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west virginia department of environmental protection

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

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

Monday, June 22, 2020  
WELL WORK PERMIT  
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC  
380 SOUTHPOINTE BLVD

CANONSBURG, PA 15317

Re: Permit approval for FITZGERALD S-18HU  
47-051-02325-00-00

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: FITZGERALD S-18HU  
Farm Name: DANNY AND FRANCES KER+  
U.S. WELL NUMBER: 47-051-02325-00-00  
Horizontal 6A New Drill  
Date Issued: 6/22/2020

# PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

## CONDITIONS

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

## PERMIT CONDITIONS

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



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west virginia department of environmental protection

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Oil and Gas Conservation Commission  
601 57<sup>th</sup> Street SE, Charleston, WV 25304  
304-926-0499 Ext 41239

Randall M. Albert, Chairman  
dep.wv.gov

June 11, 2020

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

RE: Application for Deep Well Permit – API #47-051-02325

COMPANY: Tug Hill Operating, LLC

FARM: Danny and Frances Kerns Estate

Fitzgerald S-18HU

COUNTY: Marshall

DISTRICT: Liberty

QUAD: Glen Easton

The deep well review of the application for the above company is **Approved to drill to Trenton for Point Pleasant completion. Pooling Docket No. 294-298.**

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

1. Comments to Notice of Deviation filed? Yes
2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners? Yes
3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells: \*\*yes; Docket 294-298 Exception Location Hearing
4. Provided a plat showing that the proposed location is a distance of 400+ feet from the nearest lease line or unit boundary and showing the following wells drilled to or capable of producing from the objective formation within 3,000 feet of the proposed location.

Sincerely,

A handwritten signature in blue ink that reads "Susan Rose".

Susan Rose  
Administrator

\*\* Hudson S-13HU 47-051-02293; Hudson S-12HU 47-051-02292; Hudson S-11HU 47-051-02296, Ten High 1N-20HU 47-051-02021, Ten High 1N-13HU 47-051-01965; Ten High 1S-17HU 47-051-02033; Ten High 1S-16HU 47-051-02028; Ten High 1S-15HU 47-051-02027; Ten High 1S-14HU 47-051-01966; Fitzgerald S-17HU 47-051-02324; Fitzgerald S-19HU 47-051-02326

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      Liberty      Glen Easton 7.5'  
Operator ID      County      District      Quadrangle

2) Operator's Well Number: Fitzgerald S-18HU      Well Pad Name: Fitzgerald

3) Farm Name/Surface Owner: Danny R. Kerns      Public Road Access: County Route 90

4) Elevation, current ground: 1316.5'      Elevation, proposed post-construction: 1293.30'

5) Well Type    (a) Gas          Oil            Underground Storage     

Other \_\_\_\_\_

(b) If Gas    Shallow            Deep     

Horizontal     \_\_\_\_\_

6) Existing Pad: Yes or No    No

*J*  
*3/11/2020*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Point Pleasant is the target formation at a depth of 11,797' - 11,930' - thickness of 133' and anticipated pressure of approx. 9500 psi.

8) Proposed Total Vertical Depth: 12,080'

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

10) Proposed Total Measured Depth: 21,657' ✓

11) Proposed Horizontal Leg Length: 8,319.04' ✓

12) Approximate Fresh Water Strata Depths: 70' ; 927'

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

14) Approximate Saltwater Depths: 2,167'

15) Approximate Coal Seam Depths: Sewickley Coal - 835' ; Pittsburgh Coal - 921'

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: Marshall County Coal Co./Marshall County Mine

Depth: 1059' TVD and 291' subsea level

Seam: Pittsburgh #8

Owner: Murray Energy / Consolidated Coal Co.



18)

**CASING AND TUBING PROGRAM**

<b>TYPE</b>	<b>Size (in)</b>	<b>New or Used</b>	<b>Grade</b>	<b>Weight per ft. (lb/ft)</b>	<b>FOOTAGE: For Drilling (ft)</b>	<b>INTERVALS: Left in Well (ft)</b>	<b>CEMENT: Fill-up (Cu. Ft.)/CTS</b>
Conductor	30"	NEW	BW	BW	120'	120'	259FT^3(CTS)
Fresh Water	20"	NEW	J55	106.5#	1020'	1020'	1,644FT^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	2900'	2900'	2,044FT^3(CTS)
Intermediate	9 5/8"	NEW	HPP110	47#	11,600'	11,600'	3,777FT^3(CTS)
Production	5 1/2"	NEW	P110	23#	21,657'	21,657'	5,158FT^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		12,528'	
Liners							

<b>TYPE</b>	<b>Size (in)</b>	<b>Wellbore Diameter (in)</b>	<b>Wall Thickness (in)</b>	<b>Burst Pressure (psi)</b>	<b>Anticipated Max. Internal Pressure (psi)</b>	<b>Cement Type</b>	<b>Cement Yield (cu. ft./k)</b>
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	20"	26"	.5	2,410	1,928	SEE # 24	1.2
Coal	13 3/8"	17 1/2"	.38	2,740	2,192	SEE #24	1.2
Intermediate	9 5/8"	12 1/4"	.472	10,730	6,968	SEE #24	1.99
Production	5 1/2"	8 1/2"	.415	16,510	10,864	SEE #24	1.18
Tubing	2 7/8"			11,385	9,108		
Liners							

**PACKERS**

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

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Environmental Protection

WW-6B  
(04/15)

API NO. 47- 051 -  
OPERATOR WELL NO. Fitzgerald S-18HU  
Well Pad Name: Fitzgerald

18) CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	30"	NEW	BW	BW	120'	120' ✓	259FT^3(CTS)
Fresh Water	20"	NEW	J55	106.5#	1020'	1020' ✓	1,644FT^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	2900'	2900' ✓	2,044FT^3(CTS)
Intermediate	9 5/8"	NEW	HPP110	47#	11,600'	11,600' ✓	3,777FT^3(CTS)
Production	5 1/2"	NEW	P110	23#	21,657'	21,657' ✓	5,158FT^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		12,528' ✓	
Liners							

*Ju*  
3/11/2020

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	20"	26"	.5	2,410	1,928	SEE # 24	1.2
Coal	13 3/8"	17 1/2"	.38	2,740	2,192	SEE #24	1.2
Intermediate	9 5/8"	12 1/4"	.472	10,730	6,968	SEE #24	1.99
Production	5 1/2"	8 1/2"	.415	16,510	10,864	SEE #24	1.18
Tubing	2 7/8"			* 11,385			
Liners							

PACKERS

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

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WW-6B  
(10/14)

4705102325  
API NO. 47-051

OPERATOR WELL NO. Fitzgerald S-18HU

Well Pad Name: Fitzgerald

*JW*  
*2/11/2020*

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

Drill through the Point Pleasant and TD Pilot Hole 150' into the Trenton. Log vertical section and run a solid cement plug back to proposed KOP (12,028'). Drill curve and lateral per proposed well plan, run and cement production casing. Perform CBL from 60 deg to surface, make cleanout run, and stimulate.

✓

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

Well to be completed with approximately 20,795,000 lb proppant and 321,506 bbl of water. Max rate = 80 bpm; max psi = 12,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 21.21 acres

22) Area to be disturbed for well pad only, less access road (acres): 7.44 acres

23) Describe centralizer placement for each casing string:

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

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

\*See Attachment

25) Proposed borehole conditioning procedures:

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

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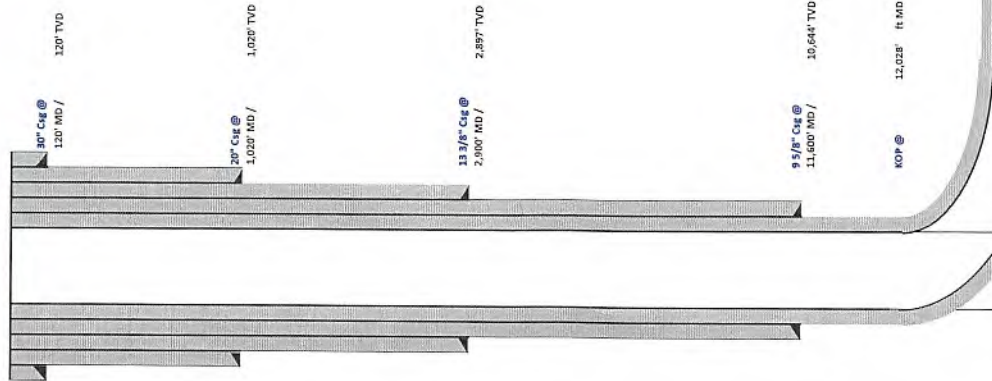
\*Note: Attach additional sheets as needed.



✓ -ws 4/30/20



WELL NAME: Fitzgerald S-18HU  
 STATE: WV COUNTY: Marshall  
 DISTRICT: Meade  
 DF Elev: 1,293'  
 TD: 21,657'  
 TH Latitude: 39.801161  
 BH Latitude: -80.64114  
 BH Longitude: 39.780391  
 BH Longitude: -80.640603



**FORMATION TOPS**

Formation	Depth TVD
Deepest Fresh Water	927'
Sewickley Coal	835'
Pittsburgh Coal	921'
Big Lima	2,246'
Berea	2,864'
Tully	6,810'
Marcellus	6,923'
Onondaga	6,975'
Salina	7,698'
Lodport	8,707'
Ulica	11,529'
Point Pleasant	11,797'
Landing Depth	11,847'
Trenton	11,990'
Pilot Hole TD	12,080'

**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	26	20	1,020'	1,020'	106.5	J55	Surface
Intermediate 1	17 1/2	13 3/8	2,900'	2,897'	54.5	J55	Surface
Intermediate 2	12 1/4	9 5/8	11,600'	10,644'	47	HPP110	Surface
Production	8 1/2	5 1/2	21,657'	11,893'	23	HCP110	Surface

**CEMENT SUMMARY**

Sacks	Class	Density	Fluid Type	Centralizer/Notes
388	A	15.6	Air	None
1,772	A	15.6	Air	3 Centralizers at equal distance
2,215	A	15	Air	1 Centralizer every other ft
3,097	A	14.5	Air	1 Centralizer every other ft
4,532	A	15	Air / SOBMM	1 every other joint in lateral; 1 per joint in curve; 1 every other ft to SIC

*Handwritten signature and date: JWS 3/11/2020*

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Landing Point @ 13,339 MD / 11,847 TVD  
 SIC = 150' below Trenton Top

Lateral TD @ 21,657' ft MD  
 11,993 ft TVD



## Tug Hill Operating, LLC Casing and Cement Program

### Fitzgerald S-18HU

#### Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	20"	J55	26"	1,020'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	2,900'	CTS
Intermediate 2	9 5/8"	HPP110	12 1/4"	11,600'	CTS
Production	5 1/2"	HCP110	8 1/2"	21,657'	CTS

#### Cement

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

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

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

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

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# Well Site Safety Plan

## Tug Hill Operating, LLC

*Ju*  
3/11/2020

Well Name: Fitzgerald S-18HU

Location: Fitzgerald Pad

Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

Northing: 4,405,749.99

Easting: 530,720.88

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February 2020

**Area of Review****Sources of information to Support 35CSR8 - 5.11: 9.3 et seq.**

Description of process to identify potential pathways for well communication during hydraulic fracturing activities.

## Data Sources Reviewed:

1. IHS Well Data service: Public nationwide data service that pulls directly from State agency Oil and Gas databases
2. Farm Maps
3. Topo Maps: Recent and older (contact WVGES)
4. Check with DPS

Contacted Devin Ducoeur 724-705-0444, [dducoeur@dpslandservices.com](mailto:dducoeur@dpslandservices.com) DPS GIS (03/06/2020) to have him make maps of the wellbores with his information. DPS utilizes WVGES maps for their mapping seems it as the best publicly available. See attached map he provided.

## Request maps for:

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

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

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

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4705102325

Permit well - Fitzgerald S-18HU

Wells within 500' Buffer

Note: Well spots depicted on Area of Review map are derived from State held coordinates. The spots may differ from those depicted on the Well Plat because the Plat locations represent actual field surveyed locations. Please refer to the Plat for surveyed well spots.

API Number	Operator Name	Total Depth	Perforated Fms	Producing zones not perforated	Is this well "known or reasonably expected to penetrate a depth that could be within the range of Fracture propagation"? 1000' is max limit I would assign to wells that might be within in range of fracture propagation	Comments
4705170626	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Point Pleasant well.	State records are incomplete.
4705102232	Tug Hill Operating, LLC	7070' TVD	None	None	No, existing Marcellus permit. The well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Currently a permit.
4705170625	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Point Pleasant well.	State records are incomplete.
4705130420	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Point Pleasant well. Well is plugged.	Well was plugged 6/16/1960.
4705100932	Consolidation Coal Co.	Unknown	Unknown	Unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Point Pleasant well. Well is plugged.	Well was plugged 8/05/2004.
4705100981	Consolidation Coal Co.	Unknown	Unknown	Unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Point Pleasant well. Well is plugged.	Well was plugged 5/03/2006.
4705170594	Hope Natural Gas Company	Unknown	Unknown	Unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Point Pleasant well.	State records are incomplete.
4705170595	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Point Pleasant well.	State records are incomplete.
4705100983	Consolidation Coal Co.	Unknown	Unknown	Unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Point Pleasant well. Well is plugged.	Well was plugged 4/11/2006.
4705100984	Consolidation Coal Co.	Unknown	Unknown	Unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Point Pleasant well. Well is plugged.	Well was plugged 4/28/2006.
4705100621	Consolidation Coal Co.	3048' TVD	Gordon	Unknown	No, the well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation. Well is plugged.	Well was plugged 1/03/2005.
4705100944	Consolidation Coal Co.	3049' TVD	Gordon	Unknown	No, the well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	State records are incomplete.
4705170081	South Penn Oil (S. Penn Nat. Gas)	Unknown	Unknown	Unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Point Pleasant well.	State records are incomplete.
4705101012	Consolidation Coal Co.	Unknown	Unknown	Unknown	No, the well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation. Well is plugged.	Well was plugged 6/07/2006.

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Application Information - This form  
is used to report the results of a well test.  
It is required for all wells that are  
being tested for production or  
injection.

Well: County = 61 Permit = 75426

Report Type: Public Health 03/2020 10:23 PM

There is no Bottom Hole Location data for this well.  
There is no Pay data for this well.  
There is no Production Oil data for this well.  
There is no Production NGL data for this well.  
There is no Production Water data for this well.  
There is no Discharge data for this well.  
There is no Weibull (E-Lag) data for this well.  
There is no Plugging data for this well.  
There is no Sample data for this well.

Well: County = 61 Permit = 02232

Report Type: Public Health 03/2020 10:24 PM

There is no Bottom Hole Location data for this well.  
There is no Pay data for this well.  
There is no Production Oil data for this well.  
There is no Production NGL data for this well.  
There is no Production Water data for this well.  
There is no Discharge data for this well.  
There is no Weibull (E-Lag) data for this well.  
There is no Plugging data for this well.  
There is no Sample data for this well.

Well: County = 61 Permit = 70626

Report Type: Public Health 03/2020 10:25 PM

There is no Bottom Hole Location data for this well.  
There is no Pay data for this well.  
There is no Production Oil data for this well.  
There is no Production NGL data for this well.  
There is no Production Water data for this well.  
There is no Discharge data for this well.  
There is no Weibull (E-Lag) data for this well.  
There is no Plugging data for this well.  
There is no Sample data for this well.

Well: County = 61 Permit = 25420

Report Type: Public Health 03/2020 10:25 PM

There is no Bottom Hole Location data for this well.  
There is no Pay data for this well.  
There is no Production Oil data for this well.  
There is no Production NGL data for this well.  
There is no Production Water data for this well.  
There is no Discharge data for this well.  
There is no Weibull (E-Lag) data for this well.  
There is no Plugging data for this well.  
There is no Sample data for this well.

Well: County = 61 Permit = 00832

Report Type: Public Health 03/2020 10:26 PM

There is no Bottom Hole Location data for this well.  
There is no Pay data for this well.  
There is no Production Oil data for this well.  
There is no Production NGL data for this well.  
There is no Production Water data for this well.  
There is no Discharge data for this well.  
There is no Weibull (E-Lag) data for this well.  
There is no Plugging data for this well.  
There is no Sample data for this well.

Well: County = 61 Permit = 00881

Report Type: Public Health 03/2020 10:26 PM

There is no Bottom Hole Location data for this well.  
There is no Pay data for this well.  
There is no Production Oil data for this well.  
There is no Production NGL data for this well.  
There is no Production Water data for this well.  
There is no Discharge data for this well.  
There is no Weibull (E-Lag) data for this well.  
There is no Plugging data for this well.  
There is no Sample data for this well.

Well: County = 61 Permit = 75884

Report Type: Public Health 03/2020 10:26 PM

There is no Bottom Hole Location data for this well.  
There is no Pay data for this well.  
There is no Production Oil data for this well.  
There is no Production NGL data for this well.  
There is no Production Water data for this well.  
There is no Discharge data for this well.  
There is no Weibull (E-Lag) data for this well.  
There is no Plugging data for this well.  
There is no Sample data for this well.

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WV Company & Business Name

Wvd: County = 81 Permit = 70081

Report Type: Permit Amend 03 2020 11:41 AM PM

Well Registration Information: Registered In  
[REDACTED]

Location Information: Well Name  
[REDACTED]

There is no Bottom Hole Location data for this well

Current Information: Status: [REDACTED] Operator: [REDACTED] Lease: [REDACTED] Production: [REDACTED] Production Type: [REDACTED] Production Method: [REDACTED] Production Date: [REDACTED]

Compliance Information: [REDACTED]

There is no Pay data for this well

There is no Production Gas data for this well

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

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

There is no Production Water data for this well

There is no Straligraphy data for this well

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

There is no Plugging data for this well

There is no Sample data for this well

Wvd: County = 81 Permit = 01012

Report Type: Permit Amend 03 2020 11:41 AM PM

WV Company & Business Name

Well Registration Information: Registered In  
[REDACTED]

Location Information: Well Name  
[REDACTED]

There is no Bottom Hole Location data for this well

Current Information: Status: [REDACTED] Operator: [REDACTED] Lease: [REDACTED] Production: [REDACTED] Production Type: [REDACTED] Production Method: [REDACTED] Production Date: [REDACTED]

Compliance Information: [REDACTED]

There is no Pay data for this well

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

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

There is no Production Water data for this well

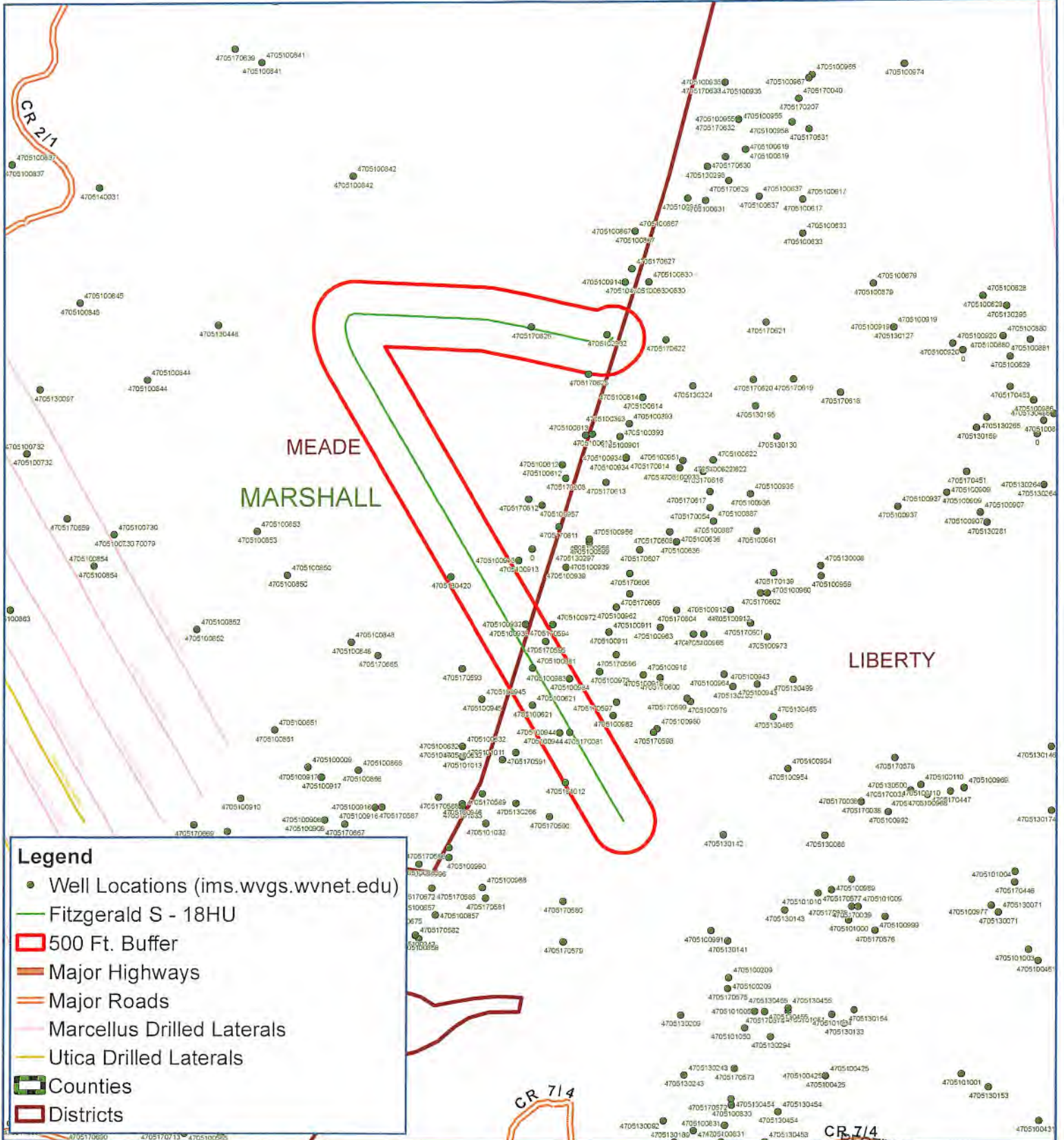
There is no Wireline (E-Log) data for this well

There is no Plugging data for this well

There is no Sample data for this well

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**Legend**

- Well Locations (ims.wvgs.wvnet.edu)
- Fitzgerald S - 18HU
- ▭ 500 Ft. Buffer
- Major Highways
- Major Roads
- Marcellus Drilled Laterals
- Utica Drilled Laterals
- ▭ Counties
- ▭ Districts



Fitzgerald S - 18HU  
Meade District  
Marshall County, WV



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

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Map Prepared by:  
**PS**  
LAND SERVICES



**Well:** Fitzgerald 18 HU (slot N)  
**Site:** Fitzgerald  
**Project:** Marshall County, West Virginia  
**Design:** rev10  
**Rig:**



Geodetic System: Universal Transverse Mercator (US Survey Feet)  
 Datum: NAD83 West Virginia - HARN  
 Ellipsoid: GRS 1960  
 Zone: Zone 17N (84 W to 78 W)

System Datum: Mean Sea Level  
 Depth Reference: GL @ 1292.9 ft

Nothing Easting 1741206.78  
 Latitude 39.80116100  
 Longitude -80.64114000

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 9.0111°



Azimuths to Grid North  
 True North: -0.23°  
 Magnetic North: -9.01°  
 Strength: 52002.0usRT  
 Dip Angle: 66.33°  
 Date: 12/11/2018  
 Model: IGRF2015

SECTION DETAILS

Sec	MD	Inc	Asi	TVD	+N/S	+E/W	Dleg	TFace	VSEct	Amolition
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 1°/100' build
3	1600.00	4.00	0.00	1596.00	8.00	0.00	0.00	0.00	8.70	Begin 4.00° tangent
4	3150.11	4.00	230.000	3150.00	-78.87	-10.93	0.00	230.000	75.71	Begin 3°/100' build/turbium
5	3077.16	30.00	293.000	3150.00	-78.86	-93.74	0.00	0.000	75.39	Begin 3°/100' tangent
6	6932.45	30.00	293.000	6277.55	-24.82	-374.50	0.00	0.000	75.74	Begin 3°/100' tangent
7	7332.42	10.00	293.000	6277.55	24.82	-1743.48	0.00	0.000	319.19	Begin 3°/100' tangent
8	7687.94	10.00	293.000	9733.57	24.27	-1873.82	0.00	0.000	319.19	Begin 3°/100' tangent
9	8258.08	30.00	272.600	7728.07	302.56	-917.51	0.00	0.000	363.85	Begin 3°/100' tangent
10	12027.73	30.00	272.600	11044.00	302.55	-2145.65	0.00	-13.664	-363.85	Begin 3°/100' tangent
11	13759.77	50.00	172.000	11860.26	395.57	-4038.62	8.00	-121.943	-495.22	Begin 8°/100' build/turbium
12	13333.14	89.00	149.689	11877.26	382.94	-4016.00	8.00	-30.486	-289.64	Begin 89.00° lateral
13	21656.70	89.00	149.689	11993.00	-7562.36	181.18	0.00	0.000	7564.53	PBHL/TD 21656.69 MD/11993.00 TVD

DESIGN TARGET DETAILS

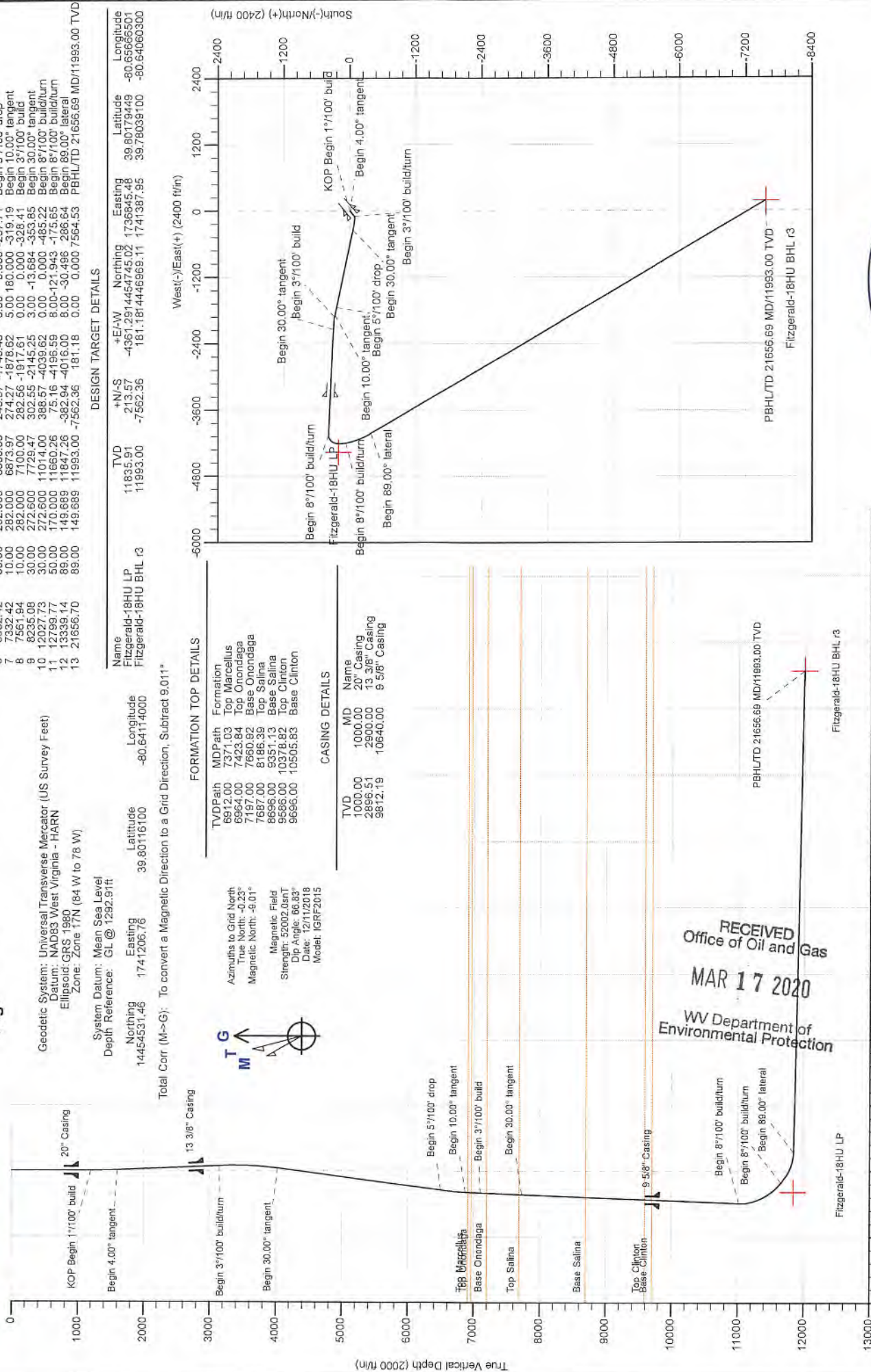
Name	TVD	+N/S	+E/W	Northing	Easting	Latitude	Longitude
Fitzgerald-18HU LP	11835.91	213.57	-4361.29	14454745.02	1736845.48	39.80173448	-80.65666501
Fitzgerald-18HU BHL r3	11993.00	-7562.36	181.18	14446969.11	1741387.95	39.78039100	-80.64060300

FORMATION TOP DETAILS

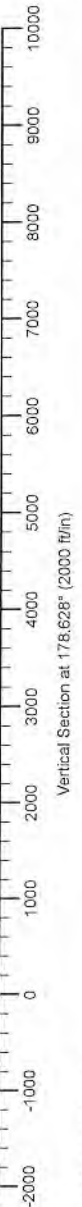
TVDPath	MDPath	Formation
6912.00	7371.03	Top Marlcellus
6964.00	7423.84	Top Onondaga
7157.00	7660.82	Base Onondaga
7657.00	8186.39	Top Salina
8656.00	9371.13	Base Salina
9586.00	10371.82	Top Clinton
9686.00	10505.83	Base Clinton

CASING DETAILS

TVD	MD	Name
1000.00	1000.00	20" Casing
2896.51	2800.00	13 3/8" Casing
9812.19	10640.00	9 5/8" Casing



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Planning Report - Geographic

4705102325



<b>Database:</b>	DB_Aug1919_v14	<b>Local Co-ordinate Reference:</b>	Well Fitzgerald 18 HU (slot N)
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL @ 1292.91ft
<b>Project:</b>	Marshall County, West Virginia	<b>MD Reference:</b>	GL @ 1292.91ft
<b>Site:</b>	Fitzgerald	<b>North Reference:</b>	Grid
<b>Well:</b>	Fitzgerald 18 HU (slot N)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev10		

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

<b>Site</b>	Fitzgerald				
<b>Site Position:</b>		<b>Northing:</b>	14,454,567.73 usft	<b>Latitude:</b>	39.80126184
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,741,096.26 usft	<b>Longitude:</b>	-80.64153292
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.229 °

<b>Well</b>	Fitzgerald 18 HU (slot N)					
<b>Well Position</b>	<b>+N/-S</b>	0.00 ft	<b>Northing:</b>	14,454,531.46 usft	<b>Latitude:</b>	39.80116100
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>	1,741,206.76 usft	<b>Longitude:</b>	-80.64114000
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>		<b>Ground Level:</b>	1,292.91 ft

<b>Wellbore</b>	Original Hole				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	12/11/2018	-8.781	66.834	52,002.02704158

<b>Design</b>	rev10				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PLAN		<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	178.628	

<b>Plan Survey Tool Program</b>	<b>Date</b>	3/4/2020			
<b>Depth From (ft)</b>	<b>Depth To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>	
1	0.00	21,656.70 rev10 (Original Hole)	MWD MWD - Standard		

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<b>Database:</b>	DB_Aug1919_v14	<b>Local Co-ordinate Reference:</b>	Well Fitzgerald 18 HU (slot N)
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL @ 1292.91ft
<b>Project:</b>	Marshall County, West Virginia	<b>MD Reference:</b>	GL @ 1292.91ft
<b>Site:</b>	Fitzgerald	<b>North Reference:</b>	Grid
<b>Well:</b>	Fitzgerald 18 HU (slot N)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev10		

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.000	
1,200.00	0.00	0.000	1,200.00	0.00	0.00	0.00	0.00	0.00	0.000	
1,600.00	4.00	230.000	1,599.68	-8.97	-10.69	1.00	1.00	0.00	230.000	
3,154.11	4.00	230.000	3,150.00	-78.66	-93.74	0.00	0.00	0.00	0.000	
4,077.46	30.00	282.000	4,027.53	-50.82	-349.20	3.00	2.82	5.63	57.951	
6,932.42	30.00	282.000	6,500.00	245.97	-1,745.48	0.00	0.00	0.00	0.000	
7,332.42	10.00	282.000	6,873.97	274.27	-1,878.62	5.00	-5.00	0.00	180.000	
7,561.94	10.00	282.000	7,100.00	282.56	-1,917.61	0.00	0.00	0.00	0.000	
8,235.08	30.00	272.600	7,729.47	302.55	-2,145.25	3.00	2.97	-1.40	-13.684	
12,027.73	30.00	272.600	11,014.00	388.57	-4,039.62	0.00	0.00	0.00	0.000	
12,799.77	50.00	170.000	11,660.26	75.16	-4,196.59	8.00	2.59	-13.29	-121.943	
13,339.14	89.00	149.689	11,847.26	-382.94	-4,016.00	8.00	7.23	-3.77	-30.496	
21,656.70	89.00	149.689	11,993.00	-7,562.36	181.18	0.00	0.00	0.00	0.000	Fitzgerald-18HU BHL

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Planning Report - Geographic



Database: DB\_Aug1919\_v14  
 Company: Tug Hill Operating LLC  
 Project: Marshall County, West Virginia  
 Site: Fitzgerald  
 Well: Fitzgerald 18 HU (slot N)  
 Wellbore: Original Hole  
 Design: rev10

Local Co-ordinate Reference: Well Fitzgerald 18 HU (slot N)  
 TVD Reference: GL @ 1292.91ft  
 MD Reference: GL @ 1292.91ft  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature

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Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	WV Dep Environmental	
								Latitude	Longitude
0.00	0.00	0.000	0.00	0.00	0.00	14,454,531.46	1,741,206.76	39.80116100	-80.64114000
100.00	0.00	0.000	100.00	0.00	0.00	14,454,531.46	1,741,206.76	39.80116100	-80.64114000
200.00	0.00	0.000	200.00	0.00	0.00	14,454,531.46	1,741,206.76	39.80116100	-80.64114000
300.00	0.00	0.000	300.00	0.00	0.00	14,454,531.46	1,741,206.76	39.80116100	-80.64114000
400.00	0.00	0.000	400.00	0.00	0.00	14,454,531.46	1,741,206.76	39.80116100	-80.64114000
500.00	0.00	0.000	500.00	0.00	0.00	14,454,531.46	1,741,206.76	39.80116100	-80.64114000
600.00	0.00	0.000	600.00	0.00	0.00	14,454,531.46	1,741,206.76	39.80116100	-80.64114000
700.00	0.00	0.000	700.00	0.00	0.00	14,454,531.46	1,741,206.76	39.80116100	-80.64114000
800.00	0.00	0.000	800.00	0.00	0.00	14,454,531.46	1,741,206.76	39.80116100	-80.64114000
900.00	0.00	0.000	900.00	0.00	0.00	14,454,531.46	1,741,206.76	39.80116100	-80.64114000
1,000.00	0.00	0.000	1,000.00	0.00	0.00	14,454,531.46	1,741,206.76	39.80116100	-80.64114000
1,100.00	0.00	0.000	1,100.00	0.00	0.00	14,454,531.46	1,741,206.76	39.80116100	-80.64114000
1,200.00	0.00	0.000	1,200.00	0.00	0.00	14,454,531.46	1,741,206.76	39.80116100	-80.64114000
<b>KOP Begin 1°/100' build</b>									
1,300.00	1.00	230.000	1,299.99	-0.56	-0.67	14,454,530.90	1,741,206.09	39.80115947	-80.64114239
1,400.00	2.00	230.000	1,399.96	-2.24	-2.67	14,454,529.21	1,741,204.09	39.80115487	-80.64114955
1,500.00	3.00	230.000	1,499.86	-5.05	-6.02	14,454,526.41	1,741,200.75	39.80114721	-80.64116149
1,600.00	4.00	230.000	1,599.68	-8.97	-10.69	14,454,522.49	1,741,196.07	39.80113648	-80.64117819
<b>Begin 4.00° tangent</b>									
1,700.00	4.00	230.000	1,699.43	-13.46	-16.04	14,454,518.00	1,741,190.73	39.80112423	-80.64119728
1,800.00	4.00	230.000	1,799.19	-17.94	-21.38	14,454,513.52	1,741,185.38	39.80111197	-80.64121637
1,900.00	4.00	230.000	1,898.94	-22.42	-26.72	14,454,509.04	1,741,180.04	39.80109972	-80.64123546
2,000.00	4.00	230.000	1,998.70	-26.91	-32.07	14,454,504.55	1,741,174.70	39.80108746	-80.64125455
2,100.00	4.00	230.000	2,098.46	-31.39	-37.41	14,454,500.07	1,741,169.35	39.80107521	-80.64127364
2,200.00	4.00	230.000	2,198.21	-35.87	-42.75	14,454,495.58	1,741,164.01	39.80106295	-80.64129273
2,300.00	4.00	230.000	2,297.97	-40.36	-48.10	14,454,491.10	1,741,158.66	39.80105070	-80.64131182
2,400.00	4.00	230.000	2,397.73	-44.84	-53.44	14,454,486.62	1,741,153.32	39.80103844	-80.64133091
2,500.00	4.00	230.000	2,497.48	-49.33	-58.78	14,454,482.13	1,741,147.98	39.80102619	-80.64135000
2,600.00	4.00	230.000	2,597.24	-53.81	-64.13	14,454,477.65	1,741,142.63	39.80101393	-80.64136909
2,700.00	4.00	230.000	2,697.00	-58.29	-69.47	14,454,473.16	1,741,137.29	39.80100168	-80.64138818
2,800.00	4.00	230.000	2,796.75	-62.78	-74.82	14,454,468.68	1,741,131.95	39.80098942	-80.64140727
2,900.00	4.00	230.000	2,896.51	-67.26	-80.16	14,454,464.20	1,741,126.60	39.80097717	-80.64142636
3,000.00	4.00	230.000	2,996.26	-71.75	-85.50	14,454,459.71	1,741,121.26	39.80096491	-80.64144545
3,100.00	4.00	230.000	3,096.02	-76.23	-90.85	14,454,455.23	1,741,115.92	39.80095266	-80.64146454
3,154.11	4.00	230.000	3,150.00	-78.66	-93.74	14,454,452.80	1,741,113.02	39.80094603	-80.64147487
<b>Begin 3°/100' build/turn</b>									
3,200.00	4.87	243.873	3,195.75	-80.54	-96.71	14,454,450.92	1,741,110.05	39.80094088	-80.64148549
3,300.00	7.33	260.468	3,295.19	-83.47	-106.82	14,454,447.99	1,741,099.94	39.80093295	-80.64152151
3,400.00	10.08	268.432	3,394.03	-84.77	-121.86	14,454,446.69	1,741,084.90	39.80092956	-80.64157509
3,500.00	12.95	272.957	3,492.01	-84.43	-141.80	14,454,447.03	1,741,064.96	39.80093071	-80.64164608
3,600.00	15.86	275.854	3,588.86	-82.45	-166.59	14,454,449.00	1,741,040.17	39.80093639	-80.64173430
3,700.00	18.80	277.868	3,684.31	-78.85	-196.15	14,454,452.60	1,741,010.61	39.80094661	-80.64183949
3,800.00	21.75	279.353	3,778.10	-73.64	-230.40	14,454,457.82	1,740,976.36	39.80096131	-80.64196138
3,900.00	24.72	280.497	3,869.98	-66.81	-269.26	14,454,464.64	1,740,937.50	39.80098048	-80.64209961
4,000.00	27.69	281.409	3,959.69	-58.41	-312.61	14,454,473.05	1,740,894.16	39.80100404	-80.64225383
4,077.46	30.00	282.000	4,027.53	-50.82	-349.20	14,454,480.64	1,740,857.57	39.80102528	-80.64238400
<b>Begin 30.00° tangent</b>									
4,100.00	30.00	282.000	4,047.05	-48.48	-360.22	14,454,482.98	1,740,846.54	39.80103184	-80.64242321
4,200.00	30.00	282.000	4,133.65	-38.08	-409.13	14,454,493.38	1,740,797.64	39.80106092	-80.64259720
4,300.00	30.00	282.000	4,220.26	-27.68	-458.03	14,454,503.77	1,740,748.73	39.80109001	-80.64277118
4,400.00	30.00	282.000	4,306.86	-17.29	-506.94	14,454,514.17	1,740,699.82	39.80111909	-80.64294516
4,500.00	30.00	282.000	4,393.46	-6.89	-555.85	14,454,524.57	1,740,650.91	39.80114818	-80.64311914
4,600.00	30.00	282.000	4,480.07	3.50	-604.76	14,454,534.96	1,740,602.01	39.80117726	-80.64329312
4,700.00	30.00	282.000	4,566.67	13.90	-653.66	14,454,545.36	1,740,553.10	39.80120634	-80.64346711





Planning Report - Geographic



Database: DB\_Aug1919\_v14  
 Company: Tug Hill Operating LLC  
 Project: Marshall County, West Virginia  
 Site: Fitzgerald  
 Well: Fitzgerald 18 HU (slot N)  
 Wellbore: Original Hole  
 Design: rev10

Local Co-ordinate Reference: Well Fitzgerald 18 HU (slot N)  
 TVD Reference: GL @ 1292.91ft  
 MD Reference: GL @ 1292.91ft  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature

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Planned Survey

MAR 17 2020

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,800.00	30.00	282.000	4,653.27	24.29	-702.57	14,454,555.75	1,740,504.19	39.80123543	-80.64364109
4,900.00	30.00	282.000	4,739.87	34.69	-751.48	14,454,566.15	1,740,455.28	39.80126451	-80.64381507
5,000.00	30.00	282.000	4,826.46	45.08	-800.39	14,454,576.54	1,740,406.38	39.80129359	-80.64398905
5,100.00	30.00	282.000	4,913.08	55.48	-849.29	14,454,586.94	1,740,357.47	39.80132268	-80.64416304
5,200.00	30.00	282.000	4,999.68	65.88	-898.20	14,454,597.33	1,740,308.56	39.80135176	-80.64433702
5,300.00	30.00	282.000	5,086.28	76.27	-947.11	14,454,607.73	1,740,259.66	39.80138084	-80.64451100
5,400.00	30.00	282.000	5,172.89	86.67	-996.02	14,454,618.13	1,740,210.75	39.80140992	-80.64468499
5,500.00	30.00	282.000	5,259.49	97.06	-1,044.92	14,454,628.52	1,740,161.84	39.80143900	-80.64485897
5,600.00	30.00	282.000	5,346.09	107.46	-1,093.83	14,454,638.92	1,740,112.93	39.80146809	-80.64503295
5,700.00	30.00	282.000	5,432.69	117.85	-1,142.74	14,454,649.31	1,740,064.03	39.80149717	-80.64520694
5,800.00	30.00	282.000	5,519.30	128.25	-1,191.65	14,454,659.71	1,740,015.12	39.80152625	-80.64538092
5,900.00	30.00	282.000	5,605.90	138.65	-1,240.55	14,454,670.10	1,739,966.21	39.80155533	-80.64555491
6,000.00	30.00	282.000	5,692.50	149.04	-1,289.46	14,454,680.50	1,739,917.30	39.80158441	-80.64572889
6,100.00	30.00	282.000	5,779.10	159.44	-1,338.37	14,454,690.89	1,739,868.40	39.80161349	-80.64590287
6,200.00	30.00	282.000	5,865.71	169.83	-1,387.27	14,454,701.29	1,739,819.49	39.80164257	-80.64607686
6,300.00	30.00	282.000	5,952.31	180.23	-1,436.18	14,454,711.69	1,739,770.58	39.80167165	-80.64625084
6,400.00	30.00	282.000	6,038.91	190.62	-1,485.09	14,454,722.08	1,739,721.68	39.80170073	-80.64642483
6,500.00	30.00	282.000	6,125.51	201.02	-1,534.00	14,454,732.48	1,739,672.77	39.80172981	-80.64659881
6,600.00	30.00	282.000	6,212.12	211.41	-1,582.90	14,454,742.87	1,739,623.86	39.80175889	-80.64677280
6,700.00	30.00	282.000	6,298.72	221.81	-1,631.81	14,454,753.27	1,739,574.95	39.80178796	-80.64694678
6,800.00	30.00	282.000	6,385.32	232.21	-1,680.72	14,454,763.66	1,739,526.05	39.80181704	-80.64712077
6,900.00	30.00	282.000	6,471.92	242.60	-1,729.63	14,454,774.06	1,739,477.14	39.80184612	-80.64729475
6,932.42	30.00	282.000	6,500.00	245.97	-1,745.48	14,454,777.43	1,739,461.28	39.80185555	-80.64735116
<b>Begin 5°/100' drop</b>									
7,000.00	26.62	282.000	6,559.49	252.63	-1,776.83	14,454,784.09	1,739,429.94	39.80187418	-80.64746267
7,100.00	21.62	282.000	6,650.73	261.13	-1,816.79	14,454,792.59	1,739,389.98	39.80189794	-80.64760483
7,200.00	16.62	282.000	6,745.18	267.94	-1,848.82	14,454,799.39	1,739,357.95	39.80191699	-80.64771877
7,300.00	11.62	282.000	6,842.13	273.01	-1,872.67	14,454,804.46	1,739,334.09	39.80193117	-80.64780364
7,332.42	10.00	282.000	6,873.97	274.27	-1,878.62	14,454,805.73	1,739,328.14	39.80193471	-80.64782480
<b>Begin 10.00° tangent</b>									
7,400.00	10.00	282.000	6,940.53	276.71	-1,890.10	14,454,808.17	1,739,316.66	39.80194153	-80.64786564
7,500.00	10.00	282.000	7,039.01	280.32	-1,907.09	14,454,811.78	1,739,299.68	39.80195163	-80.64792606
7,561.94	10.00	282.000	7,100.00	282.56	-1,917.61	14,454,814.02	1,739,289.16	39.80195788	-80.64796349
<b>Begin 3°/100' build</b>									
7,600.00	11.11	280.598	7,137.42	283.92	-1,924.45	14,454,815.38	1,739,282.32	39.80196170	-80.64798781
7,700.00	14.06	277.966	7,235.01	287.38	-1,945.95	14,454,818.83	1,739,260.81	39.80197142	-80.64806434
7,800.00	17.02	276.234	7,331.34	290.65	-1,972.54	14,454,822.11	1,739,234.23	39.80198070	-80.64815894
7,900.00	20.00	275.003	7,426.16	293.73	-2,004.13	14,454,825.19	1,739,202.64	39.80198950	-80.64827138
8,000.00	22.98	274.081	7,519.20	296.61	-2,040.64	14,454,828.07	1,739,166.13	39.80199781	-80.64840134
8,100.00	25.96	273.360	7,610.20	299.28	-2,081.97	14,454,830.74	1,739,124.80	39.80200559	-80.64854845
8,200.00	28.95	272.779	7,698.93	301.74	-2,128.01	14,454,833.20	1,739,078.76	39.80201283	-80.64871233
8,235.08	30.00	272.600	7,729.47	302.55	-2,145.25	14,454,834.01	1,739,061.52	39.80201524	-80.64877371
<b>Begin 30.00° tangent</b>									
8,300.00	30.00	272.600	7,785.69	304.02	-2,177.68	14,454,835.48	1,739,029.09	39.80201964	-80.64888914
8,400.00	30.00	272.600	7,872.29	306.29	-2,227.62	14,454,837.75	1,738,979.14	39.80202640	-80.64906695
8,500.00	30.00	272.600	7,958.90	308.56	-2,277.57	14,454,840.02	1,738,929.19	39.80203317	-80.64924476
8,600.00	30.00	272.600	8,045.50	310.83	-2,327.52	14,454,842.28	1,738,879.25	39.80203994	-80.64942257
8,700.00	30.00	272.600	8,132.10	313.10	-2,377.47	14,454,844.55	1,738,829.30	39.80204670	-80.64960037
8,800.00	30.00	272.600	8,218.70	315.36	-2,427.42	14,454,846.82	1,738,779.35	39.80205347	-80.64977818
8,900.00	30.00	272.600	8,305.31	317.63	-2,477.37	14,454,849.09	1,738,729.40	39.80206023	-80.64995599
9,000.00	30.00	272.600	8,391.91	319.90	-2,527.31	14,454,851.36	1,738,679.45	39.80206700	-80.65013380
9,100.00	30.00	272.600	8,478.51	322.17	-2,577.26	14,454,853.63	1,738,629.50	39.80207376	-80.65031160
9,200.00	30.00	272.600	8,565.11	324.44	-2,627.21	14,454,855.89	1,738,579.56	39.80208053	-80.65048941
9,300.00	30.00	272.600	8,651.72	326.70	-2,677.16	14,454,858.16	1,738,529.61	39.80208729	-80.65066722





Planning Report - Geographic



<b>Database:</b>	DB_Aug1919_v14	<b>Local Co-ordinate Reference:</b>	Well Fitzgerald 18 HU (slot N)
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL @ 1292.91ft
<b>Project:</b>	Marshall County, West Virginia	<b>MD Reference:</b>	GL @ 1292.91ft
<b>Site:</b>	Fitzgerald	<b>North Reference:</b>	Grid
<b>Well:</b>	Fitzgerald 18 HU (slot N)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev10		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
9,400.00	30.00	272.600	8,738.32	328.97	-2,727.11	14,454,860.43	1,738,479.66	39.80209406	-80.65084503	
9,500.00	30.00	272.600	8,824.92	331.24	-2,777.06	14,454,862.70	1,738,429.71	39.80210082	-80.65102283	
9,600.00	30.00	272.600	8,911.53	333.51	-2,827.01	14,454,864.97	1,738,379.76	39.80210758	-80.65120064	
9,700.00	30.00	272.600	8,998.13	335.78	-2,876.95	14,454,867.23	1,738,329.81	39.80211435	-80.65137845	
9,800.00	30.00	272.600	9,084.73	338.04	-2,926.90	14,454,869.50	1,738,279.86	39.80212111	-80.65155626	
9,900.00	30.00	272.600	9,171.33	340.31	-2,976.85	14,454,871.77	1,738,229.92	39.80212787	-80.65173406	
10,000.00	30.00	272.600	9,257.94	342.58	-3,026.80	14,454,874.04	1,738,179.97	39.80213464	-80.65191187	
10,100.00	30.00	272.600	9,344.54	344.85	-3,076.75	14,454,876.31	1,738,130.02	39.80214140	-80.65208968	
10,200.00	30.00	272.600	9,431.14	347.12	-3,126.70	14,454,878.58	1,738,080.07	39.80214816	-80.65226749	
10,300.00	30.00	272.600	9,517.74	349.39	-3,176.65	14,454,880.84	1,738,030.12	39.80215492	-80.65244530	
10,400.00	30.00	272.600	9,604.35	351.65	-3,226.59	14,454,883.11	1,737,980.17	39.80216168	-80.65262310	
10,500.00	30.00	272.600	9,690.95	353.92	-3,276.54	14,454,885.38	1,737,930.23	39.80216844	-80.65280091	
10,600.00	30.00	272.600	9,777.55	356.19	-3,326.49	14,454,887.65	1,737,880.28	39.80217520	-80.65297872	
10,700.00	30.00	272.600	9,864.15	358.46	-3,376.44	14,454,889.92	1,737,830.33	39.80218197	-80.65315653	
10,800.00	30.00	272.600	9,950.76	360.73	-3,426.39	14,454,892.18	1,737,780.38	39.80218873	-80.65333434	
10,900.00	30.00	272.600	10,037.36	362.99	-3,476.34	14,454,894.45	1,737,730.43	39.80219549	-80.65351214	
11,000.00	30.00	272.600	10,123.96	365.26	-3,526.29	14,454,896.72	1,737,680.48	39.80220225	-80.65368995	
11,100.00	30.00	272.600	10,210.56	367.53	-3,576.23	14,454,898.99	1,737,630.53	39.80220900	-80.65386776	
11,200.00	30.00	272.600	10,297.17	369.80	-3,626.18	14,454,901.26	1,737,580.59	39.80221576	-80.65404557	
11,300.00	30.00	272.600	10,383.77	372.07	-3,676.13	14,454,903.52	1,737,530.64	39.80222252	-80.65422338	
11,400.00	30.00	272.600	10,470.37	374.34	-3,726.08	14,454,905.79	1,737,480.69	39.80222928	-80.65440119	
11,500.00	30.00	272.600	10,556.97	376.60	-3,776.03	14,454,908.06	1,737,430.74	39.80223604	-80.65457899	
11,600.00	30.00	272.600	10,643.58	378.87	-3,825.98	14,454,910.33	1,737,380.79	39.80224280	-80.65475680	
11,700.00	30.00	272.600	10,730.18	381.14	-3,875.93	14,454,912.60	1,737,330.84	39.80224956	-80.65493461	
11,800.00	30.00	272.600	10,816.78	383.41	-3,925.87	14,454,914.87	1,737,280.90	39.80225631	-80.65511242	
11,900.00	30.00	272.600	10,903.38	385.68	-3,975.82	14,454,917.13	1,737,230.95	39.80226307	-80.65529023	
12,000.00	30.00	272.600	10,989.99	387.94	-4,025.77	14,454,919.40	1,737,181.00	39.80226983	-80.65546804	
12,027.73	30.00	272.600	11,014.00	388.57	-4,039.62	14,454,920.03	1,737,167.15	39.80227170	-80.65551734	
<b>Begin 8°/100' build/turn</b>										
12,100.00	27.34	261.874	11,077.45	387.05	-4,074.13	14,454,918.50	1,737,132.64	39.80226787	-80.65564023	
12,200.00	25.30	244.365	11,167.21	374.54	-4,116.20	14,454,905.99	1,737,090.57	39.80223396	-80.65579018	
12,300.00	25.53	225.663	11,257.68	350.19	-4,150.93	14,454,881.65	1,737,055.84	39.80216747	-80.65591417	
12,400.00	27.99	208.689	11,347.10	314.49	-4,177.65	14,454,845.95	1,737,029.12	39.80206971	-80.65600980	
12,500.00	32.16	195.017	11,433.72	268.12	-4,195.84	14,454,799.58	1,737,010.93	39.80194256	-80.65607520	
12,600.00	37.48	184.513	11,515.85	211.99	-4,205.14	14,454,743.45	1,737,001.63	39.80178852	-80.65610910	
12,700.00	43.52	176.412	11,591.91	147.19	-4,205.39	14,454,678.65	1,737,001.39	39.80161056	-80.65611084	
12,799.77	50.00	170.000	11,660.26	75.16	-4,196.59	14,454,606.62	1,737,010.18	39.80141265	-80.65608049	
<b>Begin 8°/100' build/turn</b>										
12,800.00	50.00	170.000	11,660.41	74.98	-4,196.55	14,454,606.44	1,737,010.22	39.80141217	-80.65608039	
12,900.00	57.01	165.159	11,719.85	-3.41	-4,179.12	14,454,528.05	1,737,027.65	39.80119689	-80.65601940	
13,000.00	64.17	161.050	11,768.94	-86.65	-4,153.72	14,454,444.80	1,737,053.05	39.80096782	-80.65593011	
13,100.00	71.43	157.414	11,806.71	-173.12	-4,120.85	14,454,358.34	1,737,085.92	39.80073001	-80.65581425	
13,200.00	78.75	154.078	11,832.43	-261.13	-4,081.15	14,454,270.33	1,737,125.62	39.80048790	-80.65567409	
13,300.00	86.11	150.909	11,845.59	-348.97	-4,035.38	14,454,182.49	1,737,171.39	39.80024618	-80.65551235	
13,339.14	89.00	149.689	11,847.26	-382.94	-4,016.01	14,454,148.52	1,737,190.76	39.80015271	-80.65544384	
<b>Begin 89.00° lateral</b>										
13,400.00	89.00	149.689	11,848.33	-435.47	-3,985.30	14,454,095.99	1,737,221.47	39.80000812	-80.65533522	
13,500.00	89.00	149.689	11,850.08	-521.78	-3,934.83	14,454,009.67	1,737,271.94	39.79977054	-80.65515674	
13,600.00	89.00	149.689	11,851.83	-608.10	-3,884.37	14,453,923.36	1,737,322.40	39.79953296	-80.65497826	
13,700.00	89.00	149.689	11,853.58	-694.42	-3,833.91	14,453,837.04	1,737,372.86	39.79929538	-80.65479979	
13,800.00	89.00	149.689	11,855.34	-780.73	-3,783.45	14,453,750.73	1,737,423.32	39.79905780	-80.65462132	
13,900.00	89.00	149.689	11,857.08	-867.05	-3,732.99	14,453,664.41	1,737,473.78	39.79882022	-80.65444284	
14,000.00	89.00	149.689	11,858.84	-953.37	-3,682.53	14,453,578.09	1,737,524.24	39.79858264	-80.65426437	
14,100.00	89.00	149.689	11,860.59	-1,039.68	-3,632.06	14,453,491.78	1,737,574.71	39.79834506	-80.65408590	





Planning Report - Geographic

4705102325



Database: DB\_Aug1919\_v14  
 Company: Tug Hill Operating LLC  
 Project: Marshall County, West Virginia  
 Site: Fitzgerald  
 Well: Fitzgerald 18 HU (slot N)  
 Wellbore: Original Hole  
 Design: rev10

Local Co-ordinate Reference: Well Fitzgerald 18 HU (slot N)  
 TVD Reference: GL @ 1292.91ft  
 MD Reference: GL @ 1292.91ft  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature

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 Office of Oil and Gas

Planned Survey										MAR 17 2020
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map		WV Department of Environmental Protection		
						Northing (usft)	Easting (usft)	Latitude	Longitude	
14,200.00	89.00	149.689	11,862.34	-1,126.00	-3,581.60	14,453,405.46	1,737,625.17	39.79810748	-80.65390743	
14,300.00	89.00	149.689	11,864.10	-1,212.32	-3,531.14	14,453,319.14	1,737,675.63	39.79786990	-80.65372897	
14,400.00	89.00	149.689	11,865.85	-1,298.63	-3,480.68	14,453,232.83	1,737,726.09	39.79763232	-80.65355050	
14,500.00	89.00	149.689	11,867.60	-1,384.95	-3,430.22	14,453,146.51	1,737,776.55	39.79739473	-80.65337203	
14,600.00	89.00	149.689	11,869.35	-1,471.27	-3,379.75	14,453,060.20	1,737,827.01	39.79715715	-80.65319357	
14,700.00	89.00	149.689	11,871.10	-1,557.58	-3,329.29	14,452,973.88	1,737,877.48	39.79691957	-80.65301511	
14,800.00	89.00	149.689	11,872.86	-1,643.90	-3,278.83	14,452,887.56	1,737,927.94	39.79668199	-80.65283665	
14,900.00	89.00	149.689	11,874.61	-1,730.22	-3,228.37	14,452,801.25	1,737,978.40	39.79644440	-80.65265819	
15,000.00	89.00	149.689	11,876.36	-1,816.53	-3,177.91	14,452,714.93	1,738,028.86	39.79620682	-80.65247973	
15,100.00	89.00	149.689	11,878.11	-1,902.85	-3,127.45	14,452,628.61	1,738,079.32	39.79596924	-80.65230127	
15,200.00	89.00	149.689	11,879.87	-1,989.16	-3,076.98	14,452,542.30	1,738,129.78	39.79573165	-80.65212281	
15,300.00	89.00	149.689	11,881.62	-2,075.48	-3,026.52	14,452,455.98	1,738,180.25	39.79549407	-80.65194436	
15,400.00	89.00	149.689	11,883.37	-2,161.80	-2,976.06	14,452,369.66	1,738,230.71	39.79525649	-80.65176590	
15,500.00	89.00	149.689	11,885.12	-2,248.11	-2,925.60	14,452,283.35	1,738,281.17	39.79501890	-80.65158745	
15,600.00	89.00	149.689	11,886.87	-2,334.43	-2,875.14	14,452,197.03	1,738,331.63	39.79478132	-80.65140900	
15,700.00	89.00	149.689	11,888.63	-2,420.75	-2,824.67	14,452,110.72	1,738,382.09	39.79454373	-80.65123055	
15,800.00	89.00	149.689	11,890.38	-2,507.06	-2,774.21	14,452,024.40	1,738,432.55	39.79430615	-80.65105210	
15,900.00	89.00	149.689	11,892.13	-2,593.38	-2,723.75	14,451,938.08	1,738,483.02	39.79406856	-80.65087365	
16,000.00	89.00	149.689	11,893.88	-2,679.70	-2,673.29	14,451,851.77	1,738,533.48	39.79383098	-80.65069520	
16,100.00	89.00	149.689	11,895.64	-2,766.01	-2,622.83	14,451,765.45	1,738,583.94	39.79359339	-80.65051676	
16,200.00	89.00	149.689	11,897.39	-2,852.33	-2,572.37	14,451,679.13	1,738,634.40	39.79335580	-80.65033831	
16,300.00	89.00	149.689	11,899.14	-2,938.65	-2,521.90	14,451,592.82	1,738,684.86	39.79311822	-80.65015987	
16,400.00	89.00	149.689	11,900.89	-3,024.96	-2,471.44	14,451,506.50	1,738,735.33	39.79288063	-80.64998143	
16,500.00	89.00	149.689	11,902.64	-3,111.28	-2,420.98	14,451,420.19	1,738,785.79	39.79264304	-80.64980299	
16,600.00	89.00	149.689	11,904.40	-3,197.60	-2,370.52	14,451,333.87	1,738,836.25	39.79240545	-80.64962455	
16,700.00	89.00	149.689	11,906.15	-3,283.91	-2,320.06	14,451,247.55	1,738,886.71	39.79216787	-80.64944611	
16,800.00	89.00	149.689	11,907.90	-3,370.23	-2,269.59	14,451,161.24	1,738,937.17	39.79193028	-80.64926767	
16,900.00	89.00	149.689	11,909.65	-3,456.54	-2,219.13	14,451,074.92	1,738,987.63	39.79169269	-80.64908924	
17,000.00	89.00	149.689	11,911.41	-3,542.86	-2,168.67	14,450,988.60	1,739,038.10	39.79145510	-80.64891080	
17,100.00	89.00	149.689	11,913.16	-3,629.18	-2,118.21	14,450,902.29	1,739,088.56	39.79121751	-80.64873237	
17,200.00	89.00	149.689	11,914.91	-3,715.49	-2,067.75	14,450,815.97	1,739,139.02	39.79097992	-80.64855394	
17,300.00	89.00	149.689	11,916.66	-3,801.81	-2,017.29	14,450,729.66	1,739,189.48	39.79074233	-80.64837551	
17,400.00	89.00	149.689	11,918.41	-3,888.13	-1,966.82	14,450,643.34	1,739,239.94	39.79050474	-80.64819708	
17,500.00	89.00	149.689	11,920.17	-3,974.44	-1,916.36	14,450,557.02	1,739,290.40	39.79026715	-80.64801865	
17,600.00	89.00	149.689	11,921.92	-4,060.76	-1,865.90	14,450,470.71	1,739,340.87	39.79002956	-80.64784022	
17,700.00	89.00	149.689	11,923.67	-4,147.08	-1,815.44	14,450,384.39	1,739,391.33	39.78979197	-80.64766180	
17,800.00	89.00	149.689	11,925.42	-4,233.39	-1,764.98	14,450,298.07	1,739,441.79	39.78955438	-80.64748337	
17,900.00	89.00	149.689	11,927.18	-4,319.71	-1,714.51	14,450,211.76	1,739,492.25	39.78931679	-80.64730495	
18,000.00	89.00	149.689	11,928.93	-4,406.03	-1,664.05	14,450,125.44	1,739,542.71	39.78907920	-80.64712653	
18,100.00	89.00	149.689	11,930.68	-4,492.34	-1,613.59	14,450,039.12	1,739,593.17	39.78884161	-80.64694810	
18,200.00	89.00	149.689	11,932.43	-4,578.66	-1,563.13	14,449,952.81	1,739,643.64	39.78860401	-80.64676969	
18,300.00	89.00	149.689	11,934.18	-4,664.98	-1,512.67	14,449,866.49	1,739,694.10	39.78836642	-80.64659127	
18,400.00	89.00	149.689	11,935.94	-4,751.29	-1,462.20	14,449,780.18	1,739,744.56	39.78812883	-80.64641285	
18,500.00	89.00	149.689	11,937.69	-4,837.61	-1,411.74	14,449,693.86	1,739,795.02	39.78789124	-80.64623443	
18,600.00	89.00	149.689	11,939.44	-4,923.92	-1,361.28	14,449,607.54	1,739,845.48	39.78765364	-80.64605602	
18,700.00	89.00	149.689	11,941.19	-5,010.24	-1,310.82	14,449,521.23	1,739,895.94	39.78741605	-80.64587760	
18,800.00	89.00	149.689	11,942.95	-5,096.56	-1,260.36	14,449,434.91	1,739,946.41	39.78717846	-80.64569919	
18,900.00	89.00	149.689	11,944.70	-5,182.87	-1,209.90	14,449,348.59	1,739,996.87	39.78694086	-80.64552078	
19,000.00	89.00	149.689	11,946.45	-5,269.19	-1,159.43	14,449,262.28	1,740,047.33	39.78670327	-80.64534237	
19,100.00	89.00	149.689	11,948.20	-5,355.51	-1,108.97	14,449,175.96	1,740,097.79	39.78646567	-80.64516396	
19,200.00	89.00	149.689	11,949.95	-5,441.82	-1,058.51	14,449,089.65	1,740,148.25	39.78622808	-80.64498555	
19,300.00	89.00	149.689	11,951.71	-5,528.14	-1,008.05	14,449,003.33	1,740,198.72	39.78599048	-80.64480715	
19,400.00	89.00	149.689	11,953.46	-5,614.46	-957.59	14,448,917.01	1,740,249.18	39.78575289	-80.64462874	
19,500.00	89.00	149.689	11,955.21	-5,700.77	-907.12	14,448,830.70	1,740,299.64	39.78551529	-80.64445034	
19,600.00	89.00	149.689	11,956.96	-5,787.09	-856.66	14,448,744.38	1,740,350.10	39.78527770	-80.64427194	





Planning Report - Geographic



<b>Database:</b>	DB_Aug1919_v14	<b>Local Co-ordinate Reference:</b>	Well Fitzgerald 18 HU (slot N)
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL @ 1292.91ft
<b>Project:</b>	Marshall County, West Virginia	<b>MD Reference:</b>	GL @ 1292.91ft
<b>Site:</b>	Fitzgerald	<b>North Reference:</b>	Grid
<b>Well:</b>	Fitzgerald 18 HU (slot N)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev10		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
19,700.00	89.00	149.689	11,958.71	-5,873.41	-806.20	14,448,658.06	1,740,400.56	39.78504010	-80.64409353	
19,800.00	89.00	149.689	11,960.47	-5,959.72	-755.74	14,448,571.75	1,740,451.02	39.78480250	-80.64391513	
19,900.00	89.00	149.689	11,962.22	-6,046.04	-705.28	14,448,485.43	1,740,501.49	39.78456491	-80.64373674	
20,000.00	89.00	149.689	11,963.97	-6,132.36	-654.82	14,448,399.11	1,740,551.95	39.78432731	-80.64355834	
20,100.00	89.00	149.689	11,965.72	-6,218.67	-604.35	14,448,312.80	1,740,602.41	39.78408971	-80.64337994	
20,200.00	89.00	149.689	11,967.48	-6,304.99	-553.89	14,448,226.48	1,740,652.87	39.78385212	-80.64320155	
20,300.00	89.00	149.689	11,969.23	-6,391.31	-503.43	14,448,140.17	1,740,703.33	39.78361452	-80.64302315	
20,400.00	89.00	149.689	11,970.98	-6,477.62	-452.97	14,448,053.85	1,740,753.79	39.78337692	-80.64284476	
20,500.00	89.00	149.689	11,972.73	-6,563.94	-402.51	14,447,967.53	1,740,804.26	39.78313932	-80.64266637	
20,600.00	89.00	149.689	11,974.48	-6,650.25	-352.04	14,447,881.22	1,740,854.72	39.78290172	-80.64248798	
20,700.00	89.00	149.689	11,976.24	-6,736.57	-301.58	14,447,794.90	1,740,905.18	39.78266412	-80.64230959	
20,800.00	89.00	149.689	11,977.99	-6,822.89	-251.12	14,447,708.58	1,740,955.64	39.78242652	-80.64213120	
20,900.00	89.00	149.689	11,979.74	-6,909.20	-200.66	14,447,622.27	1,741,006.10	39.78218892	-80.64195281	
21,000.00	89.00	149.689	11,981.49	-6,995.52	-150.20	14,447,535.95	1,741,056.56	39.78195132	-80.64177443	
21,100.00	89.00	149.689	11,983.25	-7,081.84	-99.74	14,447,449.64	1,741,107.03	39.78171372	-80.64159604	
21,200.00	89.00	149.689	11,985.00	-7,168.15	-49.27	14,447,363.32	1,741,157.49	39.78147612	-80.64141766	
21,300.00	89.00	149.689	11,986.75	-7,254.47	1.19	14,447,277.00	1,741,207.95	39.78123852	-80.64123928	
21,400.00	89.00	149.689	11,988.50	-7,340.79	51.65	14,447,190.69	1,741,258.41	39.78100092	-80.64106090	
21,500.00	89.00	149.689	11,990.25	-7,427.10	102.11	14,447,104.37	1,741,308.87	39.78076332	-80.64088252	
21,600.00	89.00	149.689	11,992.01	-7,513.42	152.57	14,447,018.05	1,741,359.33	39.78052572	-80.64070414	
21,656.69	89.00	149.689	11,993.00	-7,562.35	181.18	14,446,969.12	1,741,387.94	39.78039102	-80.64060302	
<b>PBHL/TD 21656.69 MD/11993.00 TVD</b>										
21,656.70	89.00	149.689	11,993.00	-7,562.36	181.18	14,446,969.11	1,741,387.95	39.78039100	-80.64060300	

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
Fitzgerald-18HU LP - hit/miss target - Shape - Point	0.00	0.000	11,835.91	213.57	-4,361.29	14,454,745.03	1,736,845.48	39.80179449	-80.65666501	
- plan misses target center by 277.74ft at 12799.77ft MD (11660.26 TVD, 75.16 N, -4196.59 E)										
Fitzgerald-18HU BHL r3 - plan hits target center - Point	0.00	0.000	11,993.00	-7,562.36	181.18	14,446,969.11	1,741,387.95	39.78039100	-80.64060300	

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
1,000.00	1,000.00	20" Casing	20	26	
2,900.00	2,896.51	13 3/8" Casing	13-3/8	17-1/2	
10,640.00	9,812.19	9 5/8" Casing	9-5/8	12-1/4	





Planning Report - Geographic



<b>Database:</b>	DB_Aug1919_v14	<b>Local Co-ordinate Reference:</b>	Well Fitzgerald 18 HU (slot N)
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL @ 1292.91ft
<b>Project:</b>	Marshall County, West Virginia	<b>MD Reference:</b>	GL @ 1292.91ft
<b>Site:</b>	Fitzgerald	<b>North Reference:</b>	Grid
<b>Well:</b>	Fitzgerald 18 HU (slot N)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev10		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
7,371.04	6,912.00	Top Marcellus		0.000		RECEIVED Office of Oil and Gas  MAR 17 2020  WV Department of Environmental Protection
7,423.84	6,964.00	Top Onondaga		0.000		
7,660.92	7,197.00	Base Onondaga		0.000		
8,186.39	7,687.00	Top Salina		0.000		
9,351.13	8,696.00	Base Salina		0.000		
10,378.82	9,586.00	Top Clinton		0.000		
10,505.83	9,696.00	Base Clinton		0.000		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
1,200.00	1,200.00	0.00	0.00	KOP Begin 1°/100' build	
1,600.00	1,599.68	-8.97	-10.69	Begin 4.00° tangent	
3,154.11	3,150.00	-78.66	-93.74	Begin 3°/100' build/turn	
4,077.46	4,027.53	-50.82	-349.20	Begin 30.00° tangent	
6,932.42	6,500.00	245.97	-1,745.48	Begin 5°/100' drop	
7,332.42	6,873.97	274.27	-1,878.62	Begin 10.00° tangent	
7,561.94	7,100.00	282.56	-1,917.61	Begin 3°/100' build	
8,235.08	7,729.47	302.55	-2,145.25	Begin 30.00° tangent	
12,027.73	11,014.00	388.57	-4,039.62	Begin 8°/100' build/turn	
12,799.77	11,660.26	75.16	-4,196.59	Begin 8°/100' build/turn	
13,339.14	11,847.26	-382.94	-4,016.01	Begin 89.00° lateral	
21,656.69	11,993.00	-7,562.35	181.18	PBHL/TD 21656.69 MD/11993.00 TVD	

WW-9  
(4/16)

API Number 47 - 051 - \_\_\_\_\_  
Operator's Well No. Fitzgerald S-18HU

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) Upper Fish Creek Quadrangle Glen Easton 7.5'

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

Will a pit be used? Yes  No

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

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

Proposed Disposal Method For Treated Pit Wastes:

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

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MAR 17 2020

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

WV Department of Environmental Protection

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 / WVD109185) and Westmoreland Sanitary Landfill, LLC (SAN1405 / PA DEP EC#1386426)

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

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

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

Company Official Signature James A. Pancake

Company Official (Typed Name) Jim Pancake

Company Official Title Vice President - Geosciences

Subscribed and sworn before me this 25th day of February, 2020

My commission expires 2-10-2024

Commonwealth of Pennsylvania - Notary Seal  
Chester Arthur West IV, Notary Public  
Washington County  
My commission expires February 10, 2024  
Commission number 1267179  
Member, Pennsylvania Association of Notaries

**Tug Hill Operating, LLC**

Proposed Revegetation Treatment: Acres Disturbed 7.44 Prevegetation pH 6.0

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch 2.5 Tons/acre

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WV Department of  
Environmental Protection

Seed Mixtures

**Temporary**

**Permanent**

Seed Type	lbs/acre
Annual Ryegrass	40
Spring Oats	96

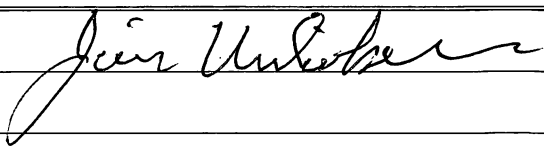
Seed Type	lbs/acre
Orchard Grass	12
Ladino	3
White Clover	2

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: \_\_\_\_\_



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

Title: Oil and Gas Inspector

Date: 3/11/2020

Field Reviewed?

Yes

No



WW-9

# PROPOSED FITZGERALD S - 18HU

SUPPLEMENT PG. 1

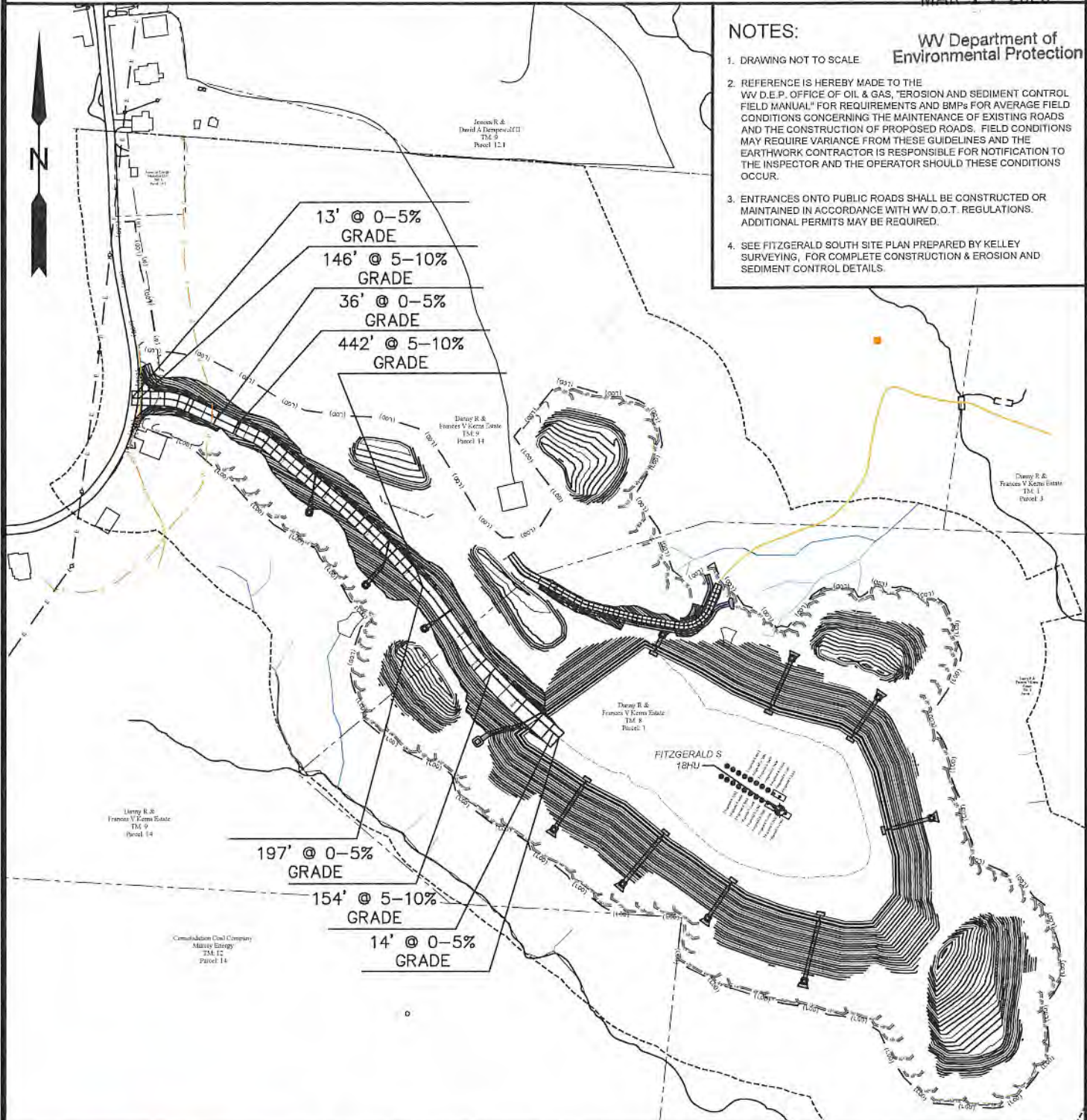
RECEIVED  
Office of Oil and Gas

MAR 17 2020

**NOTES:**

1. DRAWING NOT TO SCALE
2. REFERENCE IS HEREBY MADE TO THE WV D.E.P. OFFICE OF OIL & GAS, "EROSION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BMPs FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES AND THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION TO THE INSPECTOR AND THE OPERATOR SHOULD THESE CONDITIONS OCCUR.
3. ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED.
4. SEE FITZGERALD SOUTH SITE PLAN PREPARED BY KELLEY SURVEYING, FOR COMPLETE CONSTRUCTION & EROSION AND SEDIMENT CONTROL DETAILS.

WV Department of  
Environmental Protection



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634  
 1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3352  
 254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296  
 slswv.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	LIBERTY	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8910	03/03/20	NONE

**TUG HILL  
OPERATING**

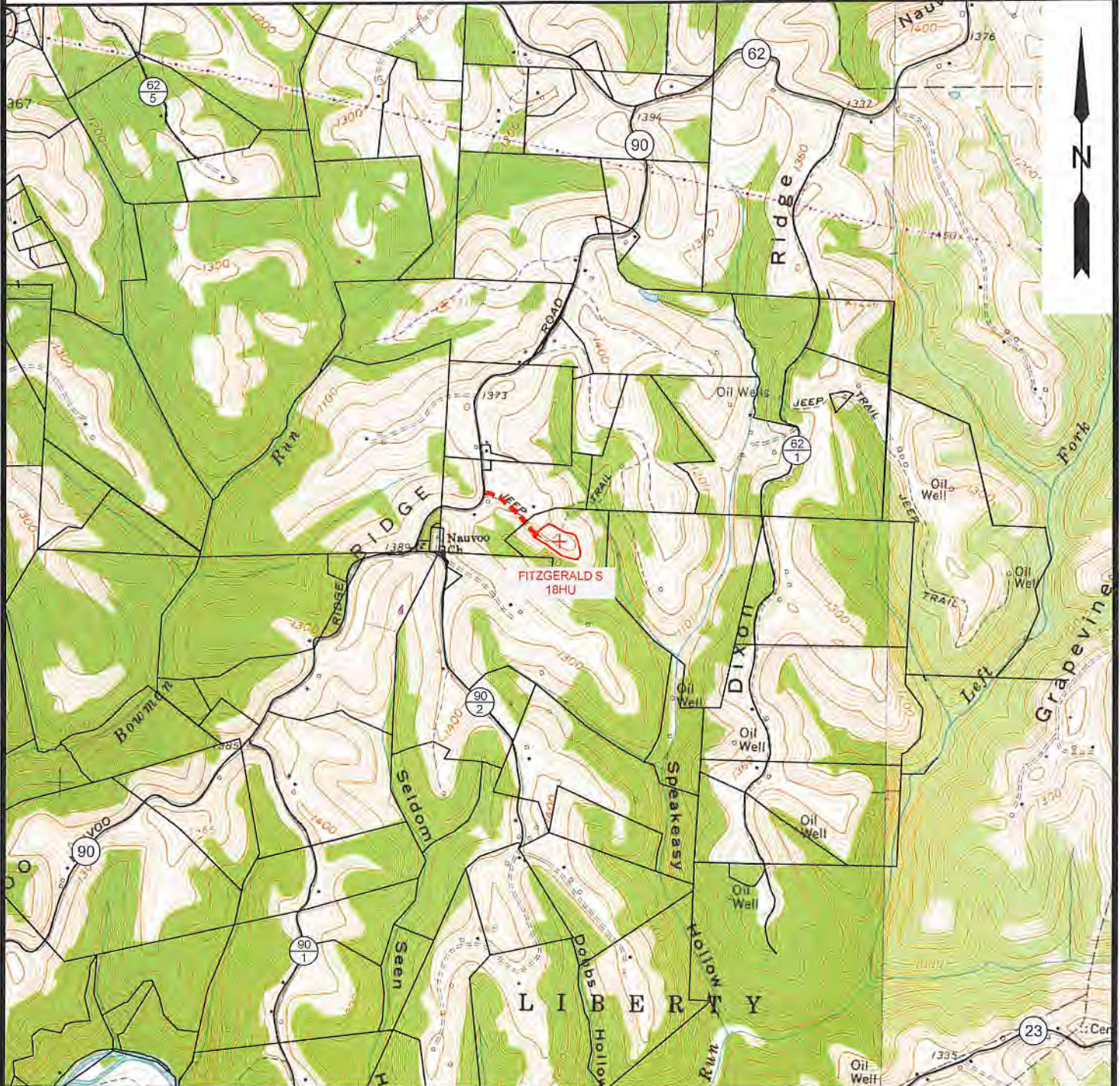


WW-9

**PROPOSED  
FITZGERALD S - 18HU**

MAR 17 2020 SUPPLEMENT PG. 2

WV Department of  
Environmental Protection



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

LAT: 39.829865  
LON: -80.573724  
LOCATED: N 62°00'46" E AT 21,684.26' FROM THE CENTER OF FITZGERALD S WELL PAD LOCATION.



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634  
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952  
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296  
slswv.com

<b>TOPO SECTION:</b>		<b>OPERATOR:</b>	
GLEN EASTON 7.5' & CAMERON 7.5'		PREPARED FOR: TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317	
<b>COUNTY</b>	<b>DISTRICT</b>		
MARSHALL	LIBERTY & MEADE		
<b>DRAWN BY</b>	<b>JOB NO.</b>	<b>DATE</b>	<b>SCALE</b>
K.G.M.	8910	03/03/2020	1" = 2000'



**TUG HILL  
OPERATING**

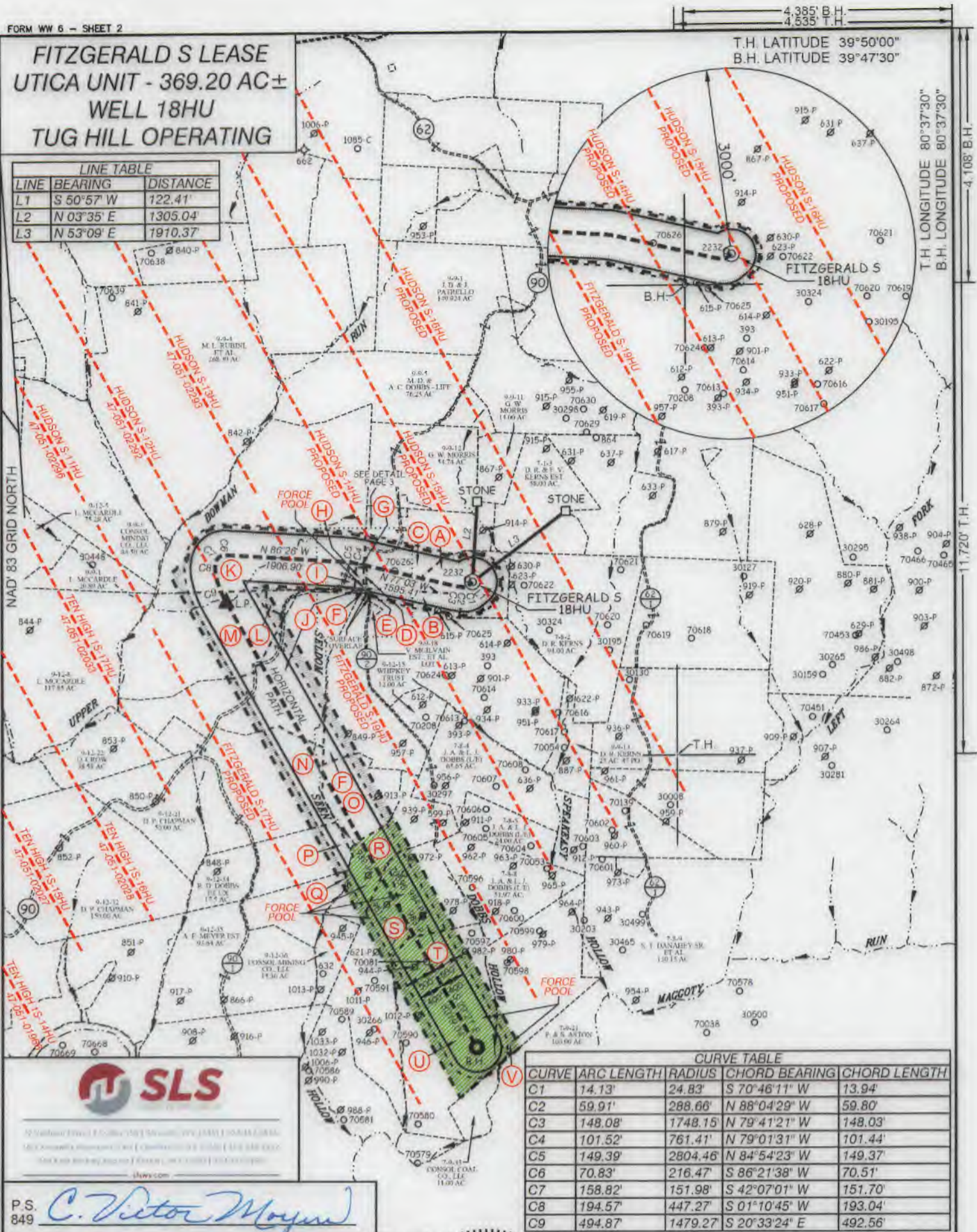


**FITZGERALD S LEASE  
UTICA UNIT - 369.20 AC±  
WELL 18HU  
TUG HILL OPERATING**

LINE TABLE		
LINE	BEARING	DISTANCE
L1	S 50°57' W	122.41'
L2	N 03°35' E	1305.04'
L3	N 53°09' E	1910.37'

T.H. LATITUDE 39°50'00"  
B.H. LATITUDE 39°47'30"

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



NAD'83 GRID NORTH

11,720' T.H.

COUNTY NAME

PERMIT

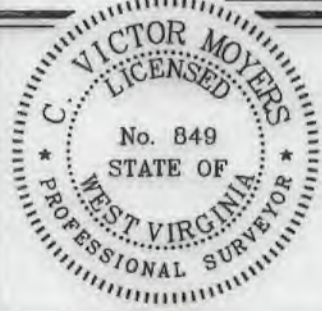


3250 South University Drive, Suite 500, Fort Worth, TX 76107  
 817-342-1111  
 www.sls.com

P.S. *C. Victor Moyers*  
849

CURVE TABLE				
CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	14.13'	24.83'	S 70°46'11" W	13.94'
C2	59.91'	288.66'	N 88°04'29" W	59.80'
C3	148.08'	1748.15'	N 79°41'21" W	148.03'
C4	101.52'	761.41'	N 79°01'31" W	101.44'
C5	149.39'	2804.46'	N 84°54'23" W	149.37'
C6	70.83'	216.47'	S 86°21'38" W	70.51'
C7	158.82'	151.98'	S 42°07'01" W	151.70'
C8	194.57'	447.27'	S 01°10'45" W	193.04'
C9	494.87'	1479.27'	S 20°33'24" E	492.56'

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)		
NAD'83 S.P.C. (FT)	N. 475,959.90	E. 1,647,895.53
NAD'83 GEO.	LAT-(N) 39.801181	LONG-(W) 80.641140
NAD'83 UTM (M)	N. 4,405,750.00	E. 530,720.88
LANDING POINT		
NAD'83 S.P.C. (FT)	N. 475,644.0	E. 1,643,872.3
NAD'83 GEO.	LAT-(N) 39.800153	LONG-(W) 80.655444
NAD'83 UTM (M)	N. 4,405,633.3	E. 529,496.8
BOTTOM HOLE		
NAD'83 S.P.C. (FT)	N. 488,393.1	E. 1,647,950.3
NAD'83 GEO.	LAT-(N) 39.780391	LONG-(W) 80.640603
NAD'83 UTM (M)	N. 4,403,445.0	E. 530,776.1



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

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

SCALE	1" = 2000'	FILE NO.	8910P18HUR.dwg
			FITZGERALD S-18HU REV10
DATE	MARCH 13		20 20
REVISED	APRIL 13		20 20
OPERATORS WELL NO.	FITZGERALD S-18HU		
API WELL NO.	47 — 051 — 02325		
	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 FORT WORTH, TX 76107	ADDRESS	5400 D BIG TYLER ROAD CHARLESTON, WV 25313



4,385' B.H.  
4,535' T.H.

**FITZGERALD S LEASE  
UTICA UNIT - 369.20 AC±  
WELL 18HU  
TUG HILL OPERATING**

T.H. LATITUDE 39°50'00"  
B.H. LATITUDE 39°47'30"

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

NAD'83 S.P.C.(FT)	N. 475,959.90	E. 1,647,895.53
NAD'83 GEO.	LAT-(N) 39.801161	LONG-(W) 80.641140
NAD'83 UTM (M)	N. 4,405,750.00	E. 530,720.88
<b>LANDING POINT</b>		
NAD'83 S.P.C.(FT)	N. 475,644.0	E. 1,643,872.3
NAD'83 GEO.	LAT-(N) 39.800153	LONG-(W) 80.655444
NAD'83 UTM (M)	N. 4,405,633.3	E. 529,496.8
<b>BOTTOM HOLE</b>		
NAD'83 S.P.C.(FT)	N. 468,393.1	E. 1,647,950.3
NAD'83 GEO.	LAT-(N) 39.780391	LONG-(W) 80.640603
NAD'83 UTM (M)	N. 4,403,445.0	E. 530,776.1

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

TAG	SURFACE OWNER	PARCEL	ACRES
A	DANNY R. & FRANCES V. KERNS ESTATE	7-8-1	27.00
B	CONSOL MINING CO., LLC	9-12-14	127.61
C	DANNY R. & FRANCES V. KERNS ESTATE	9-9-14	48.308
D	NAUVOO CEMETERY ASSOC. INC.	9-9-14.2	0.297
E	TRUSTEES OF THE REORGANIZED CHURCH OF LATTER DAY SAINTS	9-9-15	LOT
F	WHIPKEY TRUST	9-12-12	61.00
G	NAUVOO CEMETERY ASSOC. INC.	9-9-16.1	0.126
H	NAUVOO CEMETERY ASSOC. INC.	9-9-17	1.00
I	GARY W. MORRIS	9-9-22	0.15
J	WARREN BEVYLE & ELEANOR LOU CHAMBERS - LIFE	9-12-11	91.00
K	TODD L. SCHERFELT ET AL	9-9-16	168.204
L	ROBERT W. KNIGHT	9-12-10	3.00
M	CHARLES WILLIAM DOBBS, ET AL	9-12-9	87.26
N	RONALD EUGENE & MARY LEE DOBBS	9-12-20	91.00
O	VIRGINIA McIVAIN ESTATE & THE WHIPKEY TRUST	9-12-16	30.00
P	RAYMOND D. DOBBS, ET AL	9-12-19	30.00
Q	ROY ROGERS WOODS, SR.	9-12-18	30.00
R	VIRGINIA McIVAIN ESTATE & THE WHIPKEY TRUST	9-12-17	37.27
S	CONSOL MINING CO., LLC	7-9-1	59.00
T	CONSOL MINING CO., LLC	7-8-7	31.99
U	CONSOL MINING CO., LLC	7-9-22	101.36
V	JOHN ALFRED & LEORA JEAN DOBBS - LIFE	7-9-23	60.25

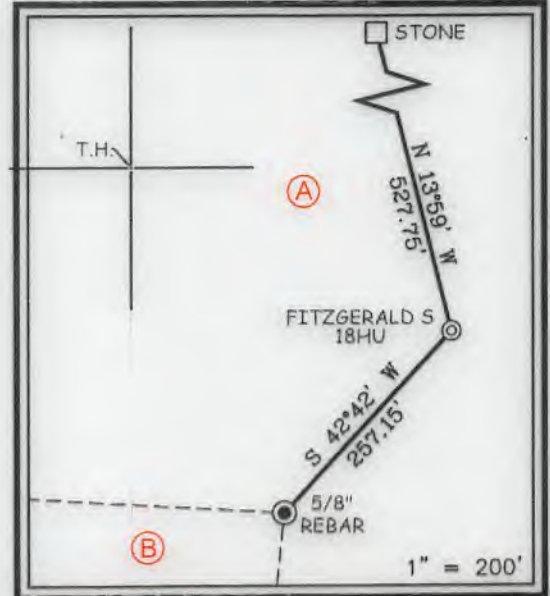
B.H.

11,720' T.H.

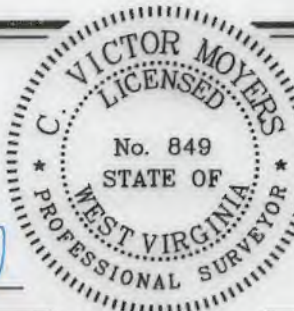
**NOTES ON SURVEY**

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE ARE 1"=2000'
- PROPOSED LATERAL OR TOP HOLE OF FITZGERALD S-18HU IS WITHIN 3000' OF THE TOP HOLES OR LATERALS OF PROPOSED FITZGERALD S-17HU, PROPOSED FITZGERALD S-19HU, HUDSON S-11HU (47-051-02296), HUDSON S-12HU (47-051-02292), HUDSON S-13HU (47-051-02293), PROPOSED HUDSON S-14HU, PROPOSED HUDSON S-15HU, PROPOSED HUDSON S-16HU & TEN HIGH 15-17HU (47-051-02033).

**REFERENCES**



11700 South Street, Suite 300, Marietta, WV 26009 304.842.8844  
1612 Knauff Drive, Charleston, WV 25303 304.846.1562  
284 Kato Drive, Beckley, WV 26001 304.846.5298  
dswv.com



I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAN 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. 849 *C. Victor Moyers*

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.  
DATE MARCH 13, 20 20  
REVISED APRIL 13, 20 20  
OPERATORS WELL NO. FITZGERALD S-18HU  
API WELL NO. 47 - 051 -  
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8910P18HUR.dwg  
FITZGERALD S-18HU REV10  
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  INJECTION  WASTE DISPOSAL  IF "GAS" PRODUCTION  STORAGE  DEEP  SHALLOW

LOCATION: GROUND = 1,319.10' ELEVATION PROPOSED = 1,344.81' WATERSHED SPEAKEASY HOLLOW OF MAGGOTY RUN  
DISTRICT LIBERTY COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'

SURFACE OWNER DANNY AND FRANCES KERNS ESTATE ACREAGE 27.00±  
ROYALTY OWNER DANNY S. KERNS, ET AL ACREAGE 27.00±

PROPOSED WORK: LEASE NO. SEE WW-6A1

DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION  PLUG AND ABANDON  CLEAN OUT AND REPLUG  OTHER

PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_ TARGET FORMATION POINT PLEASANT  
ESTIMATED DEPTH TVD: 12,080' / TMD: 21,657'

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

COUNTY NAME PERMIT



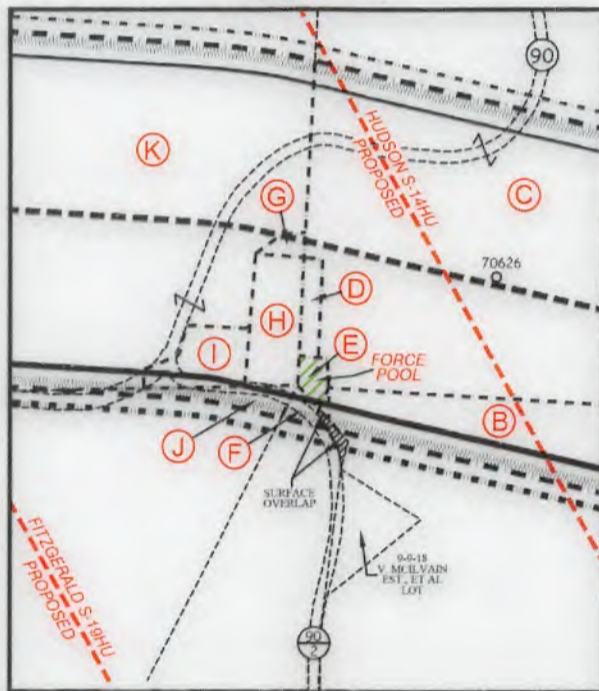
**FITZGERALD S LEASE  
UTICA UNIT - 369.20 AC ±  
WELL 18HU  
TUG HILL OPERATING**



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26151 | 304.452.5634  
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.5952  
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296  
sllwv.com

NO.	Lease ID	Tags	Parcel	Grantor, Lessor, Etc.	Deed Book/Page
1	10*25518	A	7-8-1	DANNY S KFRNS, MARRIED MAN DEALING WITH HIS SOLE AND SEPARATE PROPERTY	1010 532
2	10*18339	B	9-12-14	RESOURCE MINERALS HEADWATER I LP	940 448
3	PENDING	C	9-9-14	REGINA DANETTE FIGUEROA	1075 137
4	10*27299	D	9-9-14.2	NAUVOO CEMETERY ASSOCIATION	1057 357
5	**	E	9-9-15	REORGANIZED CHURCH OF LATER DAY SAINTS	UNLEASED
6	10*19557	F	9-12-12	FERRY L BLAKE	944 649
7	10*19987	G	9-9-16.1	LESLEY D BALLA	955 103
8	10*27299	H	9-9-17	NAUVOO CEMETERY ASSOCIATION	1057 357
9	10*24535	I	9-9-22	BOARD OF EDUCATION OF MARSHALL COUNTY	1026 64
10	10*15494	J	9-12-11	CHRISTOPHER SINGER AND SHEREA SINGER	898 433
11	10*19987	K	9-9-16	LESLEY D BALLA	955 103
12	10*23656	L	9-12-10	ROBERT W KNIGHT AND BARBARA J KNIGHT	1011 504
13	10*15999	M	9-12-9	CHARLES W DOBBS AND JUDITH M DOBBS	702 171
14	10*24679	N	9-12-20	PIKEWOOD ENERGY CORPORATION AN OFCO CORPORATION	1026 149
15	10*21512	O	9-12-16	THE WHIPKEY TRUST, ACTING TRUSTEES DAVID L WHIPKEY AND CAROL J WHIPKEY	949 266
16	10*19748	P	9-12-19	ELIZABETH JANE KEILY	957 335
17	10*18073	Q	9-12-18	ROY R WOODS	927 22
18	10*21532	R	9-12-17	CHARLES E RICHARDSON AND SHIRLEY S RICHARDSON	957 327
19	10*22631	S	7-9-1	FREDA ELIZABETH BLAKE	966 632
20	10*21532	T	7-8-7	CHARLES E RICHARDSON AND SHIRLEY S RICHARDSON	1017 620
21	10*17930	U	7-9-22	BOUNTY MINERALS LLC	928 396
22	**	V	7-9-23	O E BURGE AND SARAH L BURGE ET AL	395 586

DETAIL  
SCALE: 1" = 500'



FILE NO. 8910P18HUR.dwg  
FITZGERALD S-18HU REV10

DATE MARCH 13, 2020

REVISED APRIL 13, 2020

OPERATORS WELL NO. FITZGERALD S-18HU

API WELL NO. 47 — 051 —  
STATE COUNTY PERMIT



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



P.S. 849 *C. Victor Moyers*

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

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

COUNTY NAME

PERMIT



WW-6A1  
(5/13)

Operator's Well No. Fitzgerald S-18HU

**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

**\*Co-tenancy utilization – At least 7 mineral owners in tract. At least 75% of the royalty owners have executed a lease on the tract. The interests of the remaining co-tenants were acquired pursuant to the Co-tenancy Modernization and Majority Protection Act.**

**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









10*16001	M	9-12-9	MARILYN D GARRN	TRINEROY HOLDINGS, LLC	1/8+	702	173	NA	NA	NA	24/180 Trifenergy Holdings LLC to 1848 LLC	24466 AB Resources LLC and 18041 LLC to Chief Exploration & Development LLC and Redner 2000 limited Partnership	3571 Chief Exploration & Development LLC Chief Oil & Gas LLC Redner 2000 limited Partnership and Enerplus Resources USA Chevron USA Inc	25105 Chief Exploration & Development LLC Chief Oil & Gas LLC Redner 2000 limited Partnership and Enerplus Resources to Chevron USA Inc	38765 Trifenergy Holdings LLC and Chevron USA Inc	30784 Chevron USA Inc to Statoil USA, Onshore Proprietor Inc	30732 Chevron USA Inc to Chesapeake Appalachia LLC	34710 Chesapeake Appalachia LLC to SWN Production Company	13422 Statoil USA Onshore Proprietor Inc to SWN Exchange Trilateral LLC	15102 SWN Exchange Trilateral LLC and SWN Production Company	16743 SWN Production Company LLC to TH	16743 SWN Production Company LLC to TH	36745 Statoil USA Onshore Proprietor Inc to TH Exploration LLC
10*28506	M	9-12-9	GARDNER	THE EXPLORATION, LLC	2/8+	1073	348	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*28510	M	9-12-9	LINDA S & THOMAS E BERNETT	THE EXPLORATION, LLC	1/8+	1073	350	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
PENDING	M	9-12-9	REBECCA LYNN RITZ AND THOMAS A RITZ	THE EXPLORATION, LLC	1/8+	1075	15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*24679	N	9-12-20	WARREN LAYTON ROBBINS	THE EXPLORATION, LLC	1/8+	1076	149	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*24881	N	9-12-20	AND KATHY M DOBBS	THE EXPLORATION, LLC	1/8+	1036	152	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*27095	N	9-12-20	BOUNTY MINERALS LLC	THE EXPLORATION, LLC	1/8+	1066	113	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*27097	N	9-12-20	BOUNTY MINERALS LLC THE WHIPPLE TRUSTS, ACTING TRUSTEES	THE EXPLORATION, LLC	1/8+	1066	101	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*23512	O	9-12-16	CAROL ELEAN WHIPKEY AND DAVID L WHIPKEY	THE EXPLORATION, LLC	1/8+	965	285	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*27176	O	9-12-16	WINGINA E VASHEV AND RANDOLPH HAHN	THE EXPLORATION, LLC	1/8+	960	516	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*22839	O	9-12-16	RANDOLPH HAHN	THE EXPLORATION, LLC	1/8+	960	516	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*28120	O	9-12-16	ELIZABETH JANE KELLEY	SWN PRODUCTION COMPANY LLC	1/8+	957	597	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*19308	P	9-12-19	ELIZABETH JANE KELLEY VIRGINIA E HAHN AND RANDOLPH HAHN	THE EXPLORATION, LLC	1/8+	957	335	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*21343	P	9-12-19	CAROL ELEAN WHIPKEY AND DAVID L WHIPKEY	THE EXPLORATION, LLC	1/8+	963	87	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*21411	P	9-12-19	PAMELA HOOVER AND PAMELA HOOVER	THE EXPLORATION, LLC	1/8+	957	348	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*21100	P	9-12-19	WOLSWAN WONG DATED AUGUST 21 1998	THE EXPLORATION, LLC	1/8+	933	625	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*23441	P	9-12-19	BOBBI LOGGSON	THE EXPLORATION, LLC	1/8+	1038	345	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*24803	P	9-12-19	SKAN LOU BIRNEY	THE EXPLORATION, LLC	1/8+	1038	342	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*23642	P	9-12-19	WILLIAM D McLUVIN & CAROLYN McLUVIN	THE EXPLORATION, LLC	1/8+	1009	139	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*28608	P	9-12-19	AND DEBRA R RICHARDSON	THE EXPLORATION, LLC	1/8+	1011	509	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*23609	P	9-12-19	HOLLY ANN HOBBS	THE EXPLORATION, LLC	1/8+	1011	507	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*28660	P	9-12-19	STEVEN G RUTLAND AND RONALD HILMAN	THE EXPLORATION, LLC	1/8+	1012	87	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*23824	P	9-12-19	GARY T RICHMOND AND DAVIDT RICHMOND AND ROBIN K RICHMOND	THE EXPLORATION, LLC	1/8+	1015	160	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*23815	P	9-12-19	RICHMOND	THE EXPLORATION, LLC	1/8+	1015	163	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*23814	P	9-12-19	KETIA A RICHMOND	THE EXPLORATION, LLC	1/8+	1016	609	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*24111	P	9-12-19	HUDY M RICHARDSON	THE EXPLORATION, LLC	1/8+	1021	149	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*24213	P	9-12-19	LAURET LOU LACRO	THE EXPLORATION, LLC	1/8+	1021	293	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*24427	P	9-12-19	LEONA B RICHMOND	THE EXPLORATION, LLC	1/8+	1024	293	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*28677	P	9-12-19	GLADYS VILARIN	THE EXPLORATION, LLC	1/8+	1025	548	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*27195	P	9-12-19	KARWIN D DOBBS AND AOA DOBBS	THE EXPLORATION, LLC	1/8+	1090	195	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*27695	P	9-12-19	ALMA L SIMPSON	THE EXPLORATION, LLC	1/8+	1057	363	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*27713	P	9-12-19	ANNE McLUVIN ET AL *	THE EXPLORATION, LLC	1/8+	1058	523	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*28092	P	9-12-19	WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS	THE EXPLORATION, LLC	1/8+	1073	370	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*28093	P	9-12-19	WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS	THE EXPLORATION, LLC	1/8+	1073	370	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
10*28094	P	9-12-19	WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS	THE EXPLORATION, LLC	1/8+	1073	370	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

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..	7-9-1	JAMES RICHARD BLAKE	CHESSAPEAKE APPALACHIA LLC	1/8*	759	7	31/125 Chesapeake Appalachia LLC to Stratol USA Onshore Properties	33/110 Chesapeake Appalachia LLC to SWN Production Company	33/424 Stratol USA Onshore Properties Inc to SWN Exchange	19/624 SWN Exchange Titiholder LLC and SWN LLC merger	** FORCE POOL
..	7-9-1	HUBERT EARL MORRIS	CHESSAPEAKE APPALACHIA LLC	1/8*	742	591	32/650 Chesapeake Appalachia LLC to Stratol USA Onshore Properties	33/110 Chesapeake Appalachia LLC to SWN Production Company	33/424 Stratol USA Onshore Properties Inc to SWN Exchange	19/624 SWN Exchange Titiholder LLC and SWN LLC merger	** FORCE POOL
..	7-9-1	HERMAN WALKER BLAKE AND EVELYN BLAKE	CHESSAPEAKE APPALACHIA LLC	1/8*	747	322	27/50 Chesapeake Appalachia LLC to Stratol USA Onshore Properties	33/110 Chesapeake Appalachia LLC to SWN Production Company	33/424 Stratol USA Onshore Properties Inc to SWN Exchange	19/624 SWN Exchange Titiholder LLC and SWN LLC merger	** FORCE POOL
..	7-9-1	GARY W MORRIS SAA GARY WAYNE MORRIS	CHESSAPEAKE APPALACHIA LLC	1/8*	745	230	32/650 Chesapeake Appalachia LLC to Stratol USA Onshore Properties	33/110 Chesapeake Appalachia LLC to SWN Production Company	33/424 Stratol USA Onshore Properties Inc to SWN Exchange	19/624 SWN Exchange Titiholder LLC and SWN LLC merger	** FORCE POOL
..	7-9-1	SAMUEL NELSON RICHMOND ESTATE AND DONNA LEE STEWART	CHESSAPEAKE APPALACHIA LLC	1/8*	754	564	31/125 Chesapeake Appalachia LLC to Stratol USA Onshore Properties	33/110 Chesapeake Appalachia LLC to SWN Production Company	33/424 Stratol USA Onshore Properties Inc to SWN Exchange	19/624 SWN Exchange Titiholder LLC and SWN LLC merger	** FORCE POOL
..	7-9-1	BRIAN L. BLAKE	CHESSAPEAKE APPALACHIA LLC	1/8*	746	289	33/110 Chesapeake Appalachia LLC to Stratol USA Onshore Properties	33/110 Chesapeake Appalachia LLC to SWN Production Company	33/424 Stratol USA Onshore Properties Inc to SWN Exchange	19/624 SWN Exchange Titiholder LLC and SWN LLC merger	** FORCE POOL
..	7-9-1	DAVID RANDALL MORRIS	CHESSAPEAKE APPALACHIA LLC	1/8*	742	699	27/50 Chesapeake Appalachia LLC to Stratol USA Onshore Properties	33/110 Chesapeake Appalachia LLC to SWN Production Company	33/424 Stratol USA Onshore Properties Inc to SWN Exchange	19/624 SWN Exchange Titiholder LLC and SWN LLC merger	** FORCE POOL
..	7-9-1	DAVID BLAKE	CHESSAPEAKE APPALACHIA LLC	1/8*	747	316	27/50 Chesapeake Appalachia LLC to Stratol USA Onshore Properties	33/110 Chesapeake Appalachia LLC to SWN Production Company	33/424 Stratol USA Onshore Properties Inc to SWN Exchange	19/624 SWN Exchange Titiholder LLC and SWN LLC merger	** FORCE POOL
..	7-9-1	DARL GORDON MORRIS	CHESSAPEAKE APPALACHIA LLC	1/8*	742	401	27/50 Chesapeake Appalachia LLC to Stratol USA Onshore Properties	33/110 Chesapeake Appalachia LLC to SWN Production Company	33/424 Stratol USA Onshore Properties Inc to SWN Exchange	19/624 SWN Exchange Titiholder LLC and SWN LLC merger	** FORCE POOL
..	7-9-1	DAVID MORRIS	CHESSAPEAKE APPALACHIA LLC	1/8*	933	3	33/424 Stratol USA Onshore Properties	33/424 Stratol USA Onshore Properties	33/424 Stratol USA Onshore Properties	33/424 Stratol USA Onshore Properties	** FORCE POOL
..	7-9-1	GEORGE R TAYLOR	SWM PRODUCTION COMPANY LLC	1/8*	931	644	33/424 Stratol USA Onshore Properties	33/424 Stratol USA Onshore Properties	33/424 Stratol USA Onshore Properties	33/424 Stratol USA Onshore Properties	** FORCE POOL
..	7-9-1	LARENCE TODD TAYLOR	SWM PRODUCTION COMPANY LLC	1/8*	932	25	33/424 Stratol USA Onshore Properties	33/424 Stratol USA Onshore Properties	33/424 Stratol USA Onshore Properties	33/424 Stratol USA Onshore Properties	** FORCE POOL
..	7-9-1	ROYALTY INC	ROYALTY INC	NA	UNLEASD		UNLEASD	UNLEASD	UNLEASD	UNLEASD	** FORCE POOL
..	7-9-1	GARY A HINDS JR	UNLEASD	NA	UNLEASD		UNLEASD	UNLEASD	UNLEASD	UNLEASD	** FORCE POOL
..	7-9-1	HOWARD PATTERSON	UNLEASD	NA	UNLEASD		UNLEASD	UNLEASD	UNLEASD	UNLEASD	** FORCE POOL
..	7-9-1	EULA M STEPHENS HENS	UNLEASD	NA	UNLEASD		UNLEASD	UNLEASD	UNLEASD	UNLEASD	** FORCE POOL
..	7-9-1	USA BRATTON	UNLEASD	NA	UNLEASD		UNLEASD	UNLEASD	UNLEASD	UNLEASD	** FORCE POOL
..	7-9-1	MARIE E BOWERS	UNLEASD	NA	UNLEASD		UNLEASD	UNLEASD	UNLEASD	UNLEASD	** FORCE POOL
..	7-9-1	THE STATE OF MARYEL	UNLEASD	NA	UNLEASD		UNLEASD	UNLEASD	UNLEASD	UNLEASD	** FORCE POOL
..	7-9-1	WILLIAM TAYLOR	UNLEASD	NA	UNLEASD		UNLEASD	UNLEASD	UNLEASD	UNLEASD	** FORCE POOL
..	7-9-1	WILLIAM TAYLOR	UNLEASD	NA	UNLEASD		UNLEASD	UNLEASD	UNLEASD	UNLEASD	** FORCE POOL
..	7-9-1	THOMAS E BOWERS	UNLEASD	NA	UNLEASD		UNLEASD	UNLEASD	UNLEASD	UNLEASD	** FORCE POOL
..	7-9-1	CLAUDINE STEELE HENS	UNLEASD	NA	UNLEASD		UNLEASD	UNLEASD	UNLEASD	UNLEASD	** FORCE POOL
..	7-9-1	BENRICE WISE HENS	UNLEASD	NA	UNLEASD		UNLEASD	UNLEASD	UNLEASD	UNLEASD	** FORCE POOL
..	7-9-1	STELLA DUGLIE	UNLEASD	NA	UNLEASD		UNLEASD	UNLEASD	UNLEASD	UNLEASD	** FORCE POOL
..	7-9-1	DOCKENDORFF	UNLEASD	NA	UNLEASD		UNLEASD	UNLEASD	UNLEASD	UNLEASD	** FORCE POOL
..	7-9-1	SHIRLEY ANN DAVIS	UNLEASD	NA	UNLEASD		UNLEASD	UNLEASD	UNLEASD	UNLEASD	** FORCE POOL
..	7-9-1	FREDA ELIZABETH BLAKE	UNLEASD	NA	UNLEASD		UNLEASD	UNLEASD	UNLEASD	UNLEASD	** FORCE POOL
..	7-9-1	VICKI JORDAN	UNLEASD	NA	UNLEASD		UNLEASD	UNLEASD	UNLEASD	UNLEASD	** FORCE POOL
..	7-9-1	CHARLES W DOBBS AND JUDITH W DOBBS	UNLEASD	NA	UNLEASD		UNLEASD	UNLEASD	UNLEASD	UNLEASD	** FORCE POOL
..	7-9-1	HERBERT FORNER AND DOTY BOWERS	UNLEASD	NA	UNLEASD		UNLEASD	UNLEASD	UNLEASD	UNLEASD	** FORCE POOL
..	7-9-1	DOY BOWERS	UNLEASD	NA	UNLEASD		UNLEASD	UNLEASD	UNLEASD	UNLEASD	** FORCE POOL
..	7-9-1	DOY BOWERS	UNLEASD	NA	UNLEASD		UNLEASD	UNLEASD	UNLEASD	UNLEASD	** FORCE POOL
..	7-9-1	KAREN I REBEL	UNLEASD	NA	UNLEASD		UNLEASD	UNLEASD	UNLEASD	UNLEASD	** FORCE POOL
..	7-9-1	KAREN I REBEL	UNLEASD	NA	UNLEASD		UNLEASD	UNLEASD	UNLEASD	UNLEASD	** FORCE POOL
..	7-9-1	HANCI J KERNON	UNLEASD	NA	UNLEASD		UNLEASD	UNLEASD	UNLEASD	UNLEASD	** FORCE POOL

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**ASSIGNMENT OF OIL AND GAS LEASES**

This ASSIGNMENT OF OIL AND GAS LEASES (the "Assignment") is made and entered into this 8th day of March, 2018 (the "Effective Date"), from **Blue Roan Resources, LLC**, a West Virginia limited liability company, having an address at 3437 University Avenue, Morgantown, WV, 26505 (hereinafter "Assignor"), and **TH Exploration, LLC**, a Texas limited liability company, having an address at 1320 S. University Drive, Suite 500, Fort Worth, TX 76107 (hereinafter "Assignee").

**WITNESSETH:**

**WHEREAS**, Assignor is the owner of the right, title, and interest in those certain Oil and Gas Leases situated in Marshall County, West Virginia, which are described in Exhibit "A" attached hereto and made a part hereof (hereinafter the "Leases"); and

**WHEREAS**, subject to the exceptions and reservations herein contained, Assignor desires to assign, set over, and transfer to Assignee all of Assignor's right, title, and interest in and to the Leases.

**NOW, THEREFORE**, for and in consideration of the sum of Ten Dollars (\$10.00), cash in hand paid, and other 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, subject to the terms, reservations, waivers and provisions as hereinafter set forth, an undivided interest of all of Assignor's right, title and interest in and to the Leases and all oil, natural gas, natural gas liquids, condensate, casinghead gas and other liquefied or gaseous hydrocarbons or products ("Hydrocarbons") thereby held, in any and all depths and formations ("Assigned Formations"), together with any and all other rights that are reasonably necessary or convenient to explore for and produce Hydrocarbons from the Assigned Formations, including, but not limited to, the right of surface access, use and occupancy, the right of ingress and egress, the right to conduct geophysical and other exploratory activities, the right to lay pipeline, the right to drill through, but not perforate or stimulate, all other depths and formations necessary for the purpose of reaching the Assigned Formations and to conduct operations therein.

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

2. Representations and Warranties. Assignor represents and warrants that such Assignor has not conveyed or otherwise encumbered its interest in the Leases since the time that Assignor obtained its interests in the Leases.

Assignor represents and warrants that, as to its interests in the Leases, Assignor has paid all royalties, overriding royalties, and other payments required by the Leases which were due for the period in which Assignor held its interests in the Leases, including, but not limited to, the interests assigned hereunder, and that Assignor has fully performed all conditions necessary to maintain the Leases in full force and effect during such period.

3. Successors and Assigns. The terms of this Assignment shall be binding upon and inure to the benefit of the parties hereto and each of their respective successors and assigns, and such terms shall be covenants running with the land, and with each subsequent transfer or assignment thereof.

4. Further Assurances. Assignor and Assignee hereby agree to take all actions and execute, acknowledge, and deliver all such instruments as are necessary or advisable to effectuate the purposes of this Assignment.

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**ASSIGNMENT AND CONVEYANCE**

This Assignment and Conveyance (this "*Assignment*") is from EQUINOR USA ONSHORE PROPERTIES INC., a Delaware corporation ("*Assignor*"), to TH Exploration, LLC, a Texas limited liability company ("*Assignee*"), and is executed on December 9, 2019 (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 November 1, 2019 (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 WARRANTY, EXPRESS, IMPLIED OR STATUTORY, INCLUDING AS TO (I) TITLE TO THE LEASEHOLD RIGHTS, (II) THE CONTENTS, CHARACTER OR NATURE OF ANY DESCRIPTIVE MEMORANDUM, OR ANY REPORT OF ANY OF ITS PETROLEUM ENGINEERING CONSULTANTS, OR ANY GEOLOGICAL OR SEISMIC DATA OR INTERPRETATION, RELATING TO THE LEASEHOLD RIGHTS, (III) THE QUANTITY, QUALITY OR RECOVERABILITY OF PETROLEUM SUBSTANCES IN OR FROM THE LEASEHOLD RIGHTS, (IV) THE EXISTENCE OF ANY PROSPECT, OR ANY RECOMPLETION, INFILL OR STEP-OUT DRILLING OPPORTUNITIES, (V) ANY ESTIMATES OF THE VALUE OF THE LEASEHOLD RIGHTS, (VI) THE PRODUCTION OF PETROLEUM SUBSTANCES FROM THE LEASEHOLD RIGHTS, OR ANY PRODUCTION OR DECLINE RATES, (VII) THE MAINTENANCE, REPAIR, CONDITION, QUALITY, SUITABILITY, DESIGN OR MARKETABILITY OF THE LEASEHOLD RIGHTS, (VIII) INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHT, AND (IX) ANY OTHER MATERIALS OR INFORMATION THAT MAY HAVE BEEN MADE AVAILABLE OR COMMUNICATED TO ASSIGNEE OR ITS AFFILIATES, OR ITS OR THEIR RESPECTIVE

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March 10, 2020

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

RE: Fitzgerald S-18HU

Subject: Marshall County Route 90 and 90/2 Road Crossing Letter

Dear Laura:

Tug Hill Operating, LLC (THO) hereby submits this letter as confirmation that THO has obtained the right to drill, extract and produce the minerals under Marshall County Route 90 and 90/2 in the area reflected on the Fitzgerald S-18HU well plat. THO has conducted a full title search in the relevant Court House to confirm its ownership under said County Routes and is not currently aware of any recorded document that would suggest an ownership other than THO.

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

Sincerely,

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

Amy L. Miller  
Permitting Specialist  
Appalachia Region

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WW-6AC  
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**STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE CERTIFICATION**

Date of Notice Certification: 05/23/2019

API No. 47- 051 -

Operator's Well No. Fitzgerald S-18HU

Well Pad Name: Fitzgerald

**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>530,720.88</u>
County:	<u>Marshall</u>	UTM NAD 83 Northing:	<u>4,405,750.00</u>
District:	<u>Liberty</u>	Public Road Access:	<u>Rines Ridge Road (County Route 76)</u>
Quadrangle:	<u>Glen Easton 7.5'</u>	Generally used farm name:	<u>Danny S. Kerns, et al</u>
Watershed:	<u>Upper Fish Creek</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 align="center"><b>OOG OFFICE USE ONLY</b></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:**

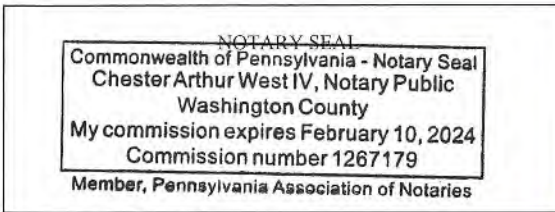
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication 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.

WW-6AC  
(1/12)

**Certification of Notice is hereby given:**

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

Well Operator:	<u>Tug Hill Operating, LLC</u>	Address:	<u>380 Southpointe Boulevard, Plaza II, Suite 200</u>
By:	<u>Amy L. Miller <i>Amy Miller</i></u>		<u>Canonsburg, PA 15317</u>
Its:	<u>Permitting Specialist - Appalachia 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 13<sup>th</sup> day of March 2020.

*[Signature]* Notary Public

My Commission Expires 2-10-2024

**Oil and Gas Privacy Notice:**

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

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**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:** 3/12/2020 **Date Permit Application Filed:** 3/13/2020

**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: Regina D. Figueroa  
 Address: 94 E. 700 N  
Valparaiso, IN 46383  
 Name: Danny S. Kerns \*See attached list  
 Address: 3500 West 80th Place  
Merrillville, IN 46410

SURFACE OWNER(s) (Road and/or Other Disturbance)  
 Name: Regina D. Figueroa  
 Address: 94 E. 700 N  
Valparaiso, IN 46383  
 Name: Danny S. Kerns \*See attached list  
 Address: 3500 West 80th Place  
Merrillville, IN 46410

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

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

COAL OPERATOR  
 Name: Murray American Energy, Inc. attn: Mason Smith  
 Address: 46226 National Road  
St. Clairsville, OH 43905

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)  
 Name: Danny R. Kerns \*See attached list  
 Address: 3500 West 80th Place  
Merrillville, IN 64610

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

\*Please attach additional forms if necessary

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 WV Department of  
 Environmental Protection



**Notice is hereby given:**

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

**This Notice Shall Include:**

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

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

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

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

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

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WV Department of Environmental Protection

**Well Location Restrictions**

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



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

**Water Well Testing:**

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

**Water Testing Laboratories:**

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

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

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

**Written Comment:**

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

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

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

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

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

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

**Comment Requirements**

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

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

**Permit Denial or Condition**

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

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

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

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

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WW-6A  
(8-13)

API NO. 47-051 - \_\_\_\_\_  
OPERATOR WELL NO. Fitzgerald S-18HU  
Well Pad Name: Fitzgerald \_\_\_\_\_

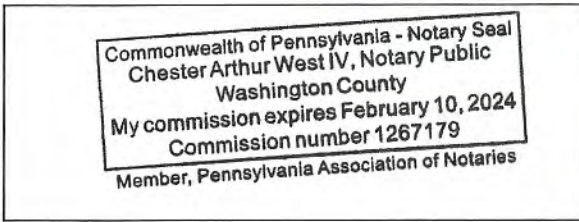
**Notice is hereby given by:**

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

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

**Oil and Gas Privacy Notice:**

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



Subscribed and sworn before me this 11<sup>th</sup> day of MARCH, 2020.  
[Signature] Notary Public  
My Commission Expires 2-10-2024

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## Exhibit WW-6A

## Supplement Pg. 1A

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

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

Well: Fitzgerald S – 18HU  
 District: Liberty  
 State: WV

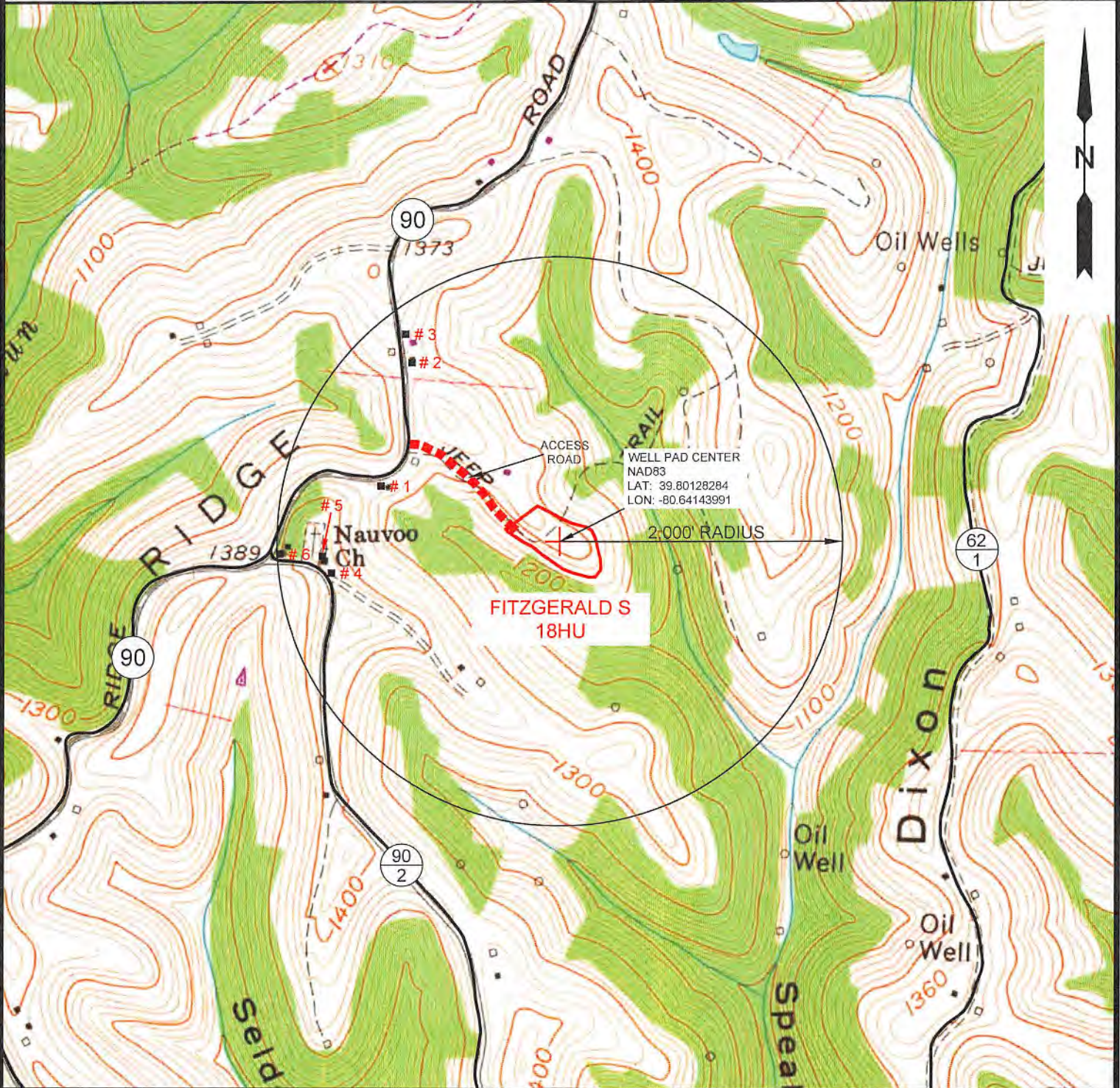
There are four (4) residences, one (1) business or commercial site, one (1) church, no schools or no emergency facilities within two-thousand feet (2,000') of the above referenced well location.

<p><b>Residence (#1)</b>            TM 9 Pcl. 14            Danny R. Kerns, Et Al            Phone: 219-887-6761 (Reverse Address – David A. &amp; Regina D. Figueroa)  <b>Physical Address:</b>            1352 Nauvoo Ridge Rd.            Cameron, WV 26033  <b>Tax Address:</b>            94 E 700 N            Valparaiso, IN 46383</p>	<p><b>Residence (#2)</b>            TM 9 Pcl. 12.1            Jessica R. &amp; David A. II Dempewolf            Phone: 304-810-0500 (Reverse Address – Jolene Morris)  <b>Physical Address:</b>            1180 Nauvoo Ridge Rd.            Cameron, WV 26033  <b>Tax Address:</b>            Same</p>	<p><b>Residence (#3)</b>            TM 9 Pcl. 12            Gary W. Morris            c/o Gary Morris &amp; Cynthia Patrello            Phone: None Found  <b>Physical Address:</b>            1156 Nauvoo Ridge Rd.            Cameron, WV 26033  <b>Tax Address:</b>            Same</p>
<p><b>Business/Commercial Site (#4)</b>            TM 12 Pcl. 14            Consol Mining Co. LLC            Consolidation Coal Company            c/o Murray Energy c/o Land Dept.  <b>Physical Address:</b>            90 The Corner Ln.            Glen Easton, WV 26039            (Appears to be an underground mine vent or fan site or other related infrastructure)  <b>Tax Address:</b>            46226 National Rd.            Saint Clairsville, OH 43950</p>	<p><b>Church (#5)</b>            TM 9 Pcl. 15            Trustees of the Reorganized Church of Latter Day Saints            Phone: None  <b>Physical Address:</b>            88 The Corner Ln.            Glen Easton, WV 26039  <b>Tax Address:</b>            Exempt/None</p>	<p><b>Residence (#6)</b>            TM 9 Pcl. 22            Gary W. Morris            Phone: None Found  <b>Physical Address:</b>            1556 Nauvoo Ridge Rd.            Cameron, WV 26033  <b>Tax Address:</b>            1156 Nauvoo RDG            Glen Easton, WV 26039</p>



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# PROPOSED FITZGERALD S - 18HU



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

 <p>12 Vanhorn Drive   P.O. Box 150   Glenville, WV 26351   304.462.5634 1412 Kanawha Boulevard, East   Charleston, WV 25301   304.346.3952 254 East Beckley Bypass   Beckley, WV 25801   304.255.5296 sllsw.com</p>	<b>TOPO SECTION:</b> GLEN EASTON 7.5' & CAMERON 7.5'		<b>OPERATOR:</b> PREPARED FOR: TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317	
	COUNTY	DISTRICT	 <b>TUG HILL OPERATING</b>	
	MARSHALL	LIBERTY & MEADE		
	<b>DRAWN BY</b> K.G.M.	<b>JOB NO.</b> 8910	<b>DATE</b> 03/03/2020	<b>SCALE</b> 1" = 1000'



7019 0700 0001 7175 6056

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Extra Services & Fees (check box, add fee as appropriate)

Return Receipt (hardcopy) \$

Return Receipt (electronic) \$

Certified Mail Restricted Delivery \$

Adult Signature Required \$

Adult Signature Restricted Delivery \$

Postage  
 \$

Total \$ Regina Figuerora  
 Sent \$ 94 E. 700 N  
 Street Valparaiso, IN 46383  
 City

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MUSE PA 15350  
 MAR 12 2020  
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 USPS

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Return Receipt (electronic) \$

Certified Mail Restricted Delivery \$

Adult Signature Required \$

Adult Signature Restricted Delivery \$

Postage  
 \$

Total \$ Danny S. Kerns  
 Sent \$ 3500 West 80h Place  
 Street Merrillville, IN 46410  
 City

PS Form 3800, April 2019 See instructions for Instructions

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 MAR 12 2020  
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 USPS

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Return Receipt (electronic) \$

Certified Mail Restricted Delivery \$

Adult Signature Required \$

Adult Signature Restricted Delivery \$

Postage  
 \$

Total \$ Consol Energy  
 Sent \$ Attn: Casey Saunders  
 Street 1000 Consol Energy Drive  
 City Canonsburg, PA 15317

PS Form 3800, April 2019 See instructions for Instructions

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 MAR 12 2020  
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Return Receipt (hardcopy) \$

Return Receipt (electronic) \$

Certified Mail Restricted Delivery \$

Adult Signature Required \$

Adult Signature Restricted Delivery \$

Postage  
 \$

Total \$ Murray American Energy, Inc.  
 Sent \$ Attn: Mason Smith  
 Street 46226 National Road  
 City St. Clairsville, OH 43905

PS Form 3800, April 2019 See instructions for Instructions

MUSE PA 15350  
 MAR 12 2020  
 Postmark Here  
 USPS

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Extra Services & Fees (check box, add fee as appropriate)

Return Receipt (hardcopy) \$

Return Receipt (electronic) \$

Certified Mail Restricted Delivery \$

Adult Signature Required \$

Adult Signature Restricted Delivery \$

Postage  
 \$

Total \$ Jessica R. and David A. II Dempewolf  
 Sent \$ 1180 Nauvoo Ridge Road  
 City Cameron, WV 26033

PS Form 3800, April 2019 See instructions for Instructions

MUSE PA 15350  
 MAR 12 2020  
 Postmark Here  
 USPS

7019 0700 0001 7175 6119

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 \$

Extra Services & Fees (check box, add fee as appropriate)

Return Receipt (hardcopy) \$

Return Receipt (electronic) \$

Certified Mail Restricted Delivery \$

Adult Signature Required \$

Adult Signature Restricted Delivery \$

Postage  
 \$

Total \$ Gary W. Morris  
 Sent \$ 1156 Yauvoo Ridge Road  
 City Cameton, WV 26033

PS Form 3800, April 2019 See instructions for Instructions

MUSE PA 15350  
 MAR 12 2020  
 Postmark Here  
 USPS

7019 0700 0001 7175 6126

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For delivery information, visit our website at [www.usps.com](http://www.usps.com)™.

**OFFICIAL USE**

Certified Mail Fee  
 \$

Extra Services & Fees (check box, add fee as appropriate)

Return Receipt (hardcopy) \$

Return Receipt (electronic) \$

Certified Mail Restricted Delivery \$

Adult Signature Required \$

Adult Signature Restricted Delivery \$

Postage  
 \$

Total \$ Trustees of the Reorganized Church of  
 Sent \$ Latter-Day Saints  
 Street 88 The Corner Lane  
 City Glen Easton, WV 26039

PS Form 3800, April 2019 See instructions for Instructions

MUSE PA 15350  
 MAR 12 2020  
 Postmark Here  
 USPS

7019 0700 0001 7175 6096

U.S. Postal Service™  
**CERTIFIED MAIL® RECEIPT**  
 Domestic Mail Only

For delivery information, visit our website at [www.usps.com](http://www.usps.com)™.

**OFFICIAL USE**

Certified Mail Fee  
 \$

Extra Services & Fees (check box, add fee as appropriate)

Return Receipt (hardcopy) \$

Return Receipt (electronic) \$

Certified Mail Restricted Delivery \$

Adult Signature Required \$

Adult Signature Restricted Delivery \$

Postage  
 \$

Total \$ Deena J. Palomo  
 Sent \$ 20 Maxwell St.  
 Street Apt. 4  
 City Hebron, IN 46341

PS Form 3800, April 2019 See instructions for Instructions

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 MAR 12 2020  
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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:** 4/24/2019      **Date of Planned Entry:** 5/3/2019

**Delivery method pursuant to West Virginia Code § 22-6A-10a**

- PERSONAL SERVICE     
 REGISTERED MAIL     
 METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to West Virginia Code § 22-6A-10(a), Prior to filing a permit application, the operator shall provide notice of planned entry on to the surface tract to conduct any plat surveys required pursuant to this article. Such notice shall be provided at least seven days but no more than forty-five days prior to such entry to: (1) The surface owner of such tract; (2) to any owner or lessee of coal seams beneath such tract that has filed a declaration pursuant to section thirty-six, article six, chapter twenty-two of this code; and (3) any owner of minerals underlying such tract in the county tax records. The notice shall include a statement that copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, which statement shall include contact information, including the address for a web page on the Secretary's web site, to enable the surface owner to obtain copies from the secretary.

**Notice is hereby provided to:**

SURFACE OWNER(s)

Name: Regina D. Figueroa  
Address: 94 E 700 N  
Valparaiso, IN 46383

Name: Danny S. Kerns  
Address: 3500 West 80th Pl.  
Merrillville, IN 46410

Name: Deena J. Palomo  
Address: 20 Maxwell St., Apt. 4  
Hebron, IN 46341

COAL OWNER OR LESSEE

Name: Consol Energy Attn: Casey Saunders  
Address: 1000 Consol Energy Drive  
Canonsburg, PA 15317

MINERAL OWNER(s)

Name: Regina D. Figueroa  
Address: 94 E 700 N  
Valparaiso, IN 46383 \*See attached list  
\*please attach additional forms if necessary

**Notice is hereby given:**

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

State: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>39.80128284; -80.64143991</u>
County: <u>Marshall</u>	Public Road Access: <u>County Route 90</u>
District: <u>Liberty</u>	Watershed: <u>Upper Fish Creek</u>
Quadrangle: <u>Glen Easton 7.5'</u>	Generally used farm name: <u>Danny &amp; Frances Kerns Estate</u>

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

**Notice is hereby given by:**

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

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

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MAR 17 2020  
WV Department of  
Environmental Protection

**Oil and Gas Privacy Notice:**

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

WW-6A3 NOTICE OF ENTRY FOR PLAT SURVEY  
FITZGERALD PAD

MINERAL OWNERS

Danny S. Kerns  
3500 West 80<sup>th</sup> Pl.  
Merrillville, IN 46410

Deena J. Palomo  
20 Maxwell Street, Apt. 4  
Hebron, IN 46341

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WW-6A5  
(1/12)

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

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

**Date of Notice:** 03/12/2020      **Date Permit Application Filed:** 03/13/2020

**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: Regina D. Figueroa  
Address: 94 E 700 N  
Valparaiso, IN 46383

Name: Danny S. Kerns  
Address: 3500 West 80th Pl  
Merrillville, IN 46410

**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>530,720.88</u>
County:	<u>Marshall</u>		Northing:	<u>4,405,750.00</u>
District:	<u>Liberty</u>	Public Road Access:	<u>Rines Ridge Road (County Route 76)</u>	
Quadrangle:	<u>Glen Easton 7.5'</u>	Generally used farm name:	<u>Danny R. Kerns, et al</u>	
Watershed:	<u>Upper Fish Creek (HUC 10)</u>			

**This Notice Shall Include:**

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

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

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

**Oil and Gas Privacy Notice:**

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

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**Additional Party to Notice**  
**WW-6A5**  
**Fitzgerald Pad**

Deana J. Palomo  
20 Maxwell Street, Apt. 4  
Hebron, IN 46341

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

**Division of Highways**

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

February 27, 2020 ✓

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

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

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

Subject: DOH Permit for the Fitzgerald Pad, Marshall County  
Fitzgerald S-18HU Well Site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2019-0351 which has been issued to Tug Hill Operating, LLC for access to the State Road for a well site located off Marshall County Route 90 SLS.

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

Very Truly Yours,

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

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MAR 17 2020

WV Department of  
Environmental Protection

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



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

Well No. Fitzgerald S-18HU

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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