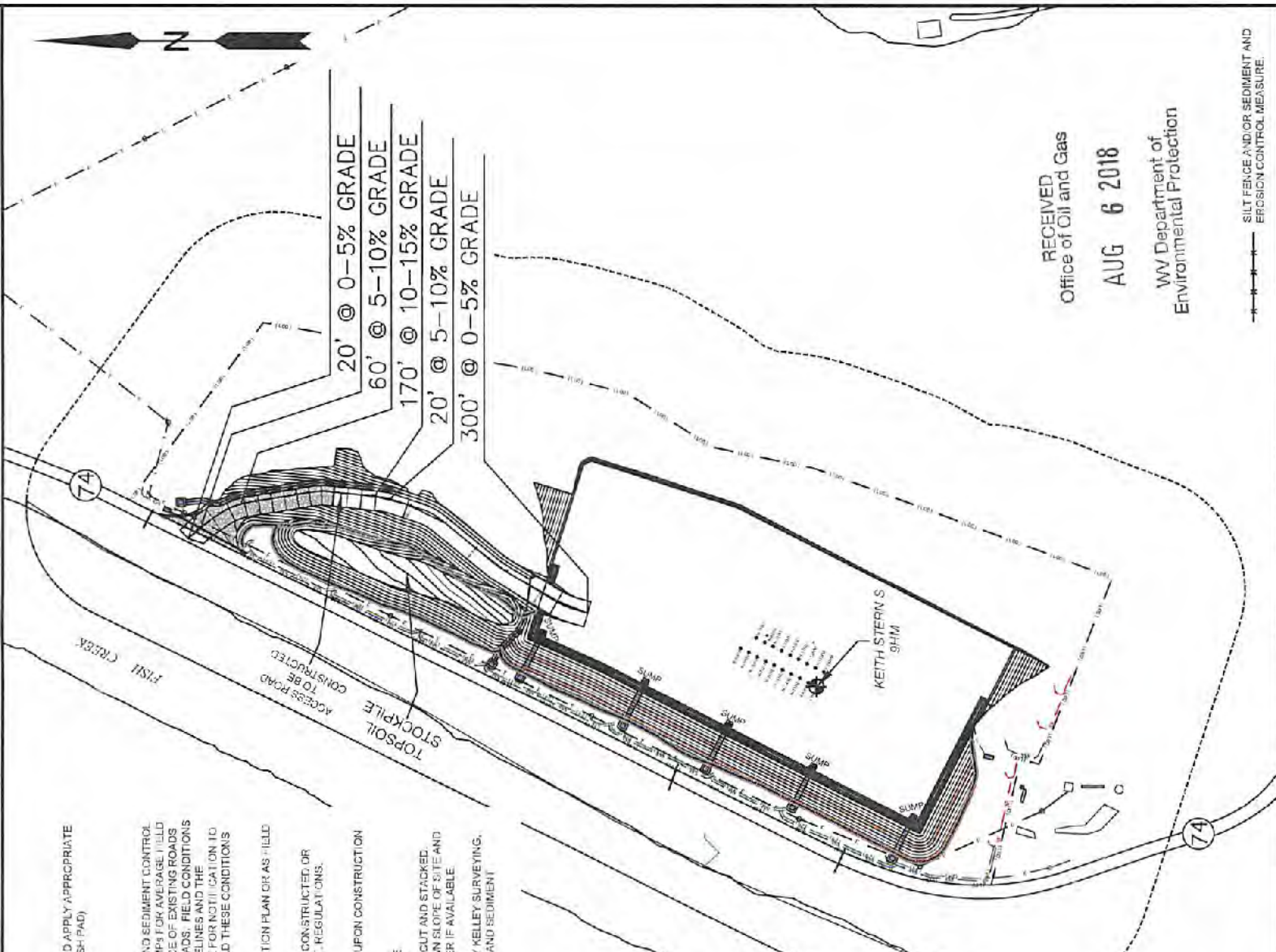
WV Department of
Environmental Protection

PROPOSED KEITH STERN S - 9HM

4705 * 02102

NOTES:

1. ©-- DENOTES INSTALL 18" PVC CULVERT AND APPLY APPROPRIATE SEDIMENT OUTLET CONTROL (RIP-RAP SPLASH PAD).
2. DRAWINGS NOT TO SCALE.
3. REFERENCE IS HEREBY MADE TO THE W.V.E.P. OFFICE OF OIL & GAS, "EROSION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BMP'S FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES AND THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION TO THE INSPECTOR AND THE OPERATOR SHOULD THESE CONDITIONS OCCUR.
4. INSTALL CULVERTS AS SHOWN ON RECLAMATION PLAN OR AS FIELD CONDITIONS REQUIRE.
5. ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH 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 FLASHINGS 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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SILT FENCE AND/OR SEDIMENT AND
EROSION CONTROL MEASURE.



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www.slsurveys.com



**TUG HILL
OPERATING**

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'	PREPARED FOR:		
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINT BLVD	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	B811	07/31/2018	NONE

4705 * 02102



Well Site Safety Plan
Tug Hill Operating, LLC

JS
8/1/18

Well Name: Keith Stern S-9HM

Pad Location: Keith Stern Pad

Marshall County, West Virginia

UTM meters , NADD83, Zone
17: Northing: 4,402,797.78
Easting: 526,356.28

August 2018

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WW-9

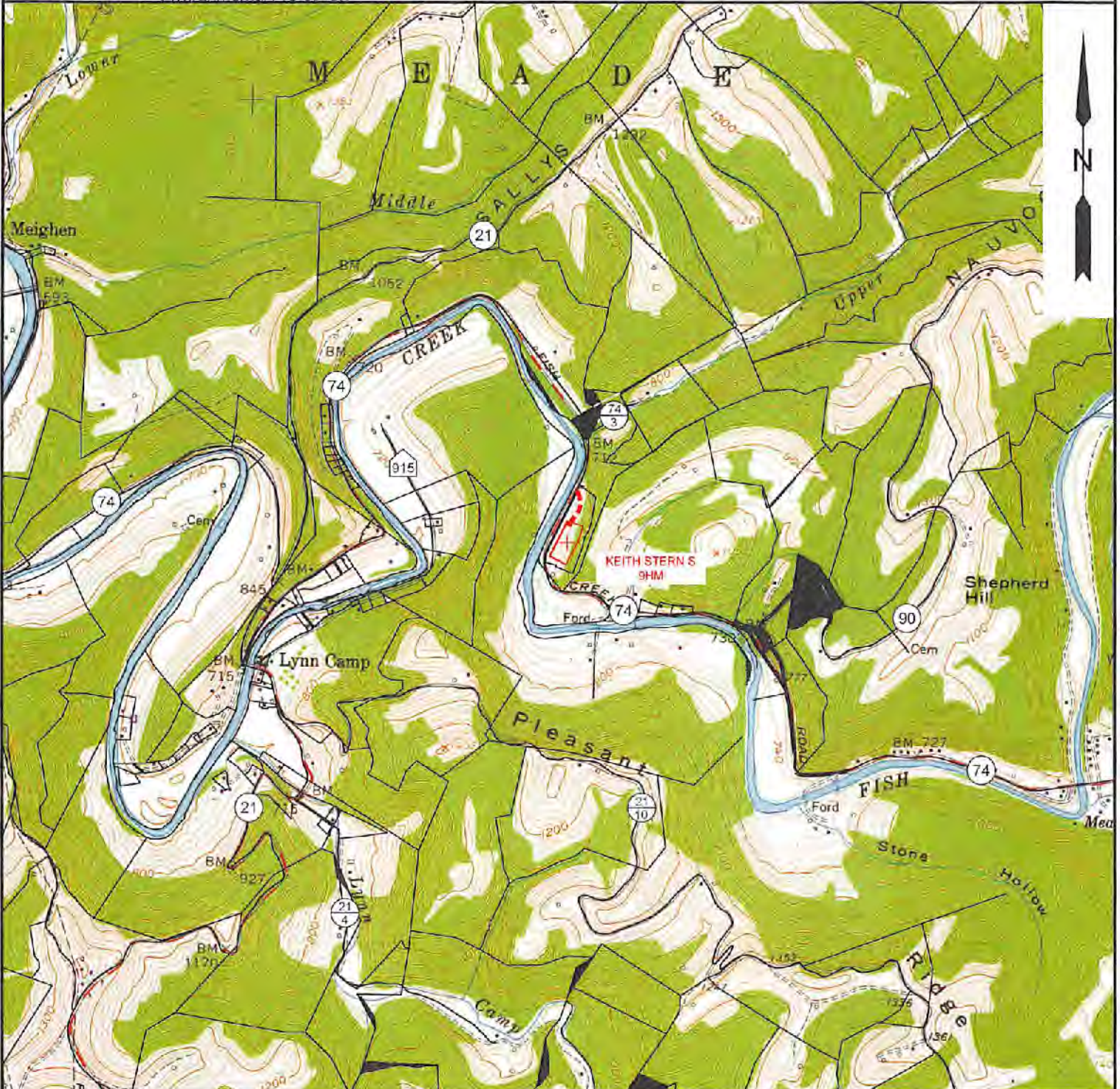
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Environmental Protection

**PROPOSED
KEITH STERN S - 9HM**

SUPPLEMENT PG. 2



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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www.slsurveys.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	390 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**

7,188' T.H.

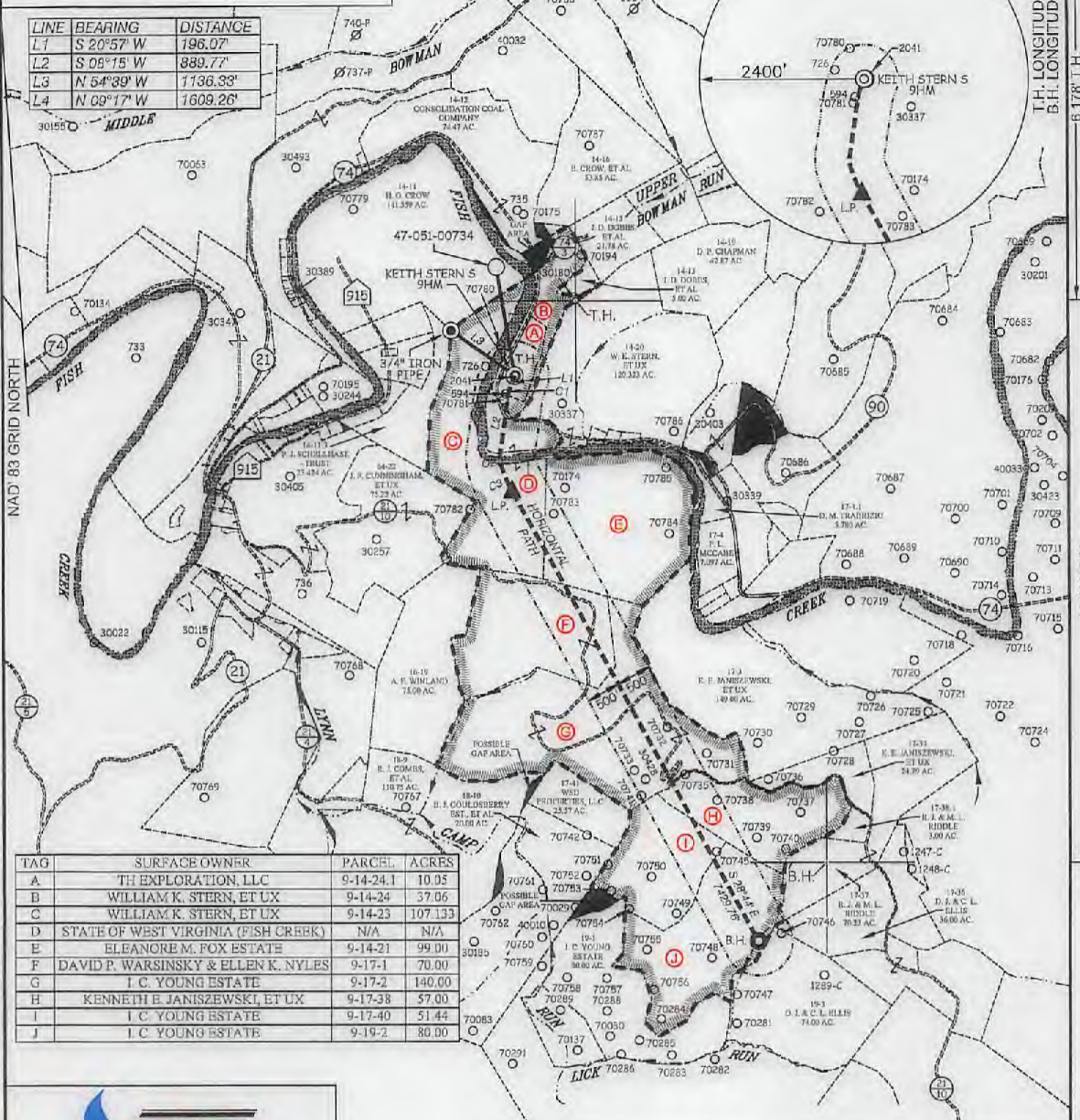
3,552' B.H.

**KEITH STERN S LEASE
WELL 9HM
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 20°57' W	196.07'
L2	S 08°15' W	889.77'
L3	N 54°39' W	1136.33'
L4	N 09°17' W	1609.26'



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	ELEANORE M. FOX ESTATE	9-14-21	99.00
F	DAVID P. WARSINSKY & ELLEN K. NYLES	9-17-1	70.00
G	I. C. YOUNG ESTATE	9-17-2	140.00
H	KENNETH E. JANISZEWSKI, ET UX	9-17-38	57.00
I	I. C. YOUNG ESTATE	9-17-40	51.44
J	I. C. YOUNG ESTATE	9-19-2	80.00

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	87.98'	471.17'	S 13°16' W	87.86'
C2	137.58'	398.93'	S 06°49' E	136.90'
C3	413.67'	1838.31'	S 22°58' E	412.80'

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(+) 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	00-00
LEASE # (SEE WW-6A1)	
SURFACE OWNER (SEE TABLE)	

SCALE 1" = 2000' FILE NO. 8811P9HMv2.dwg
DATE JULY 31, 20 18
REVISED _____, 20 _____
OPERATORS WELL NO. KEITH STERN S-9HM
API WELL NO. 47 - 051 - 02102
NO. STATE COUNTY PERMIT

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

WELL OPERATOR TUG HILL OPERATING, LLC	DESIGNATED AGENT 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

7,188' T.H.

3,552' B.H.

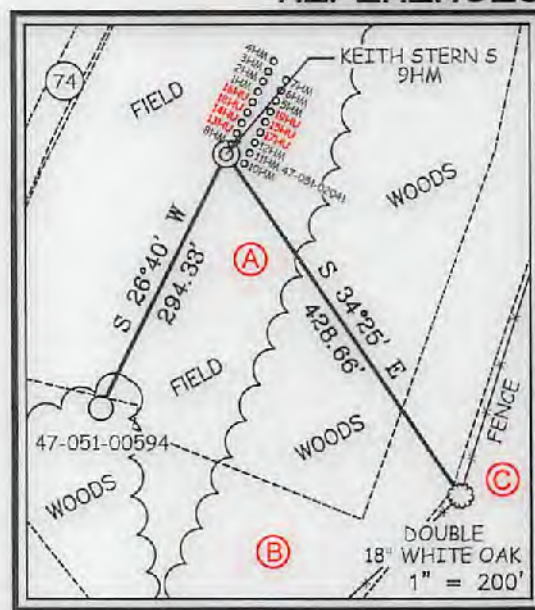
**KEITH STERN S LEASE
WELL 9HM
TUG HILL OPERATING**

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. 466,611.61	E. 1,633,411.29
NAD'83 GEO.	LAT-(N) 39.774708	LONG-(W) 80.692242
NAD'83 UTM (M)	N. 4,402,797.78	E. 526,356.29
LANDING POINT		
NAD'83 S.P.C.(FT)	N. 464,846.4	E. 1,633,370.7
NAD'83 GEO.	LAT-(N) 39.770135	LONG-(W) 80.692308
NAD'83 UTM (M)	N. 4,402,290.3	E. 526,352.4
BOTTOM HOLE		
NAD'83 S.P.C.(FT)	N. 458,331.3	E. 1,636,942.1
NAD'83 GEO.	LAT-(N) 39.752380	LONG-(W) 80.679299
NAD'83 UTM (M)	N. 4,400,323.6	E. 527,473.6

T.H. LONGITUDE 80°40'00"
B.H. LONGITUDE 80°40'00"
6,178' T.H.
14,311' B.H.

REFERENCES



NOTES ON SURVEY

1. 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.
2. WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'

Handwritten signature and date: 8/1/18



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

Handwritten signature: 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-9HM
API WELL NO. 47 - 51 - 0202
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/2500 FILE NO. 8811P9Hmv2.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 X LIQUID INJECTION ___ WASTE DISPOSAL ___ IF "GAS" PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X

LOCATION: GROUND = 737.7' ELEVATION 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 X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___

PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION MARCELLUS
ESTIMATED DEPTH TVD: 6,402' / TMD: 14,241'

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

DESIGNATED AGENT DIANNA STAMPER CT CORPORATION SYSTEM
ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313

COUNTY NAME
PERMIT

WW-6A1
(5/13)

Operator's Well No. Keith Stern S-9HM

**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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Office of Oil and Gas

AUG 6 2018

WV Department of
Environmental Protection

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

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

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

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

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

STATE OF WEST VIRGINIA §
 §
COUNTY OF MARSHALL §

Jan Post
MARSHALL County 12:43:01 PM
Instrument No 1404876
Date Recorded 05/20/2016
Document Type ASN
Pages Recorded 20
Book-Page 36-148
Recording Fee \$20.00
Additional 48.00

ASSIGNMENT AND CONVEYANCE

THIS ASSIGNMENT AND CONVEYANCE (the "Assignment") is made and entered into this 17th day of May, 2016 (the "Effective Date"), by and between CHEVRON U.S.A. INC. (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 May 2, 2016 (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", and as depicted in Exhibits "A-1" and "A-2", attached hereto and made a part hereof (hereinafter the "Leases"); and

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

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

1. Assignment. Assignor does hereby grant, bargain, sell, convey, deliver, assign, set over and transfer, as of the Effective Date, to Assignee, its respective successors and assigns, forever, all of Assignor's right, title and interest in and to the Leases, and the lands covered thereby, together with all rights incident thereto and appurtenances thereon, except that Assignor accepts and reserves from this Assignment the Chevron ORRI previously conveyed to Assignor and as described in that certain Memorandum of Assignment of Oil and Gas Lease Interests dated November 6, 2012 by and between Cornell Holdings Incorporated and Chevron U.S.A. Inc., which is recorded at Book 0028, Page 0239 in the Office of the County Clerk of Marshall County, West Virginia.

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 Conveyed Interests since the time that Assignor obtained its interests in the Leases. Assignor does covenant, promise and agree, to and with the Assignee, its respective successors and assigns, to forever specially warrant and defend the title to the Leases or portions thereof included under this Assignment, unto the Assignee and its respective successors and assigns, against the lawful claims of Assignor, and all persons claiming, or to claim, the same or any part thereof, by, through or under Assignor.

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WV Department of
Environmental Protection

STATE OF WEST VIRGINIA §
 §
COUNTY OF MARSHALL §

ASSIGNMENT AND CONVEYANCE

THIS ASSIGNMENT AND CONVEYANCE (the "**Assignment**") is made and entered into this 18th day of May, 2018, and made effective December 12, 2017 (the "**Effective Date**"), by and between AMERICAN PETROLEUM PARTNERS OPERATING, LLC, (hereinafter "**Assignor**") and TH EXPLORATION, LLC (hereinafter "**Assignee**") pursuant to the terms of that certain Acreage Trade Agreement between the Assignor and the Assignee dated December 12, 2017 (the "**Acreage Trade Agreement**"). Capitalized terms used but not defined herein and defined in the Acreage Trade Agreement shall have the meanings given to such terms in the Acreage Trade Agreement.

WITNESSETH:

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

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

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

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

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

2. **Special Warranty**. Assignor represents and warrants that Assignor has not conveyed or otherwise encumbered (other than Permitted Encumbrances) its interest in the

Marshall County
Jan Pest, Clerk
Instrument 1440860
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ASSIGNMENTS
Book 42 @ Page 109
Pages Recorded 9
Recording Cost \$ 15.00

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WV Department of
Environmental Protection

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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WV Department of
Environmental Protection

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.

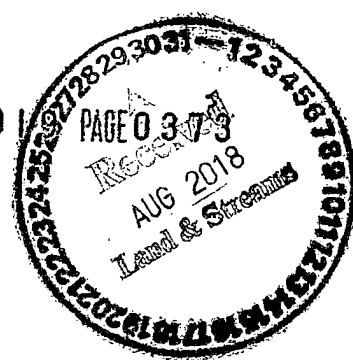
Section 1.2 Assignment Subject to Acreage Trade Agreement. This Assignment is made in accordance with and is subject to the terms, covenants and conditions contained in that certain Acreage Trade Agreement. In the event of a conflict between the provisions of the Acreage Trade Agreement and this Assignment,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



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 \$

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	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	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	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 L 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 BERLECH	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

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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	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	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	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	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	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	N/A
10*19477	9-14-23	C	DEBORAH A MILLER	TH EXPLORATION LLC	1/8+	941 320	N/A	N/A	N/A	N/A	N/A	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*19479	9-14-23	C	DENISE WILLIAMSON	TH EXPLORATION LLC	1/8+	941 329	N/A	N/A	N/A	N/A	N/A	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*19510	9-14-23	C	REED O MILLER	TH EXPLORATION LLC	1/8+	933 571	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	N/A
10*19525	9-14-23	C	AUGUSTUS R MCMAHON III AND MICHELE M MCMAHON TRUSTEES OF THE AUGUSTUS R MCMAHON III LIVING TRUST	TH EXPLORATION LLC	1/8+	942 635	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	N/A
10*19527	9-14-23	C	AUGUSTUS RUSH MCMAHON III TRUSTEE OF THE PAMELA J MCMAHON REVCLB TRUST	TH EXPLORATION LLC	1/8+	953 339	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	N/A
10*19530	9-14-23	C	SHAROL K CASADA	TH EXPLORATION LLC	1/8+	943 1	N/A	N/A	N/A	N/A	N/A	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*19531	9-14-23	C	DELBERT D RUSH AND BETTY RUTH RUSH	TH EXPLORATION LLC	1/8+	942 615	N/A	N/A	N/A	N/A	N/A	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*19625	9-14-23	C	DURR SUCKEL & ELIZABETH SUCKEL	TH EXPLORATION LLC	1/8+	944 150	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19626	9-14-23	C	LAURIE R BROWN	TH EXPLORATION LLC	1/8+	944 153	N/A	N/A	N/A	N/A	N/A	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*19676	9-14-23	C	RONALD W REINBEAU	TH EXPLORATION LLC	1/8+	944 456	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	N/A
10*19677	9-14-23	C	NEIL SCHAFER AND CHRISTAL L SHAFER	TH EXPLORATION LLC	1/8+	944 147	N/A	N/A	N/A	N/A	N/A	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*19681	9-14-23	C	TIMOTHY LEE COLLEY	TH EXPLORATION LLC	1/8+	944 140	N/A	N/A	N/A	N/A	N/A	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*19683	9-14-23	C	DANIEL L ALLEY AND TERESA ALLEY	TH EXPLORATION LLC	1/8+	944 145	N/A	N/A	N/A	N/A	N/A	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*19686	9-14-23	C	KAREN J AND MICHAEL E BRUGGEMAN	TH EXPLORATION LLC	1/8+	944 142	N/A	N/A	N/A	N/A	N/A	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*19712	9-14-23	C	CHAZ AARON COLLEY AND DANA COLLINS	TH EXPLORATION LLC	1/8+	957 139	N/A	N/A	N/A	N/A	N/A	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*19723	9-14-23	C	REID ELATRACHE AND TONYA ELATRACHE	TH EXPLORATION LLC	1/8+	957 131	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	N/A
10*19859	9-14-23	C	ELIZABETH A STARC	TH EXPLORATION LLC	1/8+	945 603	N/A	N/A	N/A	N/A	N/A	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*19860	9-14-23	C	Alicia N STARC	TH EXPLORATION LLC	1/8+	945 601	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	N/A
10*19861	9-14-23	C	JOSEPH F STARC JR AND DONNA STARC	TH EXPLORATION LLC	1/8+	945 605	N/A	N/A	N/A	N/A	N/A	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*19862	9-14-23	C	STACY R BENNETT	TH EXPLORATION LLC	1/8+	945 608	N/A	N/A	N/A	N/A	N/A	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*19864	9-14-23	C	JOE Y KELLER JR AND SHARON MARIE KELLER	TH EXPLORATION LLC	1/8+	945 610	N/A	N/A	N/A	N/A	N/A	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*19935	9-14-23	C	SARA E STARC	TH EXPLORATION LLC	1/8+	948 553	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	N/A
10*19936	9-14-23	C	SHERWOOD MASON NILA JUNE MASON	TH EXPLORATION LLC	1/8+	948 255	N/A	N/A	N/A	N/A	N/A	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*19940	9-14-23	C	EMMA JO CRISWELL	TH EXPLORATION LLC	1/8+	948 551	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	N/A
10*21028	9-14-23	C	BRENDA GILBERT	TH EXPLORATION LLC	1/8+	951 159	N/A	N/A	N/A	N/A	N/A	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*21094	9-14-23	C	KATHERINE DEGROOT AND DANIEL DEGROOT	TH EXPLORATION LLC	1/8+	951 151	N/A	N/A	N/A	N/A	N/A	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*21111	9-14-23	C	DONNA G AND PAUL L CHMELYSKI	TH EXPLORATION LLC	1/8+	951 154	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21209	9-14-23	C	CHARLES R WILLIAMSON JR	TH EXPLORATION LLC	1/8+	951 157	N/A	N/A	N/A	N/A	N/A	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*21228	9-14-23	C	CHARLES F HORNER & LORAIN G HORNER	TH EXPLORATION LLC	1/8+	952 434	N/A	N/A	N/A	N/A	N/A	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*21229	9-14-23	C	TARA E CAUSEY	TH EXPLORATION LLC	1/8+	952 432	N/A	N/A	N/A	N/A	N/A	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*21395	9-14-23	C	DANIEL L LANDRIS AND JOAN L LANDRIS	TH EXPLORATION LLC	1/8+	956 625	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	N/A
10*21396	9-14-23	C	MICHAEL D ZUCKER	TH EXPLORATION LLC	1/8+	956 647	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	N/A
10*21441	9-14-23	C	JOSEPH A MURPHY AND VIRGINIA ANNE MURPHY	TH EXPLORATION LLC	1/8+	956 631	N/A	N/A	N/A	N/A	N/A	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*21443	9-14-23	C	ROBERT L LANDRIS AND LIBERTY JANE LANDRIS	TH EXPLORATION LLC	1/8+	956 628	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	N/A
10*21490	9-14-23	C	DANIEL E WILLIAMSON AND HEATHER R WILLIAMSON	TH EXPLORATION LLC	1/8+	957 153	N/A	N/A	N/A	N/A	N/A	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*21493	9-14-23	C	DENZIL ALLEY JR	TH EXPLORATION LLC	1/8+	958 64	N/A	N/A	N/A	N/A	N/A	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*21497	9-14-23	C	KATHLEEN G WILLIAMSON	TH EXPLORATION LLC	1/8+	957 324	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21837	9-14-23	C	WILLIAM BRYAN COLLEY	TH EXPLORATION LLC	1/8+	959 627	N/A	N/A	N/A	N/A	N/A	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*21873	9-14-23	C	MICHAEL WAYNE ALLEY AND LINDA ALLEY	TH EXPLORATION LLC	1/8+	953 501	N/A	N/A	N/A	N/A	N/A	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*21961	9-14-23	C	JOHN WILLIAMSON JR	TH EXPLORATION LLC	1/8+	960 24	N/A	N/A	N/A	N/A	N/A	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*21972	9-14-23	C	CATHERINE I AND ERNEST M SILVERIO	TH EXPLORATION LLC	1/8+	960 586	N/A	N/A	N/A	N/A	N/A	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*21979	9-14-23	C	CHARLES C SEAMON	TH EXPLORATION LLC	1/8+	954 340	N/A	N/A	N/A	N/A	N/A	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*21991	9-14-23	C	THE JOANN REILLY TRUST KIMBERLY MAEZ TRUSTEE	TH EXPLORATION LLC	1/8+	953 341	N/A	N/A	N/A	N/A	N/A	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*21997	9-14-23	C	MICHAEL SAUDERS AND AMI SAUDERS	TH EXPLORATION LLC	1/8+	953 505	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22004	9-14-23	C	RALPH EDWARD WILLIAMSON	TH EXPLORATION LLC	1/8+	953 507	N/A	N/A	N/A	N/A	N/A	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*22037	9-14-23	C	JOSHUA W SEAMON	TH EXPLORATION LLC	1/8+	953 503	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22053	9-14-23	C	LARRY R CRANE	TH EXPLORATION LLC	1/8+	953 344	N/A	N/A	N/A	N/A	N/A	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*22089	9-14-23	C	MARCIA A LUKE	TH EXPLORATION LLC	1/8+	961 333	N/A	N/A	N/A	N/A	N/A	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*22110	9-14-23	C	JENNIFER ALLEY FISHER & ROBERT D FISHER	TH EXPLORATION LLC	1/8+	961 347	N/A	N/A	N/A	N/A	N/A	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*22127	9-14-23	C	JUDITH L BENEDICT AND LOUIS G BENEDICT	TH EXPLORATION LLC	1/8+	961 343	N/A	N/A	N/A	N/A	N/A	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*22150	9-14-23	C	CHAD ERIC BENNETT AND MARY A BENNETT	TH EXPLORATION LLC	1/8+	954 338	N/A	N/A	N/A	N/A	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*22257	9-14-23	C	CHARLES F ALLEY TRUST EMMANUEL PREVOLES TRUSTEE	TH EXPLORATION LLC	1/8+	970 26	N/A	N/A	N/A	N/A	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*22380	9-14-23	C	JUDITH S KNIGHT	TH EXPLORATION LLC	1/8+	962 276	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22411	9-14-23	C	EARL FRAZIER AND LYDIA ARMENTA	TH EXPLORATION LLC	1/8+	963 128	N/A	N/A	N/A	N/A	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*22461	9-14-23	C	BRIAN R MORGAN	TH EXPLORATION LLC	1/8+	964 453	N/A	N/A	N/A	N/A	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*22775	9-14-23	C	DIANNE LEA SHEPARD	TH EXPLORATION LLC	1/8+	970 30	N/A	N/A	N/A	N/A	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*22778	9-14-23	C	DANNY E COCHRAN AND LORI ANN COCHRAN	TH EXPLORATION LLC	1/8+	972 40	N/A	N/A	N/A	N/A	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*22833	9-14-23	C	RANDY W MORRIS SR AND CHERYL MORRIS	TH EXPLORATION LLC	1/8+	966 465	N/A	N/A	N/A	N/A	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*22848	9-14-23	C	JULIA BROOKS	TH EXPLORATION LLC	1/8+	977 30	N/A	N/A	N/A	N/A	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*22854	9-14-23	C	SUSAN KAY EXLINE	TH EXPLORATION LLC	1/8+	977 32	N/A	N/A	N/A	N/A	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*22878	9-14-23	C	AUBREY E REILLY	TH EXPLORATION LLC	1/8+	977 26	N/A	N/A	N/A	N/A	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*22879	9-14-23	C	BRENDAN Q REILLY	TH EXPLORATION LLC	1/8+	977 28	N/A	N/A	N/A	N/A	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*22501	9-14-23	C	LINDA 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 I 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	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
U-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*47051.243.1	9-14-21	E	MARY A FOX	TH EXPLORATION LLC	1/8+	879 332	N/A	N/A	N/A	N/A	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*47051.243.2	9-14-21	E	PAUL G FOX	TH EXPLORATION LLC	1/8+	879 335	N/A	N/A	N/A	N/A	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*47051.243.3	9-14-21	E	MARK H FOX	TH EXPLORATION LLC	1/8+	879 338	N/A	N/A	N/A	N/A	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*47051.243.4	9-14-21	E	DAVID E FOX	TH EXPLORATION LLC	1/8+	876 55	N/A	N/A	N/A	N/A	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*47051.243.5	9-14-21	E	LOUIS T FOX AND KAREN A FOX	TH EXPLORATION LLC	1/8+	876 58	N/A	N/A	N/A	N/A	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*47051.243.6	9-14-21	E	THOMAS J FOX	TH EXPLORATION LLC	1/8+	876 61	N/A	N/A	N/A	N/A	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*17135	9-17-1	F	ELLEN K NYLES	TH EXPLORATION LLC	1/8+	919 625	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*17136	9-17-1	F	DAVID P WARSINSKY	TH EXPLORATION LLC	1/8+	919 627	N/A	N/A	N/A	N/A	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*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
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
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
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
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
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
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
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
10*18168	9-17-2	G	SANDRA YANAGAWA	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
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

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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	GENMA 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	USA 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	CHERYL 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*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*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*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*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*21940	9-17-2	G	ALYSIA 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*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*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*22776	9-17-2	G	JAMES 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	RONALD 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*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*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*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*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*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*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*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*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*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	Chesapeake Appalachia LLC 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

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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	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	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	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	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*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

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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	PHYLUS 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
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

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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
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

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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	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	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	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	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	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	TEXYN 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	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	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*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

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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*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	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	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	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	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	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	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	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*47051.185.1	9-17-38	H	HOMER L SIMMONS AND GLADYS R SIMMONS	TH EXPLORATION LLC	1/8+	885 68	N/A	N/A	N/A	N/A	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*47051.185.2	9-17-38	H	LUCINDA RAE ALLEN AND DAVID A ALLEN	TH EXPLORATION LLC	1/8+	894 482	N/A	N/A	N/A	N/A	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*47051.185.3	9-17-38	H	ANITA DIANE ANTILL AND TERRY ANTILL	TH EXPLORATION LLC	1/8+	885 71	N/A	N/A	N/A	N/A	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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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*23194	9-17-40	J	ALBERT AND CHRISTOPHER HARTLEY	J S ROGERS	1/8+	60 160	60/162	J S Rogers to South Penn Oil Company:	South Penn Oil Company to South Penn Natural Gas Company:	Unrecorded transfer - South Penn Oil Company to Hope Natural Gas Company-ARTI in/to the gas leasehold rights of subject leasehold.	South Penn Natural Gas Company to Dallis Snyder and Sam Beren: 239/81 - Working Agreement between South Penn Oil Company & Hope Natural Gas Company	Dallis Snyder, et ux & Sam Bereun 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: 3/495	Elva Robinson & Mary Ellen Davis to Andrew L. Henry, Charles E. Reed & Harry R. Cronin Jr: 4/35	Katherine A. 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 changed 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
10*18610	9-19-2	J	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	J	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	J	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	J	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	
10*18625	9-19-2	J	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	J	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	J	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	J	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	J	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	J	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	J	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	J	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	J	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	J	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	J	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	J	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	J	ALICE 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	J	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	J	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	J	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	J	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	J	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	J	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	J	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	J	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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WV Department of
Environmental Protection



TUG HILL

4705 · 02102

August 3, 2018

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

RE: Keith Stern S-9HM

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-9HM 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.

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-9HM

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>526,356.28</u>
County: <u>Marshall</u>		Northing: <u>4,402,797.78</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.

<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 100px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p>OOG OFFICE USE ONLY</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p>
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Required Attachments:

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

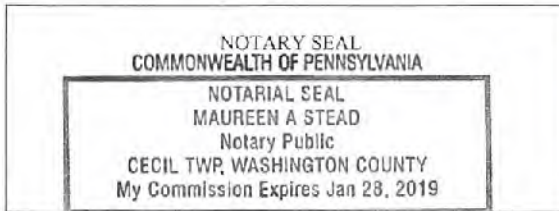
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Certification of Notice is hereby given:

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

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

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WV Department of
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STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION

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

Date of Notice: 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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WV Department of
Environmental Protection

API NO. 47- 051 - _____
OPERATOR WELL NO. Keith Stern S-SHM
Well Pad Name: Keith Stern

Notice is hereby given:

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

This Notice Shall Include:

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

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

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

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

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

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 57th St. SE
Charleston, WV 25304
(304) 926-0450

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

Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

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WW-6A
(8-13)

API NO. 47-051 -
OPERATOR WELL NO. Keith Stern S-9HM
Well Pad Name: Keith Stern

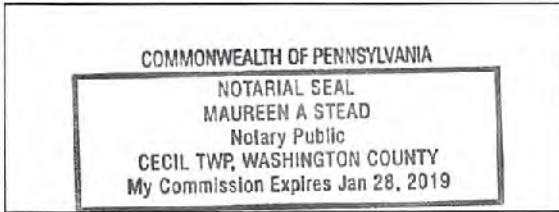
Notice is hereby given by:

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

Address: 390 Southpointe Boulevard, Plaza #4 Suite 200 **4705 * 02102**
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.



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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Environmental Protection

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

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

Well: KEITH STERN S – 9HM
 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.

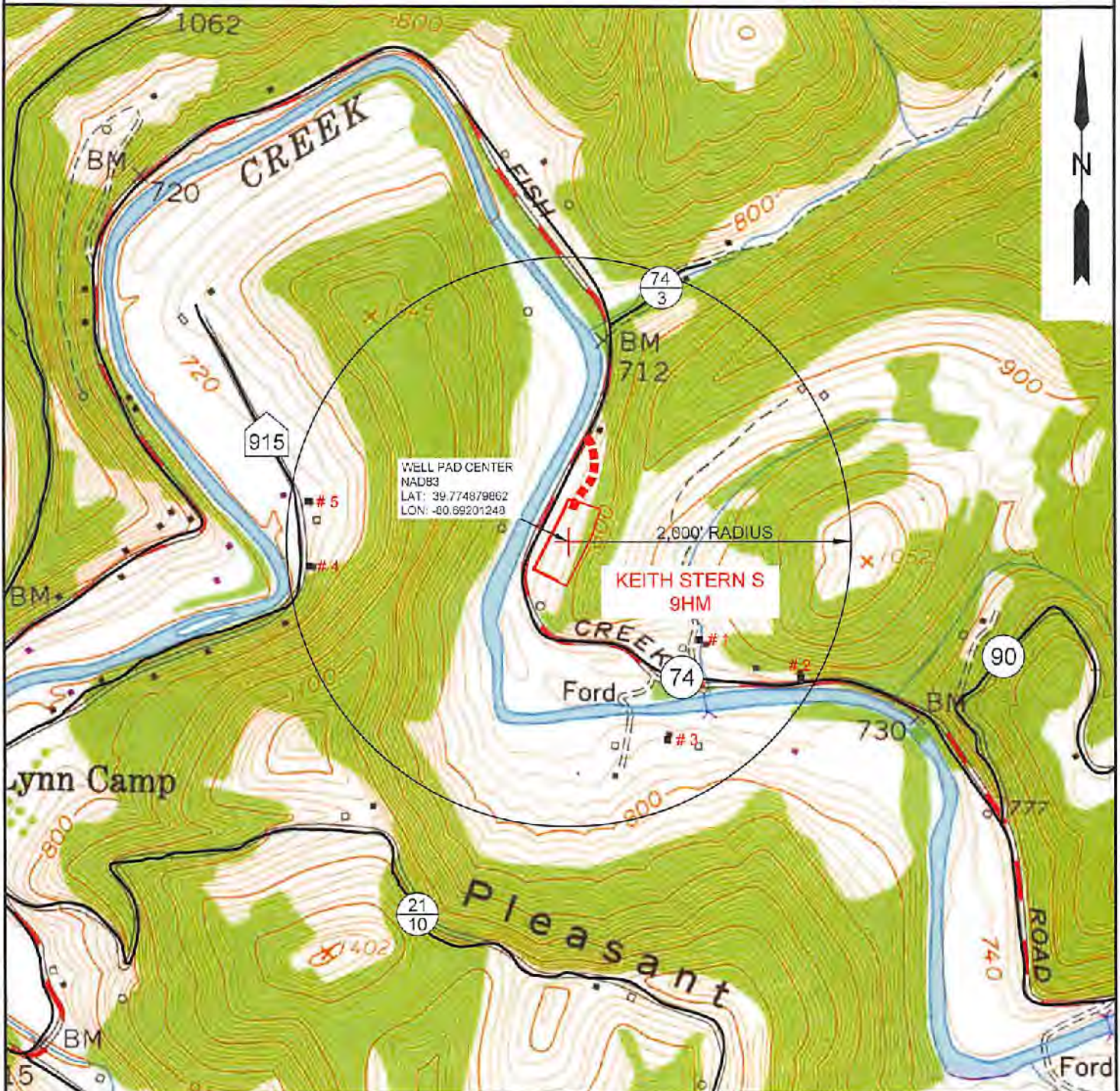
<p>House 1 TM 14 Pcl. 20 William K. Stern, Et Ux Phone: 304-843-1478 (Per Address – Keith, Betty & Ginger Sue Stern) Physical Address: 14912 Fish Creek Rd. Glen Easton, WV 26039 Tax Address: Same</p>	<p>House 2 TM 14 Pcl. 20.1 William K. Stern, Et Ux Phone: 304-843-1478 (Per Address – Keith, Betty & Ginger Sue Stern) Physical Address: 15056 Fish Creek Rd. Glen Easton, WV 26039 Tax Address: 14912 Fish Creek Rd. Glen Easton, WV 26039</p>	<p>House 3 TM 14 Pcl. 21 Eleanore M. Fox Est. Phone: 304-845-6016 (Per Tax Address – Thomas Fox) Physical Address: None Found – Appears to be an old home. Tax Address: 100 Lynn Camp Ln. Glen Easton, WV 26039-9707</p>
<p>House 4 TM 14 Pcl. 27 Patrick J. Shellhase Phone: 304-845-0742; 304-810-0258 Physical Address: 593 Crow Dr. Glen Easton, WV 26039 Tax Address: 2300 7th St. Moundsville, WV 26041</p>	<p>House 5 TM 14 Pcl. 25 Patricia A. Dugas Phone: None Found Physical Address: 681 Crow Dr. Glen Easton, WV 26039 Tax Address: Same</p>	

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 Environmental Protection

PROPOSED
KEITH STERN S - 9HM



SLS
Land & Energy Development
Solutions from the ground up.
P.O. Box 150 • 12 Vanhorn Drive • Glenville, WV 26031 • (304) 462-5634
www.slssurveys.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPONTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8811	07/31/2018	1" = 1000'

TUG HILL
OPERATING

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-6AS
- (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-9HM 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, 20 18 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 Keller
(Signature of person executing service)

Taken, subscribed and sworn before me this 3 day of Aug., 20 18.
My commission expires 1/28/19

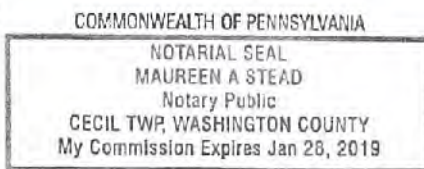
Maureen A Stead
Notary Public

(AFFIX SEAL IF NOTARIZED OUTSIDE THE STATE)

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Environmental Protection



**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

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Environmental Protection

*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; -80.6920382</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 57th Street, SE, Charleston, WV 25304 (304-926-0450). Copies of such documents or additional information related to horizontal drilling may be obtained from the Secretary by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

Well Operator: <u>Tug Hill Operating, LLC</u>	Address: <u>380 Southpointe Boulevard, Plaza II, Suite 200</u>
Telephone: <u>724-749-8368</u>	<u>Canonsburg, PA 15317</u>
Email: <u>amiller@tug-hill-op.com</u>	Facsimile: <u>724-338-2030</u>

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.

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 HAND
RETURN RECEIPT REQUESTED DELIVERY

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

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

Name: TH Exploration, LLC Name: _____
Address: 380 Southpointe Boulevard, Plaza II, Suite 200 Address: _____
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:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>526,355.28</u>
County:	<u>Marshall</u>		Northing:	<u>4,402,797.78</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>IH Exploration, LLC</u>	
Watershed:	<u>Fish Creek (HUC 10)</u>			

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by **W. Va. Code § 22-6A-10(b)** to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Operator:	<u>Tug Hill Operating, LLC</u>	Address:	<u>380 Southpointe Boulevard, Plaza II, Suite 200</u>
Telephone:	<u>724-749-8388</u>		<u>Canonsburg, PA 15317</u>
Email:	<u>amiller@tug-hilltop.com</u>	Facsimile:	<u>724-338-2030</u>

Oil and Gas Privacy Notice:

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

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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 Stern 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:

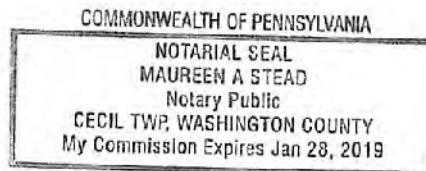
Handing it to the corporation's employee / officer / director / attorney in fact / named David DeLallo.

Amy Muller
(Signature of person executing service)

Taken, subscribed and sworn before me this 3 day of AUG. 20 18.
My commission expires 1/28/19

Maureen A Stead
Notary Public

(AFFIX SEAL IF NOTARIZED OUTSIDE THE STATE)



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4705-02102

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 57th 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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Environmental Protection



TUG HILL

4705 · 02102

PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Keith Stern S-9HM

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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WEST VIRGINIA COUNTY MAP



APPROVED WVDEP OOG

7/30/2018

Keith Stern Well Site

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

Tug Hill Operating
Marshall County
Meade District

Latitude 39.77487986°
Longitude -80.69201248°
Middle Fish Creek Watershed

Pertinent Site Information
Keith Stern Well Site
Emergency Number: 304-345-1920
Meade District, Marshall County, WV
Watershed: Middle Fish Creek Watershed
Site 911 Address:

Tug Hill Contact Number: 1-817-632-3600

Property Owner Information: Keith Stern Well Site

Owner	Lot Area	Imp. Fee	Front Lot	Depth	Quality Code	Assessment	Tax District
Tug Hill Operating, LLC	1.8241	2.55	0.17	2.00	3.00	3.00	30.00
Totals	1.8241	2.55	0.17	2.00	3.00	3.00	30.00

Access Road

Location	Year	Width	Depth	Notes
Tug Hill Operating, LLC	1934	36.00	36.00	New Access Road Construction

Disturbed Area

Category	Area (Acres)
Well Pad Construction	0.12
Access Road Construction	0.11
Gravel Storage Area	0.05
Additional Information	0.00
Total Disturbed Area	0.28

Keith Stern Well Site Occupancy

Occupancy	Area (Acres)	Depth (Feet)	Notes
Well Pad	0.12	36.00	
Access Road	0.11	36.00	
Gravel Storage Area	0.05	36.00	
Total Occupancy	0.28	36.00	

Exhibit A: Final Design: Issue for Permitting



UNITS: 1" = 400 Feet

Site Location (NAD 83)	Site Location (NAD 83)
Center of Well Pad	Center of Well Pad

Approach Route

From the intersection of OH Rt. 7 and WV Rt. 1 near New Marlinton, WV, Travel North on WV Rt. 2 for 13.8 mi. Turn Right onto Ca Rt 74 (Fish Creek Rd). Follow Ca Rt 74 for 2.1 mi. Turn Right onto Ewe Rd 2 (Continues on Ca Rt 74). Follow Ewe Rd 2 for 0.2 mi. Turn Sharp Left onto Ca Rt 74 (Fish Creek Rd). Follow Ca Rt 74 for 2.1 mi. The well entrance will be on the left (eastward) side of the well.



Well Location Restrictions

All Well construction complies with the following restrictions:

- 1. Well must be installed on a well greater than 10 feet in depth to ensure adequate aquifer protection.
- 2. Well must be installed on a well greater than 10 feet in depth to ensure adequate aquifer protection.
- 3. Well must be installed on a well greater than 10 feet in depth to ensure adequate aquifer protection.



The design, construction, and installation of this well was prepared by Brent C. Summers, a Professional Engineer, License No. 12138, State of West Virginia. The design is based on information provided by the client and is intended for the use of the client. The engineer is not responsible for any errors or omissions in the design or construction of the well.

Sheet	Description
1	Cover Sheet
2	Schedule of Quantities
3	Site Map
4	Pre-Construction Site Conditions
5	Site Plan
6	Construction Erosion & Sediment Control Plans
7	Site Plan
8	E&S Plan View
9	Site Plan
10	Cross Section - Well Pad
11	Cross Section - Access Road
12	Site Plan
13	Disturbed Area
14	Landowner Disturbed Area Exhibit
15	Site Plan
16	Production Exhibit
17	Access Road Details
18	Erosion and Sediment Control Details
19	Access Road Details
20	Well Details



THIS DOCUMENT PREPARED FOR TUG HILL OPERATING



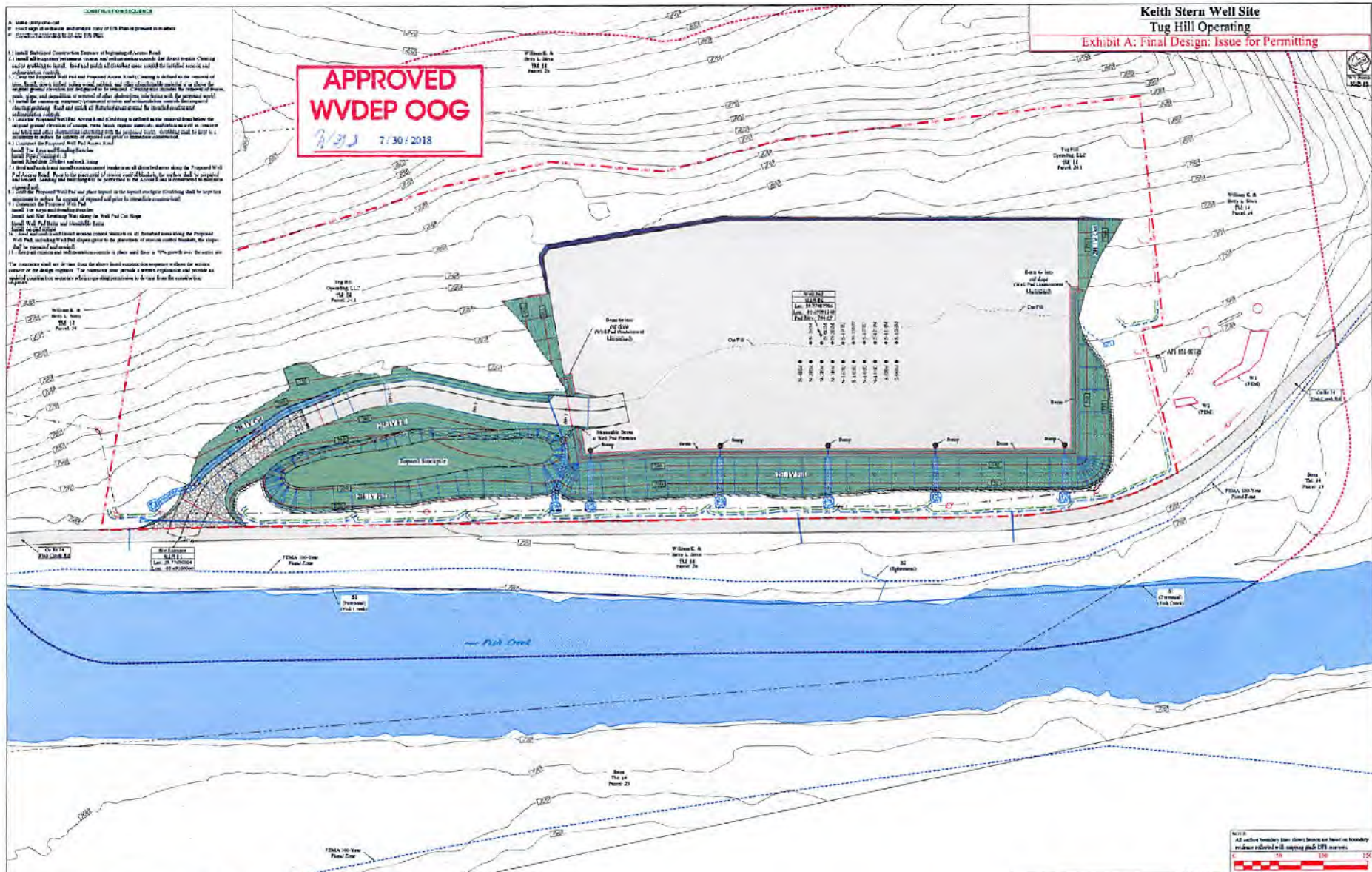
Keith Stern Well Site
Meade District
Marshall County, WV

Date: 07/30/2018
Scale: As Shown
Drawing No.: 18
Sheet 1 of 11

**Keith Stern Well Site
Tug Hill Operating**

Exhibit A: Final Design: Issue for Permitting

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



Disturbed Area	Access Road
Well Pad Construction	Well Pad
Access Road Construction	Access Road
Well Pad Construction	Well Pad
Access Road Construction	Access Road
Well Pad Construction	Well Pad
Access Road Construction	Access Road
Well Pad Construction	Well Pad
Access Road Construction	Access Road
Well Pad Construction	Well Pad
Access Road Construction	Access Road

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
- Line of Access
- Existing 2" Poly Pipe Line
- Existing 4" Poly Pipe Line
- Existing 6" Poly Pipe Line
- Existing 8" Poly Pipe Line
- Existing 10" Poly Pipe Line
- Existing 12" Poly Pipe Line
- Existing 14" Poly Pipe Line
- Existing 16" Poly Pipe Line
- Existing 18" Poly Pipe Line
- Existing 20" Poly Pipe Line
- Existing 24" Poly Pipe Line
- Existing 30" Poly Pipe Line
- Existing 36" Poly Pipe Line
- Existing 42" Poly Pipe Line
- Existing 48" Poly Pipe Line
- Existing 54" Poly Pipe Line
- Existing 60" Poly Pipe Line
- Existing 66" Poly Pipe Line
- Existing 72" Poly Pipe Line
- Existing 78" Poly Pipe Line
- Existing 84" Poly Pipe Line
- Existing 90" Poly Pipe Line
- Existing 96" Poly Pipe Line
- Existing 102" Poly Pipe Line
- Existing 108" Poly Pipe Line
- Existing 114" Poly Pipe Line
- Existing 120" Poly Pipe Line
- Existing 126" Poly Pipe Line
- Existing 132" Poly Pipe Line
- Existing 138" Poly Pipe Line
- Existing 144" Poly Pipe Line
- Existing 150" Poly Pipe Line
- Existing 156" Poly Pipe Line
- Existing 162" Poly Pipe Line
- Existing 168" Poly Pipe Line
- Existing 174" Poly Pipe Line
- Existing 180" Poly Pipe Line
- Existing 186" Poly Pipe Line
- Existing 192" Poly Pipe Line
- Existing 198" Poly Pipe Line
- Existing 204" Poly Pipe Line
- Existing 210" Poly Pipe Line
- Existing 216" Poly Pipe Line
- Existing 222" Poly Pipe Line
- Existing 228" Poly Pipe Line
- Existing 234" Poly Pipe Line
- Existing 240" Poly Pipe Line
- Existing 246" Poly Pipe Line
- Existing 252" Poly Pipe Line
- Existing 258" Poly Pipe Line
- Existing 264" Poly Pipe Line
- Existing 270" Poly Pipe Line
- Existing 276" Poly Pipe Line
- Existing 282" Poly Pipe Line
- Existing 288" Poly Pipe Line
- Existing 294" Poly Pipe Line
- Existing 300" Poly Pipe Line

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: 24 of 24