



west virginia department of environmental protection

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

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Friday, July 13, 2018
WELL WORK PERMIT
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
380 SOUTHPOINTE BOULEVARD, PLAZA II
SUITE 200
CANNONSBURG, PA 15317

Re: Permit approval for TEN HIGH 1S-17HU
47-051-02033-00-00

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: TEN HIGH 1S-17HU
Farm Name: LAWRENCE & SHIRLEY CON.
U.S. WELL NUMBER: 47-051-02033-00-00
Horizontal 6A New Drill
Date Issued: 7/13/2018

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

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.



west virginia department of environmental protection

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

Barry K. Lay, Chairman
dep.wv.gov

June 21, 2018

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

RE: Application for Deep Well Permit – API #47-051-02033

COMPANY: Tug Hill Operating, LLC

FARM: Tug Hill Operating, LLC Ten High 1S-17HU


COUNTY: Marshall DISTRICT: Meade QUAD: Glen Easton 7.5'

The deep well review of the application for the above company is **Approved to drill to Trenton for Point Pleasant completion.**

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, but withdrawn prior to exception location hearing.
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: Heaven Hill 3-8HU 47-051-01967; Ten High 1N-11HU 47-051-01960; Ten High 1N-12HU 47-051-01961; Ten High 1N-13HU 47-051-01965
4. Provided a plat showing that the proposed location is a distance of 400+ feet from the nearest lease line or unit boundary and showing the following wells drilled to or capable of producing from the objective formation within 3,000 feet of the proposed location.

Sincerely,


Susan Rose
Administrator

WW-6B
(04/15)

API NO. 47-051 -
OPERATOR WELL NO. Ten High 1S-17HU
Well Pad Name: Ten High

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

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

2) Operator's Well Number: Ten High 1S-17HU Well Pad Name: Ten High

3) Farm Name/Surface Owner: Lawrence & Shirley Conkle, ests Public Road Access: Shepherd Ridge Lane CR 21/9

4) Elevation, current ground: 1310' Elevation, proposed post-construction: 1310' ✓

5) Well Type (a) Gas Oil _____ Underground Storage _____
Other _____
(b) If Gas Shallow _____ Deep
Horizontal

Handwritten signature and date: 4/12/18

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Point Pleasant is the target formation at a depth of 11,589' - 11,728' thickness of 139' and anticipated pressure of approx. 9500 psi

8) Proposed Total Vertical Depth: 11,878'

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 17,519'

11) Proposed Horizontal Leg Length: 5,070'

12) Approximate Fresh Water Strata Depths: 70', 1026' ✓

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: Sewickly Coal - 935' and Pittsburgh Coal - 1020'

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

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

(a) If Yes, provide Mine Info: Name: Marshall County Coal Co. / Marshall County Mine
Depth: 1020' TVD and 290' subsea level
Seam: Pittsburgh #8
Owner: Murray Energy / Consolidated Coal Co.

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18)

CASING AND TUBING PROGRAM

TYPE	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	30"	NEW	BW	BW	125'	125'	270FT^3(CTS)
Fresh Water	20"	NEW	J55	106.5#	1,086'	1,086'	1,747ft^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	2,800'	2,800'	1,976ft^3(CTS)
Intermediate	9 5/8"	NEW	HPP110	47#	10,839'	10,839'	3,534ft^3(CTS)
Production	5 1/2"	NEW	P110	23#	17,519'	17,519'	4,197ft^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		12,304'	
Liners							

ju
5/22/18

TYPE	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
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	11,624		
Liners							

PACKERS

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

WW-6B
(10/14)

API NO. 47-051 -
OPERATOR WELL NO. Ten High 1S-17HU
Well Pad Name: Ten High

John
4/12/18

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. 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 12,675,000 lb proppant and 195,965 bbl of water. Max rate = 80 bpm; max psi = 10,000#. ✓

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 16.2

22) Area to be disturbed for well pad only, less access road (acres): 5.92

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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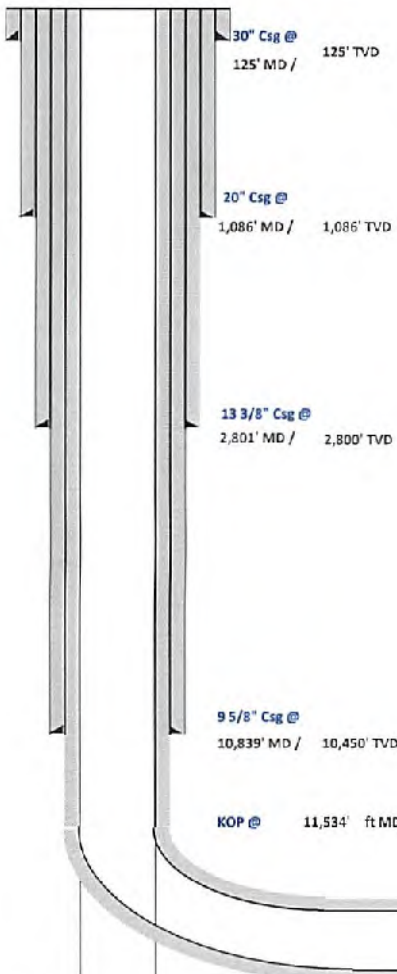
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*Note: Attach additional sheets as needed.



WELL NAME: Ten High 15-17HU
STATE: West Virginia
DISTRICT: Meade
DF Elev: 1,310'
TD: 17,519'
TH Latitude: 39.80677792
TH Longitude: -80.68083671
BH Latitude: 39.79782200
BH Longitude: 80.66227900
COUNTY: Marshall
GL Elev: 1,310'



FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	1,026'
Sewickley Coal	935'
Pittsburgh Coal	1,020'
Big Lime	2,049'
Berea	2,673'
Tully	6,606'
Marcellus	6,713'
Onondaga	6,765'
Salina	7,497'
Lockport	8,562'
Utica	11,413'
Point Pleasant	11,589'
Landing Depth	11,653'
Trenton	11,728'
Pilot Hole TD	11,878'

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	125'	125'	BW	BW	Surface
Surface	26	20	1,086'	1,086'	106.5	J55	Surface
Intermediate 1	17 1/2	13 3/8	2,801'	2,800'	54.5	J55	Surface
Intermediate 2	12 1/4	9 5/8	10,839'	10,450'	47	HPP110	Surface
Production	8 1/2	5 1/2	17,519'	11,742'	23	HCP110	Surface

	CEMENT SUMMARY			DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	350	A	15.6	Air	None
Surface	1,882	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	2,140	A	15	Air	1 Centralizer every other jt
Intermediate 2	2,861	A	14.5	Air	1 Centralizer every other jt
Production	3,596	A	15	Air / SOB M	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc

Pilot Hole
 PH TD @ 11,878'
 Landing Point @ 12,449' MD / 11,653' TVD
 PH TVD = 150' below Trenton Top

Lateral TD @ 17,519' ft MD
 11,742' ft TVD

Handwritten signature and date: JAC 4/12/18

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Handwritten vertical text: 51-02033

WW6B Attachment to #24. (REV 02/22/17)

Conductor and Surface Casing Cement:

Premium NE-1 + 2% CaCl

- Premium NE-1 – Class A Portland API Spec
- CaCl – Calcium Chloride

Intermediate Casing:

Premium NE-1 + 1.5% CaCl + Flake

- Premium NE-1 – Class A Portland API spec
- CaCl – Calcium Chloride
- CelloFlake

Intermediate Casing (13-3/8", 9-5/8"):

Lead: *Premium NE-1 + 5% BA-90 + .85% R-3 + 3% KCl + .75 gals/100sk FP-13L + 1% MPA-170*

Tail: *Premium NE-1 +.1% R-3 + 5% KCl + 1% CD-32 + .4% FL-52 +.2% ASA-301 + .6% Sodium Metasilicate*

- Premium NE-1 – Class A Portland API spec
- BA-90 – Gas Migration Mitigator
- R-3 – Cement Retarder
- KCl – Potassium Chloride
- FP-13L – Anti-Foaming Agent
- MPA-170 – Gelling Agent
- CD-32 – Dispersant
- FL-52 – Fluid Loss Agent
- ASA-301 – Free Water Control Agent
- Sodium Metasilicate – Extending Agent

Kick Off Plug:

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

- CD-32 – Dispersant
- Sodium Metasilicate – Extending Agent
- R-3 – Cement Retarder
- FP-13L – Anti-Foaming Agent

Production Casing Cement:

Lead: *50:50 (Poz:Class H) + .3% R-3 + .3% MPA-250 + .75 gal/100sk FP-13L*

Tail: *25:75 (Poz:Class H) + .3% R-3 + .3% MPA-250 + .375 gal/100sk FP-13L*

- R-3 – Cement Retarder
- MPA-250 – Gelling Agent
- FP-13L – Anti-Foaming Agent

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Tug Hill Operating, LLC Casing and Cement Program

Ten High 1S-17HU

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	125'	CTS
Surface	20"	J55	26"	1,086'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	2,801'	CTS
Intermediate 2	9 5/8"	HPP110	12 1/4"	10,839'	CTS
Production	5 1/2"	HCP110	8 1/2"	17,519'	CTS

Cement

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

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

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

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

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

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

Data Sources Reviewed:

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

Contacted Devin Ducoeur 724-705-0444, dducoeur@dpslandservices.com DPS GIS (12/19/2016) 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

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

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

51-02033

Permit well - Ten High 1S-17HU

Wells within 500' Buffer

Note: Well spots depicted on Area of Review map (page 3) are derived from State held coordinates. The spots may differ from those depicted on the Well Plat because the Plat locations represent actual field surveyed locations. Please refer to the Plat for surveyed well spots

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

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
4705101935	Tug Hill Operating	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101944	Tug Hill Operating	6737' TVD planned	None	None	No, Permit submitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101945	Tug Hill Operating	6737' TVD planned	None	None	No, Permit submitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101943	Tug Hill Operating	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101964	Tug Hill Operating	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101973	Tug Hill Operating	6737' TVD planned	None	None	No, Permit submitted Marcellus well	Permit submitted Marcellus well. Not yet drilled
4705101974	Tug Hill Operating	6737' TVD planned	None	None	No, Permit submitted Marcellus well	Permit submitted Marcellus well. Not yet drilled
4705101975	Tug Hill Operating	6737' TVD planned	None	None	No, Permit submitted Marcellus well	Permit submitted Marcellus well. Not yet drilled
4705101976	Tug Hill Operating	6737' TVD planned	None	None	No, Permit submitted Marcellus well	Permit submitted Marcellus well. Not yet drilled
4705101960	Tug Hill Operating	11878' TVD planned	None	None	No, Permit submitted Utica well	Permit submitted Utica well. Not yet drilled
4705101961	Tug Hill Operating	11878' TVD planned	None	None	No, Permit submitted Utica well	Permit submitted Utica well. Not yet drilled
4705101965	Tug Hill Operating	11878' TVD planned	None	None	No, Permit submitted Utica well	Permit submitted Utica well. Not yet drilled
4705101966	Tug Hill Operating	11878' TVD planned	None	None	No, Permit submitted Utica well	Permit submitted Utica well. Not yet drilled
4705101934	Tug Hill	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101935	Tug Hill	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705100837	McElroy Coal Co	Unknown	Unknown	Unknown	Unknown but unlikely, most likely an old shallow well. Well has been plugged.	Well records are incomplete. Well was plugged 9/16/1998
4705140031	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely, most likely an old shallow well or Pittsburgh coal test bore	Well records incomplete. Pittsburgh Coal listed under Stratigraphy Info.

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WVGES
"Pipeline"

Select County: (051) Marshall
Enter Permit #: 00837
Get Data Reset

Select datatypes: (Check All)
 Location Production Plugging
 Owner/Completion Stratigraphy Sample
 Pay/ShowWater Logs Blow Hole Log

[Table Definitions](#)
[County Code Translations](#)
[Permit Numbering Schemas](#)
[License Types](#)
[Completions Information](#)
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[Feedback Page](#) **New**

WV Geological & Economic Survey **Well: County = 51 Permit = 00837**

Well Reassignment Information: Reassigned From

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	1043	51	037

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
4705100837	Marshall	037	Meigs	04N	04E	80 50 16	-80 07 47.6	527541	440952.4

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PR
4705100837	0/15/1998		Plugging Completed	James L Rines	95-8	(14-37)			McElroy Coal Company	

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TS
4705100837	0/15/1998	0/5/1998	1207	Ground Level						not available	Unknown	unknown

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

Plugging Information:

API	PLOG_DT	DEPTH_FBT
4705100837	0/15/1998	0

There is no Sample data for this well

WVGES
"Pipeline"

Select County: (051) Marshall
Enter Permit #: 40031
Get Data Reset

Select datatypes: (Check All)
 Location Production Plugging
 Owner/Completion Stratigraphy Sample
 Pay/ShowWater Logs Blow Hole Log

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WV Geological & Economic Survey **Well: County = 51 Permit = 40031**

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
4705140031	Marshall	40031	Meigs	04N	04E	80 50 16	-80 07 47.6	527541	440952.4

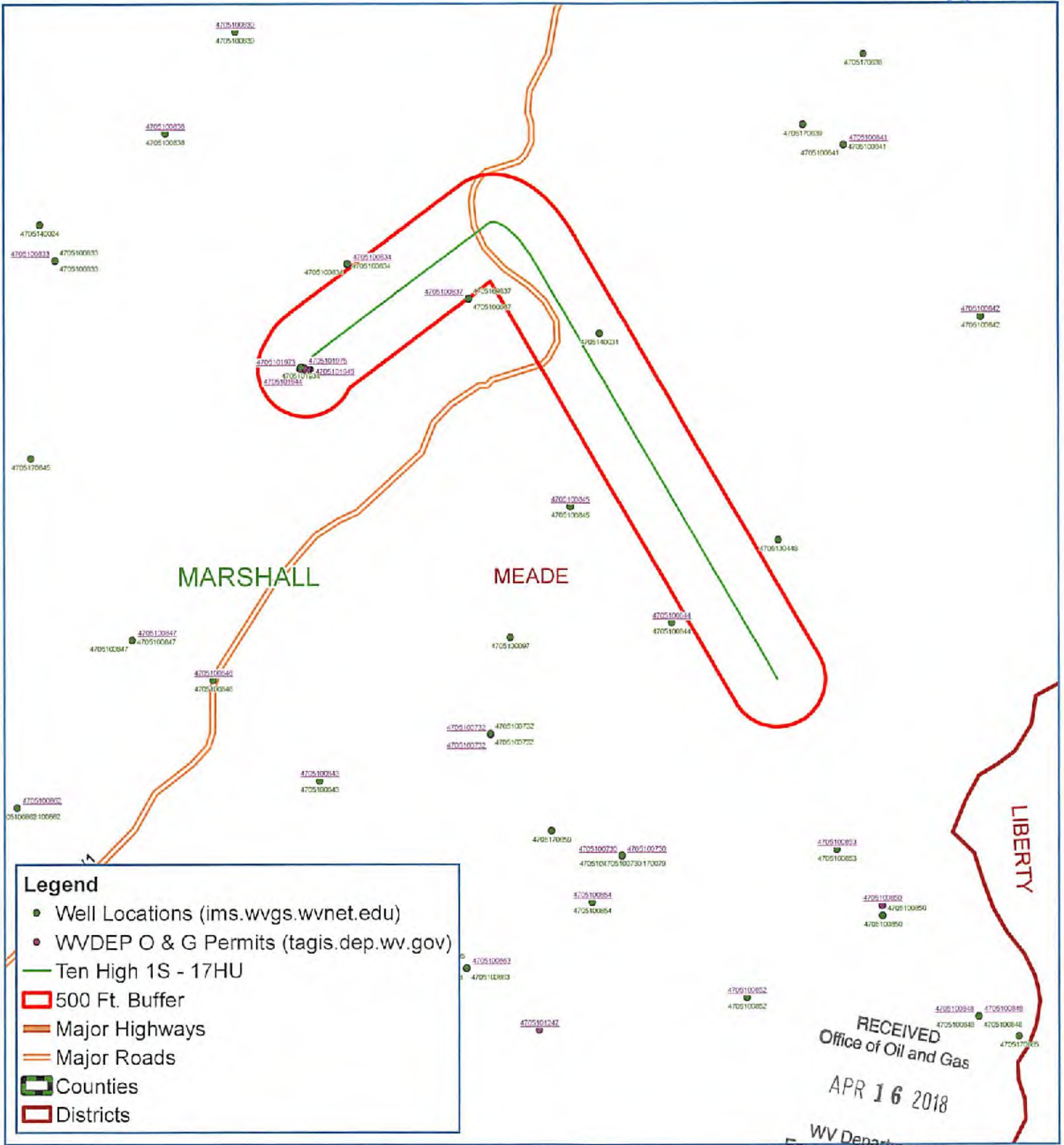
There is no Bottom Hole Location data for this well
 There is no Owner/Completion data for this well
 There is no Pay data for this well
 There is no Production Gas data for this well
 There is no Production Oil data for this well ** some operators may have reported NGL under Oil
 There is no Production NGL data for this well ** some operators may have reported NGL under Oil
 There is no Production Water data for this well

Stratigraphy Information:

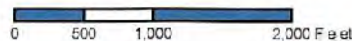
API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV DATUM			
4705140031		Original Loc	Pittsburgh coal	C8M	Dill Hole	1000	Reasonable	0	Marg/Repeated	1242	unknown

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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Environmental Protection



Ten High 1S - 17HU Meade District Marshall County, WV



Map Created: April 2, 2018
Map Current As Of: April 2, 2018

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



S1-02033



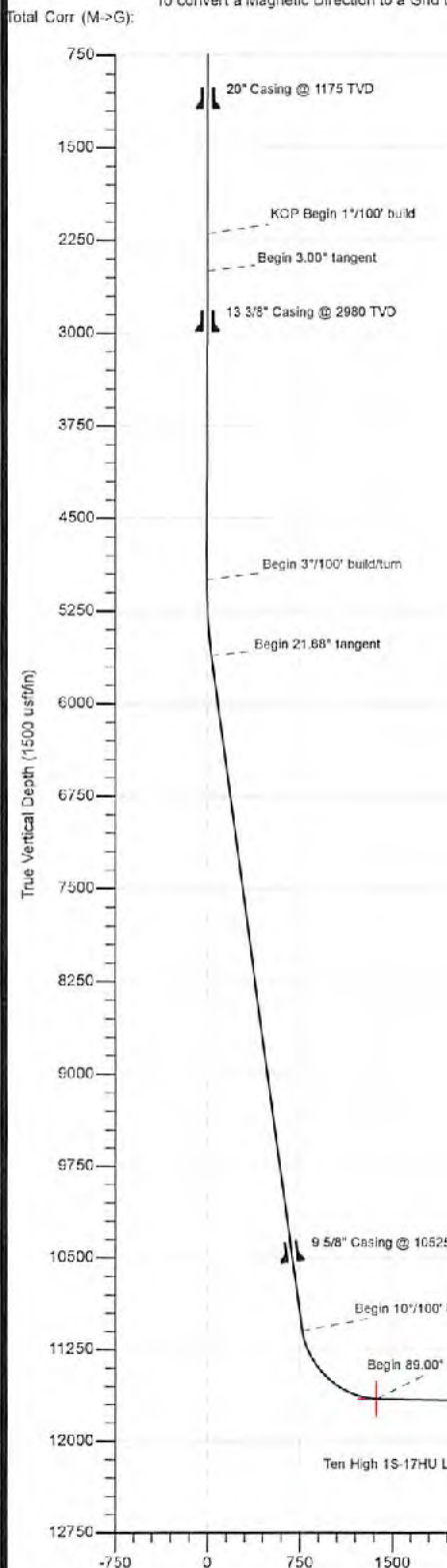
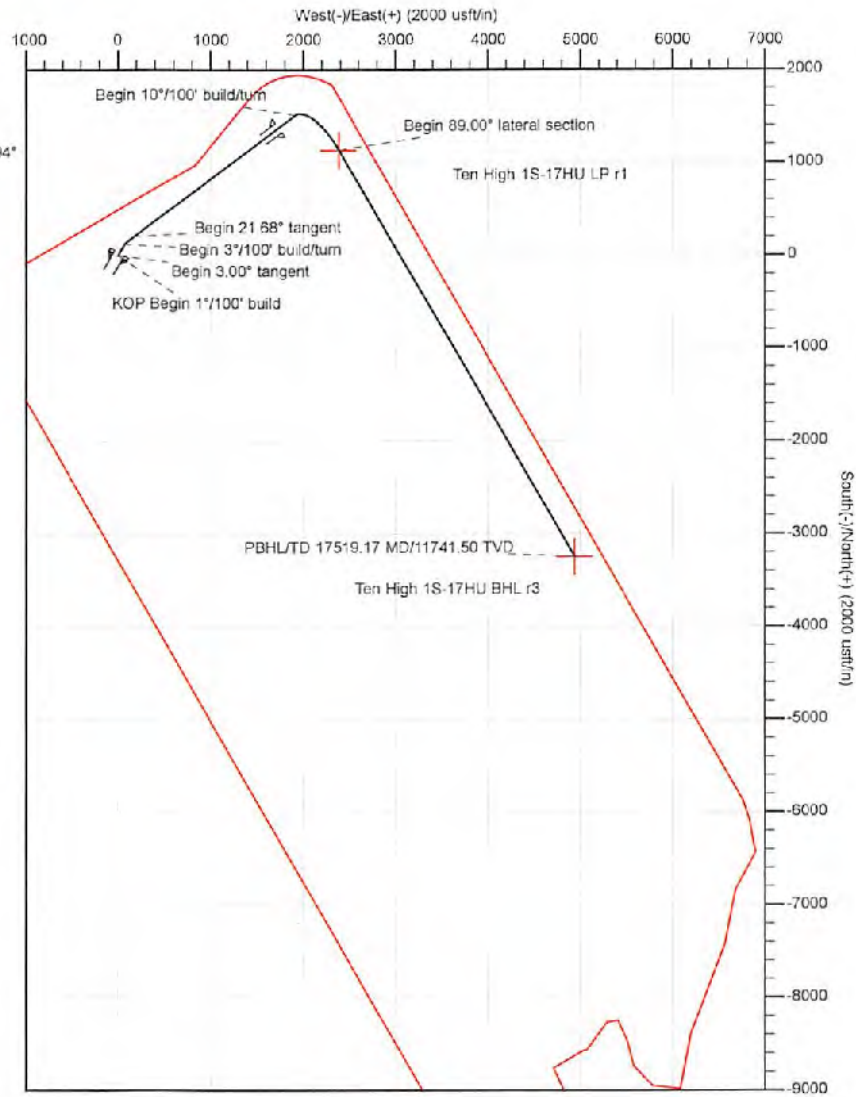
Well: Ten High 1S-17HU (E)
 Site: Ten High
 Project: Marshall County, West Virginia
 Design: rev3

Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: NAD03 West Virginia - HARN
 Ellipsoid: GRS 1980
 Zone: Zone 17N (64 W to 78 W)

System Datum: Mean Sea Level
 Depth Reference: GL=1310 @ 1310.00usft

Northing 14456534.51 Easting 1730050.15 Latitude 39.80677792 Longitude -80.68083671

To convert a Magnetic Direction to a Grid Direction, Subtract 8.94°



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSec	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2200.00	0.00	0.00	2200.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 1°/100° build
3	2500.00	3.00	30.00	2495.86	6.90	3.93	1.00	30.00	-0.45	Begin 3.00° tangent
4	3000.00	3.00	30.00	2995.18	29.46	17.01	0.00	0.00	-1.94	
5	5003.57	3.00	30.00	5000.00	120.27	69.44	0.00	0.00	-7.91	Begin 3°/100° build/turn
6	5635.51	21.68	53.17	4614.77	205.34	172.08	3.00	28.58	31.25	Begin 21.68° tangent
7	11534.43	21.68	53.17	11095.37	1511.62	1916.50	0.00	0.00	773.29	Begin 10°/100° build/turn
8	12449.24	89.00	149.71	11653.00	1134.19	2386.86	10.00	66.45	1373.60	Begin 89.00° lateral section
9	17519.17	89.00	149.71	11741.50	-3243.04	4943.45	0.00	0.00	5912.28	PBH/1TD 17519.17 MD/11741.50 TVD



Azimuths to Grid North
 True North: -0.20°
 Magnetic North: -8.94°
 Magnetic Field
 Strength: 52090.45nT
 Dip Angle: 66.90°
 Date: 3/29/2018
 Model: IGRF2015

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Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Ten High 1S-17HU (E)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1310 @ 1310.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1310 @ 1310.00usft
Site:	Ten High	North Reference:	Grid
Well:	Ten High 1S-17HU (E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

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

Site	Ten High				
Site Position:		Northing:	14,456,545.60 usft	Latitude:	39.80680885
From:	Lat/Long	Easting:	1,730,001.41 usft	Longitude:	-80.68101011
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.20 °

Well	Ten High 1S-17HU (E)					
Well Position	+N-S	0.00 usft	Northing:	14,456,534.51 usft	Latitude:	39.80677792
	+E-W	0.00 usft	Easting:	1,730,050.15 usft	Longitude:	-80.68083671
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	1,310.00 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	3/29/2018	-8.73	66.90	52,090.36924975

Design	rev3			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (°)
	0.00	0.00	0.00	123.27

Plan Survey Tool Program	Date 3/28/2018			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	17,519.17 rev3 (Original Hole)	MWD	
			MWD - Standard	

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,500.00	3.00	30.00	2,499.86	6.80	3.93	1.00	1.00	0.00	30.00	
3,000.00	3.00	30.00	2,999.18	29.46	17.01	0.00	0.00	0.00	0.00	
5,003.57	3.00	30.00	5,000.00	120.27	69.44	0.00	0.00	0.00	0.00	
5,635.51	21.68	53.17	5,614.77	205.34	172.08	3.00	2.96	3.67	26.58	
11,534.43	21.68	53.17	11,096.37	1,511.62	1,916.50	0.00	0.00	0.00	0.00	
12,449.24	89.00	149.71	11,653.00	1,134.19	2,386.87	10.00	7.36	10.55	96.45	
17,519.17	89.00	149.71	11,741.50	-3,243.04	4,943.45	0.00	0.00	0.00	0.00	

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Planning Report - Geographic

Database:	DB_Jul2218dt_v14	Local Co-ordinate Reference:	Well Ten High 1S-17HU (E)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1310 @ 1310.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1310 @ 1310.00usft
Site:	Ten High	North Reference:	Grid
Well:	Ten High 1S-17HU (E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.00	0.00	0.00	0.00	14,456,534.51	1,730,050.15	39.80677792	-80.68083671	
100.00	0.00	0.00	100.00	0.00	0.00	14,456,534.51	1,730,050.15	39.80677792	-80.68083671	
200.00	0.00	0.00	200.00	0.00	0.00	14,456,534.51	1,730,050.15	39.80677792	-80.68083671	
300.00	0.00	0.00	300.00	0.00	0.00	14,456,534.51	1,730,050.15	39.80677792	-80.68083671	
400.00	0.00	0.00	400.00	0.00	0.00	14,456,534.51	1,730,050.15	39.80677792	-80.68083671	
500.00	0.00	0.00	500.00	0.00	0.00	14,456,534.51	1,730,050.15	39.80677792	-80.68083671	
600.00	0.00	0.00	600.00	0.00	0.00	14,456,534.51	1,730,050.15	39.80677792	-80.68083671	
700.00	0.00	0.00	700.00	0.00	0.00	14,456,534.51	1,730,050.15	39.80677792	-80.68083671	
800.00	0.00	0.00	800.00	0.00	0.00	14,456,534.51	1,730,050.15	39.80677792	-80.68083671	
900.00	0.00	0.00	900.00	0.00	0.00	14,456,534.51	1,730,050.15	39.80677792	-80.68083671	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,456,534.51	1,730,050.15	39.80677792	-80.68083671	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,456,534.51	1,730,050.15	39.80677792	-80.68083671	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,456,534.51	1,730,050.15	39.80677792	-80.68083671	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,456,534.51	1,730,050.15	39.80677792	-80.68083671	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,456,534.51	1,730,050.15	39.80677792	-80.68083671	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,456,534.51	1,730,050.15	39.80677792	-80.68083671	
1,600.00	0.00	0.00	1,600.00	0.00	0.00	14,456,534.51	1,730,050.15	39.80677792	-80.68083671	
1,700.00	0.00	0.00	1,700.00	0.00	0.00	14,456,534.51	1,730,050.15	39.80677792	-80.68083671	
1,800.00	0.00	0.00	1,800.00	0.00	0.00	14,456,534.51	1,730,050.15	39.80677792	-80.68083671	
1,900.00	0.00	0.00	1,900.00	0.00	0.00	14,456,534.51	1,730,050.15	39.80677792	-80.68083671	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	14,456,534.51	1,730,050.15	39.80677792	-80.68083671	
2,100.00	0.00	0.00	2,100.00	0.00	0.00	14,456,534.51	1,730,050.15	39.80677792	-80.68083671	
2,200.00	0.00	0.00	2,200.00	0.00	0.00	14,456,534.51	1,730,050.15	39.80677792	-80.68083671	
KOP Begin 1"/100' build										
2,300.00	1.00	30.00	2,299.99	0.76	0.44	14,456,535.27	1,730,050.59	39.80677999	-80.68083515	
2,400.00	2.00	30.00	2,399.96	3.02	1.75	14,456,537.54	1,730,051.90	39.80678621	-80.68083046	
2,500.00	3.00	30.00	2,499.86	6.80	3.93	14,456,541.31	1,730,054.08	39.80679656	-80.68082264	
Begin 3.00° tangent										
2,600.00	3.00	30.00	2,599.73	11.33	6.54	14,456,545.85	1,730,056.70	39.80680898	-80.68081327	
2,700.00	3.00	30.00	2,699.59	15.87	9.16	14,456,550.36	1,730,059.31	39.80682140	-80.68080389	
2,800.00	3.00	30.00	2,799.45	20.40	11.78	14,456,554.91	1,730,061.93	39.80683382	-80.68079452	
2,900.00	3.00	30.00	2,899.31	24.93	14.39	14,456,559.44	1,730,064.55	39.80684624	-80.68078514	
3,000.00	3.00	30.00	2,999.18	29.46	17.01	14,456,563.98	1,730,067.16	39.80685867	-80.68077577	
3,100.00	3.00	30.00	3,099.04	33.99	19.63	14,456,568.51	1,730,069.78	39.80687109	-80.68076639	
3,200.00	3.00	30.00	3,198.90	38.53	22.24	14,456,573.04	1,730,072.40	39.80688351	-80.68075702	
3,300.00	3.00	30.00	3,298.77	43.08	24.86	14,456,577.57	1,730,075.01	39.80689593	-80.68074764	
3,400.00	3.00	30.00	3,398.63	47.59	27.48	14,456,582.11	1,730,077.63	39.80690835	-80.68073827	
3,500.00	3.00	30.00	3,498.49	52.12	30.09	14,456,586.64	1,730,080.25	39.80692077	-80.68072889	
3,600.00	3.00	30.00	3,598.36	56.66	32.71	14,456,591.17	1,730,082.86	39.80693320	-80.68071952	
3,700.00	3.00	30.00	3,698.22	61.19	35.33	14,456,595.70	1,730,085.48	39.80694562	-80.68071014	
3,800.00	3.00	30.00	3,798.08	65.72	37.94	14,456,600.23	1,730,088.10	39.80695804	-80.68070077	
3,900.00	3.00	30.00	3,897.94	70.25	40.56	14,456,604.77	1,730,090.71	39.80697046	-80.68069139	
4,000.00	3.00	30.00	3,997.81	74.79	43.18	14,456,609.30	1,730,093.33	39.80698288	-80.68068202	
4,100.00	3.00	30.00	4,097.67	79.32	45.79	14,456,613.83	1,730,095.95	39.80699530	-80.68067264	
4,200.00	3.00	30.00	4,197.53	83.85	48.41	14,456,618.36	1,730,098.56	39.80700772	-80.68066327	
4,300.00	3.00	30.00	4,297.40	88.38	51.03	14,456,622.90	1,730,101.18	39.80702015	-80.68065389	
4,400.00	3.00	30.00	4,397.26	92.92	53.65	14,456,627.43	1,730,103.80	39.80703257	-80.68064451	
4,500.00	3.00	30.00	4,497.12	97.45	56.26	14,456,631.96	1,730,106.41	39.80704499	-80.68063514	
4,600.00	3.00	30.00	4,596.99	101.98	58.88	14,456,636.49	1,730,109.03	39.80705741	-80.68062576	
4,700.00	3.00	30.00	4,696.85	106.51	61.50	14,456,641.03	1,730,111.65	39.80706983	-80.68061639	
4,800.00	3.00	30.00	4,796.71	111.05	64.11	14,456,645.56	1,730,114.27	39.80708225	-80.68060702	
4,900.00	3.00	30.00	4,896.57	115.58	66.73	14,456,650.09	1,730,116.88	39.80709467	-80.68059764	
5,000.00	3.00	30.00	4,996.44	120.11	69.35	14,456,654.62	1,730,119.50	39.80710710	-80.68058826	

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Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Ten High 1S-17HU (E)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1310 @ 1310.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1310 @ 1310.00usft
Site:	Ten High	North Reference:	Grid
Well:	Ten High 1S-17HU (E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
5,003.57	3.00	30.00	5,000.00	120.27	69.44	14,456,654.79	1,730,119.59	39.80710754	-80.68058793	
Begin 3°/100' build/turn										
5,100.00	5.74	43.06	5,096.15	125.98	73.99	14,456,660.49	1,730,124.14	39.80712317	-80.68057165	
5,200.00	8.68	47.72	5,195.34	134.71	82.99	14,456,669.22	1,730,133.14	39.80714705	-80.68053950	
5,300.00	11.65	50.03	5,293.76	146.27	96.31	14,456,680.79	1,730,146.47	39.80717868	-80.68049190	
5,400.00	14.64	51.40	5,391.13	160.65	113.93	14,456,695.16	1,730,164.09	39.80721798	-80.68042899	
5,500.00	17.63	52.32	5,487.19	177.79	135.79	14,456,712.30	1,730,185.95	39.80726483	-80.68035092	
5,600.00	20.62	52.98	5,581.66	197.65	161.84	14,456,732.16	1,730,211.99	39.80731912	-80.68025793	
5,635.51	21.68	53.17	5,614.77	205.34	172.08	14,456,739.85	1,730,222.24	39.80734015	-80.68022136	
Begin 21.68° tangent										
5,700.00	21.68	53.17	5,674.70	219.62	191.16	14,456,754.14	1,730,241.31	39.80737918	-80.68015327	
5,800.00	21.68	53.17	5,767.63	241.77	220.73	14,456,776.28	1,730,270.88	39.80743971	-80.68004769	
5,900.00	21.68	53.17	5,860.55	263.91	250.30	14,456,798.42	1,730,300.45	39.80750023	-80.67994211	
6,000.00	21.68	53.17	5,953.48	286.06	279.87	14,456,820.57	1,730,330.02	39.80756075	-80.67983653	
6,100.00	21.68	53.17	6,046.40	308.20	309.44	14,456,842.71	1,730,359.60	39.80762128	-80.67973095	
6,200.00	21.68	53.17	6,139.33	330.34	339.01	14,456,864.86	1,730,389.17	39.80768180	-80.67962537	
6,300.00	21.68	53.17	6,232.25	352.49	368.59	14,456,887.00	1,730,418.74	39.80774232	-80.67951979	
6,400.00	21.68	53.17	6,325.18	374.63	398.16	14,456,909.15	1,730,448.31	39.80780285	-80.67941421	
6,500.00	21.68	53.17	6,418.11	396.78	427.73	14,456,931.29	1,730,477.88	39.80786337	-80.67930863	
6,600.00	21.68	53.17	6,511.03	418.92	457.30	14,456,953.44	1,730,507.45	39.80792389	-80.67920305	
6,700.00	21.68	53.17	6,603.96	441.07	486.87	14,456,975.58	1,730,537.03	39.80798442	-80.67909746	
6,800.00	21.68	53.17	6,696.88	463.21	516.45	14,456,997.72	1,730,566.60	39.80804494	-80.67899188	
6,900.00	21.68	53.17	6,789.81	485.36	546.02	14,457,019.87	1,730,596.17	39.80810546	-80.67888630	
7,000.00	21.68	53.17	6,882.73	507.50	575.59	14,457,042.01	1,730,625.74	39.80816598	-80.67878072	
7,100.00	21.68	53.17	6,975.66	529.64	605.16	14,457,064.16	1,730,655.31	39.80822651	-80.67867514	
7,200.00	21.68	53.17	7,068.58	551.79	634.73	14,457,086.30	1,730,684.89	39.80828703	-80.67856956	
7,300.00	21.68	53.17	7,161.51	573.93	664.30	14,457,108.45	1,730,714.46	39.80834755	-80.67846397	
7,400.00	21.68	53.17	7,254.43	596.08	693.88	14,457,130.59	1,730,744.03	39.80840807	-80.67835839	
7,500.00	21.68	53.17	7,347.36	618.22	723.45	14,457,152.74	1,730,773.60	39.80846860	-80.67825281	
7,600.00	21.68	53.17	7,440.28	640.37	753.02	14,457,174.88	1,730,803.17	39.80852912	-80.67814723	
7,700.00	21.68	53.17	7,533.21	662.51	782.59	14,457,197.02	1,730,832.74	39.80858964	-80.67804164	
7,800.00	21.68	53.17	7,626.14	684.66	812.16	14,457,219.17	1,730,862.32	39.80865016	-80.67793605	
7,900.00	21.68	53.17	7,719.06	706.80	841.74	14,457,241.31	1,730,891.89	39.80871068	-80.67783048	
8,000.00	21.68	53.17	7,811.99	728.94	871.31	14,457,263.46	1,730,921.46	39.80877120	-80.67772489	
8,100.00	21.68	53.17	7,904.91	751.09	900.88	14,457,285.60	1,730,951.03	39.80883173	-80.67761931	
8,200.00	21.68	53.17	7,997.84	773.23	930.45	14,457,307.75	1,730,980.60	39.80889225	-80.67751372	
8,300.00	21.68	53.17	8,090.76	795.38	960.02	14,457,329.89	1,731,010.18	39.80895277	-80.67740814	
8,400.00	21.68	53.17	8,183.69	817.52	989.60	14,457,352.04	1,731,039.75	39.80901329	-80.67730256	
8,500.00	21.68	53.17	8,276.61	839.67	1,019.17	14,457,374.18	1,731,069.32	39.80907381	-80.67719697	
8,600.00	21.68	53.17	8,369.54	861.81	1,048.74	14,457,396.32	1,731,098.89	39.80913433	-80.67709139	
8,700.00	21.68	53.17	8,462.46	883.96	1,078.31	14,457,418.47	1,731,128.46	39.80919485	-80.67698580	
8,800.00	21.68	53.17	8,555.39	906.10	1,107.88	14,457,440.61	1,731,158.04	39.80925537	-80.67688022	
8,900.00	21.68	53.17	8,648.31	928.24	1,137.45	14,457,462.76	1,731,187.61	39.80931589	-80.67677463	
9,000.00	21.68	53.17	8,741.24	950.39	1,167.03	14,457,484.90	1,731,217.18	39.80937642	-80.67666905	
9,100.00	21.68	53.17	8,834.17	972.53	1,196.60	14,457,507.05	1,731,246.75	39.80943694	-80.67656346	
9,200.00	21.68	53.17	8,927.09	994.68	1,226.17	14,457,529.19	1,731,276.32	39.80949746	-80.67645787	
9,300.00	21.68	53.17	9,020.02	1,016.82	1,255.74	14,457,551.34	1,731,305.89	39.80955798	-80.67635229	
9,400.00	21.68	53.17	9,112.94	1,038.97	1,285.31	14,457,573.48	1,731,335.47	39.80961850	-80.67624670	
9,500.00	21.68	53.17	9,205.87	1,061.11	1,314.89	14,457,595.62	1,731,365.04	39.80967902	-80.67614112	
9,600.00	21.68	53.17	9,298.79	1,083.26	1,344.46	14,457,617.77	1,731,394.61	39.80973954	-80.67603553	
9,700.00	21.68	53.17	9,391.72	1,105.40	1,374.03	14,457,639.91	1,731,424.18	39.80980006	-80.67592994	
9,800.00	21.68	53.17	9,484.64	1,127.54	1,403.60	14,457,662.06	1,731,453.75	39.80986058	-80.67582436	
9,900.00	21.68	53.17	9,577.57	1,149.69	1,433.17	14,457,684.20	1,731,483.33	39.80992110	-80.67571878	
10,000.00	21.68	53.17	9,670.49	1,171.83	1,462.74	14,457,706.35	1,731,512.90	39.80998162	-80.67561318	

Office of Oil and Gas

51-02033



Planning Report - Geographic

Database:	DB_Jul2218dt_v14	Local Co-ordinate Reference:	Well Ten High 1S-17HU (E)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1310 @ 1310.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1310 @ 1310.00usft
Site:	Ten High	North Reference:	Grid
Well:	Ten High 1S-17HU (E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
10,100.00	21.68	53.17	9,783.42	1,193.98	1,492.32	14,457,728.49	1,731,542.47	39.81004214	-80.87550759	
10,200.00	21.68	53.17	9,856.35	1,216.12	1,521.89	14,457,750.64	1,731,572.04	39.81010265	-80.87540201	
10,300.00	21.68	53.17	9,949.27	1,238.27	1,551.46	14,457,772.78	1,731,601.61	39.81016317	-80.87529642	
10,400.00	21.68	53.17	10,042.20	1,260.41	1,581.03	14,457,794.92	1,731,631.18	39.81022369	-80.87519083	
10,500.00	21.68	53.17	10,135.12	1,282.56	1,610.60	14,457,817.07	1,731,660.76	39.81028421	-80.87508524	
10,600.00	21.68	53.17	10,228.05	1,304.70	1,640.18	14,457,839.21	1,731,690.33	39.81034473	-80.87497865	
10,700.00	21.68	53.17	10,320.97	1,326.84	1,669.75	14,457,861.38	1,731,719.90	39.81040525	-80.87487407	
10,800.00	21.68	53.17	10,413.90	1,348.99	1,699.32	14,457,883.50	1,731,749.47	39.81046577	-80.87476848	
10,900.00	21.68	53.17	10,506.82	1,371.13	1,728.89	14,457,905.65	1,731,779.04	39.81052629	-80.87466289	
11,000.00	21.68	53.17	10,599.75	1,393.28	1,758.46	14,457,927.79	1,731,808.62	39.81058681	-80.87455730	
11,100.00	21.68	53.17	10,692.67	1,415.42	1,788.04	14,457,949.94	1,731,838.19	39.81064733	-80.87445171	
11,200.00	21.68	53.17	10,785.60	1,437.57	1,817.61	14,457,972.08	1,731,867.76	39.81070784	-80.87434612	
11,300.00	21.68	53.17	10,878.52	1,459.71	1,847.18	14,457,994.22	1,731,897.33	39.81076836	-80.87424053	
11,400.00	21.68	53.17	10,971.45	1,481.86	1,876.75	14,458,016.37	1,731,926.90	39.81082888	-80.87413494	
11,500.00	21.68	53.17	11,064.38	1,504.00	1,906.32	14,458,038.51	1,731,956.48	39.81088940	-80.87402935	
11,534.43	21.68	53.17	11,098.37	1,511.62	1,916.50	14,458,046.14	1,731,966.66	39.81091023	-80.87399300	
Begin 10°/100' build/turn										
11,600.00	21.89	70.89	11,157.32	1,522.90	1,937.77	14,458,057.41	1,731,987.92	39.81094098	-80.87391712	
11,700.00	25.51	94.29	11,249.08	1,527.40	1,976.95	14,458,061.91	1,732,027.11	39.81095295	-80.87377754	
11,800.00	31.81	110.60	11,338.92	1,518.49	2,023.21	14,458,051.00	1,732,073.37	39.81092252	-80.87381295	
11,900.00	39.54	121.55	11,418.17	1,490.49	2,075.15	14,458,025.00	1,732,125.30	39.81085080	-80.87342836	
12,000.00	48.00	129.29	11,490.37	1,450.20	2,131.17	14,457,984.71	1,732,181.32	39.81079939	-80.87322938	
12,100.00	56.86	135.17	11,551.31	1,396.84	2,189.59	14,457,931.35	1,732,239.74	39.81059227	-80.87302205	
12,200.00	65.94	139.96	11,599.16	1,332.03	2,248.63	14,457,866.54	1,732,298.78	39.81041369	-80.87281267	
12,300.00	75.14	144.10	11,632.45	1,257.74	2,306.49	14,457,792.26	1,732,356.64	39.81020910	-80.87260781	
12,400.00	84.42	147.90	11,650.18	1,176.23	2,361.41	14,457,710.75	1,732,411.56	39.80998471	-80.87241309	
12,449.24	89.00	149.71	11,653.00	1,134.19	2,386.86	14,457,668.71	1,732,437.02	39.80986900	-80.87232300	
Begin 89.00° lateral section										
12,500.00	89.00	149.71	11,653.89	1,090.37	2,412.46	14,457,624.88	1,732,462.61	39.80974839	-80.87223243	
12,600.00	89.00	149.71	11,655.83	1,004.03	2,462.89	14,457,538.55	1,732,513.04	39.80951078	-80.87205399	
12,700.00	89.00	149.71	11,657.38	917.70	2,513.31	14,457,452.21	1,732,563.47	39.80927317	-80.87187556	
12,800.00	89.00	149.71	11,659.12	831.36	2,563.74	14,457,365.87	1,732,613.89	39.80903556	-80.87169713	
12,900.00	89.00	149.71	11,660.87	745.02	2,614.17	14,457,279.53	1,732,664.32	39.80879795	-80.87151870	
13,000.00	89.00	149.71	11,662.61	658.68	2,664.59	14,457,193.20	1,732,714.75	39.80856034	-80.87134027	
13,100.00	89.00	149.71	11,664.36	572.35	2,715.02	14,457,106.86	1,732,765.17	39.80832273	-80.87116184	
13,200.00	89.00	149.71	11,666.11	486.01	2,765.45	14,457,020.52	1,732,815.60	39.80808512	-80.87098341	
13,300.00	89.00	149.71	11,667.85	399.67	2,815.87	14,456,934.18	1,732,866.03	39.80784750	-80.87080498	
13,400.00	89.00	149.71	11,669.60	313.33	2,866.30	14,456,847.85	1,732,916.45	39.80760989	-80.87062658	
13,500.00	89.00	149.71	11,671.34	227.00	2,916.73	14,456,761.51	1,732,966.88	39.80737228	-80.87044813	
13,600.00	89.00	149.71	11,673.09	140.66	2,967.15	14,456,675.17	1,733,017.30	39.80713487	-80.87026971	
13,700.00	89.00	149.71	11,674.83	54.32	3,017.58	14,456,588.84	1,733,067.73	39.80689705	-80.87009129	
13,800.00	89.00	149.71	11,676.58	-32.01	3,068.01	14,456,502.50	1,733,118.16	39.80665944	-80.86991287	
13,900.00	89.00	149.71	11,678.32	-118.35	3,118.43	14,456,416.16	1,733,168.58	39.80642183	-80.86973445	
14,000.00	89.00	149.71	11,680.07	-204.69	3,168.86	14,456,329.82	1,733,219.01	39.80618421	-80.86955603	
14,100.00	89.00	149.71	11,681.82	-291.03	3,219.28	14,456,243.49	1,733,269.44	39.80594660	-80.86937762	
14,200.00	89.00	149.71	11,683.56	-377.36	3,269.71	14,456,157.15	1,733,319.86	39.80570898	-80.86919920	
14,300.00	89.00	149.71	11,685.31	-463.70	3,320.14	14,456,070.81	1,733,370.29	39.80547137	-80.86902079	
14,400.00	89.00	149.71	11,687.05	-550.04	3,370.56	14,455,984.47	1,733,420.72	39.80523375	-80.86884238	
14,500.00	89.00	149.71	11,688.80	-636.38	3,420.99	14,455,898.14	1,733,471.14	39.80499614	-80.86866396	
14,600.00	89.00	149.71	11,690.54	-722.71	3,471.42	14,455,811.80	1,733,521.57	39.80475852	-80.86848555	
14,700.00	89.00	149.71	11,692.29	-809.05	3,521.84	14,455,725.46	1,733,572.00	39.80452091	-80.86830714	
14,800.00	89.00	149.71	11,694.03	-895.39	3,572.27	14,455,639.13	1,733,622.42	39.80428329	-80.86812872	
14,900.00	89.00	149.71	11,695.78	-981.72	3,622.70	14,455,552.79	1,733,672.85	39.80404567	-80.86795033	
15,000.00	89.00	149.71	11,697.53	-1,068.06	3,673.12	14,455,466.45	1,733,723.28	39.80380808	-80.86777193	

Office of Oil and Gas
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SI-02033



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Ten High 1S-17HU (E)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1310 @ 1310.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1310 @ 1310.00usft
Site:	Ten High	North Reference:	Grid
Well:	Ten High 1S-17HU (E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
15,100.00	89.00	149.71	11,699.27	-1,154.40	3,723.55	14,455,380.11	1,733,773.70	39.80357044	-80.86759352	
15,200.00	89.00	149.71	11,701.02	-1,240.74	3,773.98	14,455,293.78	1,733,824.13	39.80333282	-80.86741512	
15,300.00	89.00	149.71	11,702.76	-1,327.07	3,824.40	14,455,207.44	1,733,874.55	39.80309520	-80.86723672	
15,400.00	89.00	149.71	11,704.51	-1,413.41	3,874.83	14,455,121.10	1,733,924.98	39.80285759	-80.86705632	
15,500.00	89.00	149.71	11,706.25	-1,499.75	3,925.25	14,455,034.76	1,733,975.41	39.80261997	-80.86687992	
15,600.00	89.00	149.71	11,708.00	-1,586.09	3,975.68	14,454,948.43	1,734,025.83	39.80238235	-80.86670152	
15,700.00	89.00	149.71	11,709.75	-1,672.42	4,026.11	14,454,862.09	1,734,076.26	39.80214473	-80.86652312	
15,800.00	89.00	149.71	11,711.49	-1,758.76	4,076.53	14,454,775.75	1,734,126.69	39.80190711	-80.86634473	
15,900.00	89.00	149.71	11,713.24	-1,845.10	4,126.96	14,454,689.42	1,734,177.11	39.80166949	-80.86616633	
16,000.00	89.00	149.71	11,714.96	-1,931.44	4,177.39	14,454,603.08	1,734,227.54	39.80143187	-80.86598794	
16,100.00	89.00	149.71	11,716.73	-2,017.77	4,227.81	14,454,516.74	1,734,277.97	39.80119425	-80.86580955	
16,200.00	89.00	149.71	11,718.47	-2,104.11	4,278.24	14,454,430.40	1,734,328.39	39.80095663	-80.86563116	
16,300.00	89.00	149.71	11,720.22	-2,190.45	4,328.67	14,454,344.07	1,734,378.82	39.80071901	-80.86545277	
16,400.00	89.00	149.71	11,721.96	-2,276.78	4,379.09	14,454,257.73	1,734,429.25	39.80048139	-80.86527438	
16,500.00	89.00	149.71	11,723.71	-2,363.12	4,429.52	14,454,171.39	1,734,479.67	39.80024377	-80.86509599	
16,600.00	89.00	149.71	11,725.46	-2,449.46	4,479.95	14,454,085.05	1,734,530.10	39.80000615	-80.86491760	
16,700.00	89.00	149.71	11,727.20	-2,535.80	4,530.37	14,453,998.72	1,734,580.53	39.79976853	-80.86473922	
16,800.00	89.00	149.71	11,728.95	-2,622.13	4,580.80	14,453,912.38	1,734,630.95	39.79953091	-80.86456084	
16,900.00	89.00	149.71	11,730.69	-2,708.47	4,631.23	14,453,826.04	1,734,681.38	39.79929328	-80.86438245	
17,000.00	89.00	149.71	11,732.44	-2,794.81	4,681.65	14,453,739.71	1,734,731.80	39.79905566	-80.86420407	
17,100.00	89.00	149.71	11,734.18	-2,881.15	4,732.08	14,453,653.37	1,734,782.23	39.79881804	-80.86402569	
17,200.00	89.00	149.71	11,735.93	-2,967.48	4,782.50	14,453,567.03	1,734,832.66	39.79858042	-80.86384732	
17,300.00	89.00	149.71	11,737.67	-3,053.82	4,832.93	14,453,480.69	1,734,883.08	39.79834279	-80.86366894	
17,400.00	89.00	149.71	11,739.42	-3,140.16	4,883.36	14,453,394.36	1,734,933.51	39.79810517	-80.86349056	
17,500.00	89.00	149.71	11,741.17	-3,226.49	4,933.78	14,453,308.02	1,734,983.94	39.79786754	-80.86331219	
17,519.17	89.00	149.71	11,741.50	-3,243.04	4,943.45	14,453,291.47	1,734,993.60	39.79782200	-80.86327800	

PBHL/TD 17519.17 MD/11741.50 TVD

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
Ten High 1S-17HU LP r1 - hit/miss target - Shape - Point	0.00	0.00	11,653.00	1,134.19	2,386.87	14,457,668.71	1,732,437.02	39.80986900	-80.67232300	
Ten High 1S-17HU BHL - plan hits target center - Point	0.00	0.00	11,741.50	-3,243.04	4,943.45	14,453,291.47	1,734,993.60	39.79782200	-80.66327800	

Casing Points						
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")		
1,175.00	1,175.00	20" Casing @ 1175 TVD	20	24		
2,980.80	2,980.00	13 3/8" Casing @ 2980 TVD	13-3/8	17-1/2		
10,919.56	10,525.00	9 5/8" Casing @ 10525 TVD	9-5/8	12-1/4		

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Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Ten High 1S-17HU (E)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1310 @ 1310.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1310 @ 1310.00usft
Site:	Ten High	North Reference:	Grid
Well:	Ten High 1S-17HU (E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,200.00	2,200.00	0.00	0.00	KOP Begin 1°/100' build
2,500.00	2,499.86	6.80	3.93	Begin 3.00° tangent
3,000.00	2,999.18	29.46	17.01	
5,003.57	5,000.00	120.27	69.44	Begin 3°/100' build/turn
5,635.51	5,614.77	205.34	172.08	Begin 21.68° tangent
11,534.43	11,096.37	1,511.62	1,916.50	Begin 10°/100' build/turn
12,449.24	11,653.00	1,134.19	2,386.86	Begin 89.00° lateral section
17,519.17	11,741.50	-3,243.04	4,943.45	PBHL/TD 17519.17 MD/11741.50 TVD

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WV Department of
Environmental Protection

WW-9
(4/16)

API Number 47 - 051 - _____
Operator's Well No. Ten High 1S-17HU

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Tug Hill Operating, LLC OP Code 494510851

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

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

Will a pit be used? Yes No

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

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

Proposed Disposal Method For Treated Pit Wastes:

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

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

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

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

Additives to be used in drilling medium? Barite for weight

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

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

-Landfill or offsite name/permit number? Wetzel County Sanitary Landfill (SWF-1021 / WV0109185) and Westmoreland Sanitary Landfill, LLC (SAN1405 / PA DEP EC#1356426)

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 _____

Company Official (Typed Name) Sean Gasser

Company Official Title Engineer

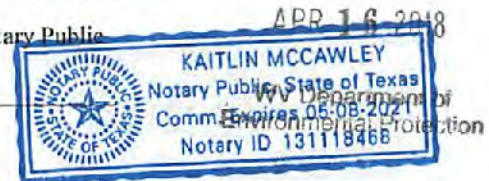
Subscribed and sworn before me this 11th day of June, 2018

RECEIVED
Office of Oil and Gas

Kaitlin McCawley Kaitlin McCawley

Notary Public

My commission expires 5/8/2021



Form WW-9

Operator's Well No. Ten High 1S-17HU

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 16.20 Prevegetation pH 6.0

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch 2.5 Tons/acre

Seed Mixtures

Temporary

Permanent

Seed Type	lbs/acre
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: *Jim Trubee*

Comments: _____

Title: WVDEP Oil and Gas Inspector

Date: 4/12/18

Field Reviewed? () Yes () No

RECEIVED
Office of Oil and Gas

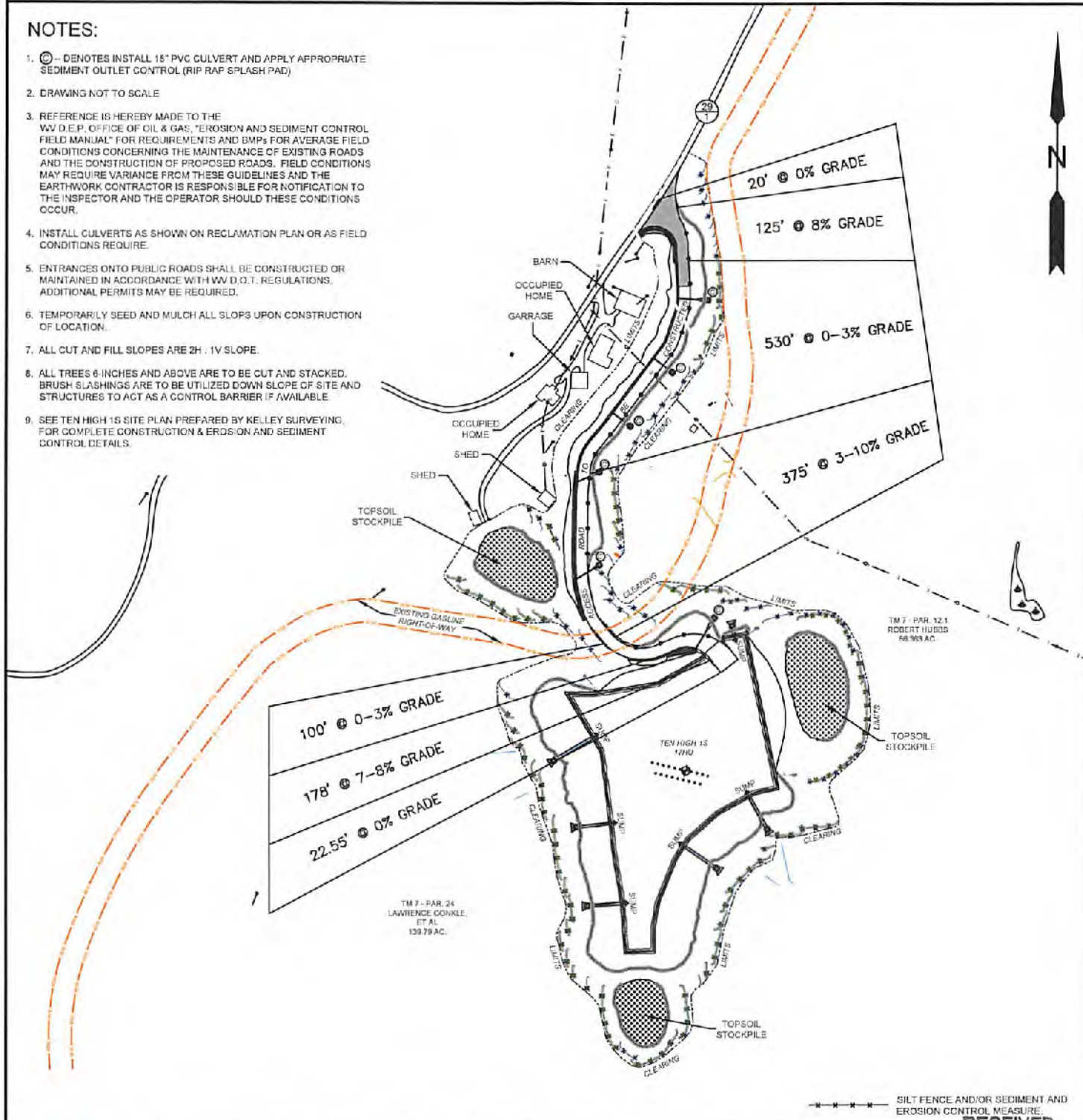
APR 16 2018

WV Department of
Environmental Protection

PROPOSED TEN HIGH 1S - 17HU

NOTES:

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



***** SILT FENCE AND/OR SEDIMENT AND EROSION CONTROL MEASURE RECEIVED

SLS
Land & Energy Development
Solutions from the ground up.
P.O. Box 130 • 12 Vanhorn Drive • Glenville, WV 26351 • (304) 462-5634
www.slsurveys.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8655	04-11-18	NONE

Office of Oil and Gas

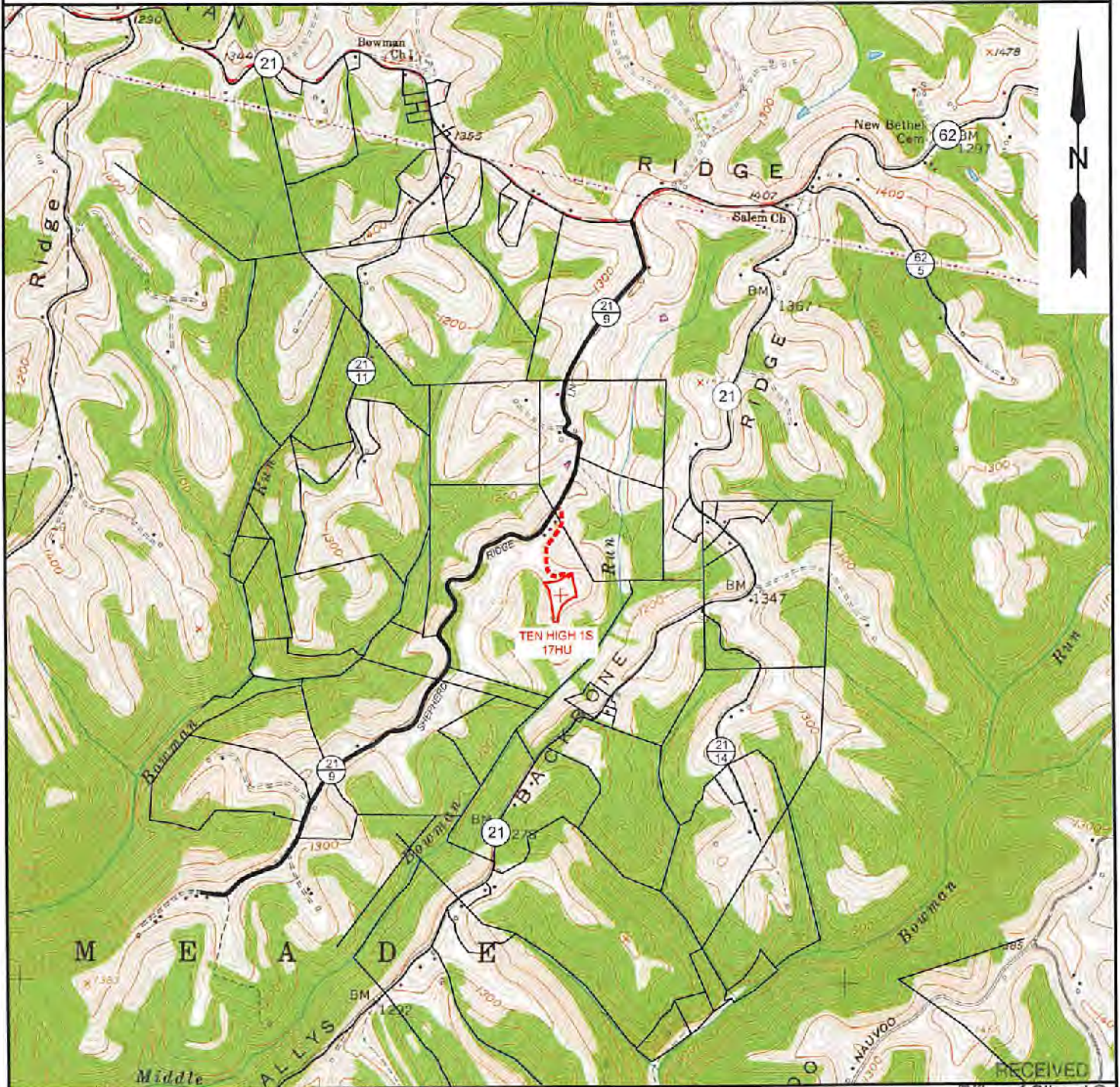
TUG HILL
OPERATING
WV Department of Environmental Protection

51-02033

WW-9

PROPOSED TEN HIGH 1S - 17HU

SUPPLEMENT PG. 2



TEN HIGH 1S
17HU

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

LAT: 39.7137712
LON: -80.8259327
LOCATED S 51°03'40" W AT 52.970' FROM TEN HIGH 1S - 17HU SURFACE LOCATION

Office of Oil and Gas
DR 16 2018

SLS
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P.O. Box 190 • 12 Vanhorn Drive • Glenville, WV 26031 • (304) 462-5634
www.slsurveys.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8655	08-29-17	1" = 2000'

WV Department of Environmental Protection
TUG HILL
OPERATING

51-02033

WW-6A1
(5/13)

Operator's Well No. Ten High 1S-17HU

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

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

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

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

*See attached pages

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

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

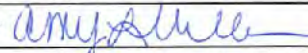
- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

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Office of Oil and Gas

APR 16 2018

WV Department of
Environmental Protection

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

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

WW - 6A1 Supplement

Lease Name or No.	Tag	Percent	Grantor, Lessee, etc.	Grantee, Lessee, etc.	Royalty	Deed Book & Page	Assignment	Assignment	Assignment	Assignment
10*15662	A	9-7-24	LARRY LEE COMBLE	CHEVRON U.S.A. INC.	1/8	863 354	N/A	N/A	N/A	Chevron to TUG HRL: 16/148
10*15663	A	9-7-24	ROY A COMBLE SR	CHEVRON USA INC.	1/8	863 331	N/A	N/A	N/A	Chevron to TUG HRL: 16/148
10*15664	A	9-7-24	THERESA AMRE HUGHES	CHEVRON USA INC.	1/8	863 435	N/A	N/A	N/A	Chevron to TUG HRL: 16/148
10*15665	A	9-7-24	BRENDA J WHITTELL	CHEVRON USA INC.	1/8	863 435	N/A	N/A	N/A	N/A
10*16138	A	9-7-24	DANNY SHAWN KERNS AND AMY LYNN KERNS	THE EXPLORATION LLC	1/8	905 518	N/A	N/A	N/A	N/A
10*16139	A	9-7-24	LARRY W KUHN AND VICKIE B KUHN, HUSBAND AND WIFE	THE EXPLORATION LLC	1/8	905 522	N/A	N/A	N/A	N/A
10*16140	A	9-7-24	HUBERT DEAN KUHN AND ANDREA KUHN	THE EXPLORATION LLC	1/8	905 524	N/A	N/A	N/A	N/A
10*16141	A	9-7-24	ANDY PAUL & JACKIE KUHN	THE EXPLORATION LLC	1/8	905 526	N/A	N/A	N/A	N/A
10*16143	A	9-7-24	HOWARD F KUHN AND MARY L KUHN	THE EXPLORATION LLC	1/8	919 237	N/A	N/A	N/A	N/A
10*16820	A	9-7-24	ROBERTA ANN AND DAVID S GIBB	THE EXPLORATION LLC	1/8	927 268	N/A	N/A	N/A	N/A
10*17145	A	9-7-24	MYSTI JOANNE GOODMAN	THE EXPLORATION LLC	1/8	927 470	N/A	N/A	N/A	N/A
10*17170	A	9-7-24	KELLY KURE GOODMAN	THE EXPLORATION LLC	1/8	929 1	N/A	N/A	N/A	N/A
10*18256	A	9-7-24	JEFFREY STEPHEN GOODMAN	THE EXPLORATION LLC	1/8	905 470	N/A	N/A	N/A	N/A
10*47051.295.10	A	9-7-24	DEENA J PALOMO	THE EXPLORATION LLC	1/8	905 435	N/A	N/A	N/A	N/A
10*47051.295.11	A	9-7-24	REGINA D FIGUEROA AND DAVID FIGUEROA	THE EXPLORATION LLC	1/8	905 432	N/A	N/A	N/A	N/A
10*47051.295.12	A	9-7-24	EARL D WELLMAN	THE EXPLORATION LLC	1/8	904 641	N/A	N/A	N/A	N/A
10*47051.295.13	A	9-7-24	THE DOLLY F WOOD REVOCABLE TRUST BY NICHOLAS CHARLES WOOD AS TRUSTEE	THE EXPLORATION LLC	1/8	904 632	N/A	N/A	N/A	N/A
10*47051.295.3	A	9-7-24	HAZEL ARIZONA MOORE REYNOLDS	THE EXPLORATION LLC	1/8	904 632	N/A	N/A	N/A	N/A
10*47051.295.4	A	9-7-24	LLOYD D MOORE	THE EXPLORATION LLC	1/8	904 635	N/A	N/A	N/A	N/A
10*47051.295.5	A	9-7-24	DALE R MOORE	THE EXPLORATION LLC	1/8	904 638	N/A	N/A	N/A	N/A
10*47051.295.6	A	9-7-24	MARY BURKHART	THE EXPLORATION LLC	1/8	904 662	N/A	N/A	N/A	N/A
10*47051.295.7	A	9-7-24	JEANNE V MELCHIONI	THE EXPLORATION LLC	1/8	904 655	N/A	N/A	N/A	N/A
10*47051.295.9	A	9-7-24	JAMES E HAMELCK JR AND KAREN HIMELRICK	THE EXPLORATION LLC	1/8	908 197	N/A	N/A	N/A	N/A
10*15481	B	9-7-25.2	DEAN P RIGBY AND SUSAN RIGBY	THE EXPLORATION LLC	1/8	908 203	N/A	N/A	N/A	N/A
10*15482	B	9-7-25.2	SUSAN HELLSON	THE EXPLORATION LLC	1/8	908 209	N/A	N/A	N/A	N/A
10*15668	B	9-7-25.2	JOHN OMER BOKET	THE EXPLORATION LLC	1/8	908 160	N/A	N/A	N/A	N/A
10*15750	B	9-7-25.2	SANDRA K TRULL	THE EXPLORATION LLC	1/8	908 229	N/A	N/A	N/A	N/A
10*16058	B	9-7-25.2	MATTHE RUTH JACKSON PRESCOTT	THE EXPLORATION LLC	1/8	908 231	N/A	N/A	N/A	N/A
10*16118	B	9-7-25.2	RUBY RIDGLE JACKSON	THE EXPLORATION LLC	1/8	908 233	N/A	N/A	N/A	N/A
10*16297	B	9-7-25.2	ROBERT A LEADBETTER AND M BEBECCA LEADBETTER	THE EXPLORATION LLC	1/8	908 235	N/A	N/A	N/A	N/A
10*16298	B	9-7-25.2	GEOFFREY A SHELTER AND STEPHANNE L SCHREIER	THE EXPLORATION LLC	1/8	908 234	N/A	N/A	N/A	N/A
10*16383	B	9-7-25.2	ROBERT STEPHEN DRIGGERS	THE EXPLORATION LLC	1/8	908 238	N/A	N/A	N/A	N/A
10*16414	B	9-7-25.2	MARY ELIZABETH DRIGGERS	THE EXPLORATION LLC	1/8	908 238	N/A	N/A	N/A	N/A
10*16415	B	9-7-25.2	TERENCE J ANDERSON AND NANCY J ANDERSON	THE EXPLORATION LLC	1/8	908 213	N/A	N/A	N/A	N/A
10*16416	B	9-7-25.2	CYNTHIA HUDSON	THE EXPLORATION LLC	1/8	908 219	N/A	N/A	N/A	N/A
10*16424	B	9-7-25.2	ROBERT J RIGBY	THE EXPLORATION LLC	1/8	908 243	N/A	N/A	N/A	N/A
10*16468	B	9-7-25.2	RAKHIA AND MARIETA L COMA	THE EXPLORATION LLC	1/8	908 248	N/A	N/A	N/A	N/A
10*16478	B	9-7-25.2	MARION I AND EMELY CAMPBELL	THE EXPLORATION LLC	1/8	908 245	N/A	N/A	N/A	N/A
10*16514	B	9-7-25.2	ALEX RUSSELL AND JOYCE A CAMPBELL	THE EXPLORATION LLC	1/8	908 248	N/A	N/A	N/A	N/A
10*16515	B	9-7-25.2	ANNA MARIE JACKSON	THE EXPLORATION LLC	1/8	908 251	N/A	N/A	N/A	N/A
10*16516	B	9-7-25.2	WILSON ANDREW JACKSON	THE EXPLORATION LLC	1/8	908 253	N/A	N/A	N/A	N/A
10*16545	B	9-7-25.2	ROBERT G & ELLEN FOUNDS	THE EXPLORATION LLC	1/8	908 260	N/A	N/A	N/A	N/A
10*16661	B	9-7-25.2	RICHARD THOMAS AND VICKI J MIMS	THE EXPLORATION LLC	1/8	908 255	N/A	N/A	N/A	N/A
10*16666	B	9-7-25.2	MICHAEL P PYLE	THE EXPLORATION LLC	1/8	908 266	N/A	N/A	N/A	N/A
10*16667	B	9-7-25.2	CHARLES F AND GAIL ANN PYLE	THE EXPLORATION LLC	1/8	908 257	N/A	N/A	N/A	N/A
10*16668	B	9-7-25.2	JACK I AND MERRILEE PYLE	THE EXPLORATION LLC	1/8	908 269	N/A	N/A	N/A	N/A
10*16669	B	9-7-25.2	JOHN S AND PATRICIA S DADD	THE EXPLORATION LLC	1/8	927 475	N/A	N/A	N/A	N/A
10*16686	B	9-7-25.2	CHARLEY M TRACET	THE EXPLORATION LLC	1/8	927 481	N/A	N/A	N/A	N/A
10*16688	B	9-7-25.2	SHERRILL P BAHN	THE EXPLORATION LLC	1/8	927 478	N/A	N/A	N/A	N/A
10*16689	B	9-7-25.2	JOHN C FOUNDS	THE EXPLORATION LLC	1/8	921 352	N/A	N/A	N/A	N/A
10*16690	B	9-7-25.2	RICARDO ORTIZ	THE EXPLORATION LLC	1/8	921 352	N/A	N/A	N/A	N/A
10*16720	B	9-7-25.2	DONNA ELAINE BRASKETT	THE EXPLORATION LLC	1/8	921 352	N/A	N/A	N/A	N/A
10*16738	B	9-7-25.2	CHARLES A RINE AND RUTH K RINE	THE EXPLORATION LLC	1/8	921 352	N/A	N/A	N/A	N/A
10*16742	B	9-7-25.2	PAUL CHESLON	THE EXPLORATION LLC	1/8	921 366	N/A	N/A	N/A	N/A
10*16747	B	9-7-25.2	WILLIAM DALE BRASKETT	THE EXPLORATION LLC	1/8	921 96	N/A	N/A	N/A	N/A
10*16798	B	9-7-25.2	PATRICK A RAMSIN AND ROBIN A RAMSIN	THE EXPLORATION LLC	1/8	921 364	N/A	N/A	N/A	N/A
10*16800	B	9-7-25.2	JAMES KE MATH JACSON AND JULIE JACKSON	THE EXPLORATION LLC	1/8	921 93	N/A	N/A	N/A	N/A
10*16802	B	9-7-25.2	CHRISTOPHER AND TAMMY RICHARDSON	THE EXPLORATION LLC	1/8	921 495	N/A	N/A	N/A	N/A
10*16804	B	9-7-25.2	WILLIAM H AND SHERRY D TAYLOR	THE EXPLORATION LLC	1/8	921 510	N/A	N/A	N/A	N/A
10*16806	B	9-7-25.2	VORONKA WHITMAN TRUST DTD 7-25-2004 ION WHITMAN TRUSTEE	THE EXPLORATION LLC	1/8	921 513	N/A	N/A	N/A	N/A
10*16807	B	9-7-25.2	DAVID TULLER AND SUSAN STORTS TULLER	THE EXPLORATION LLC	1/8	921 349	N/A	N/A	N/A	N/A
10*16808	B	9-7-25.2	MICHAEL L ORTIZ	THE EXPLORATION LLC	1/8	921 357	N/A	N/A	N/A	N/A
10*16815	B	9-7-25.2	HAROLD W PYLE	THE EXPLORATION LLC	1/8	921 147	N/A	N/A	N/A	N/A
10*16819	B	9-7-25.2	TERESA ORTIZ BIGGS	THE EXPLORATION LLC	1/8	921 167	N/A	N/A	N/A	N/A
10*16821	B	9-7-25.2	SHERA BRASKETT METCHY	THE EXPLORATION LLC	1/8	921 156	N/A	N/A	N/A	N/A
10*16836	B	9-7-25.2	BECKA AND LENORE A STORTS	THE EXPLORATION LLC	1/8	921 507	N/A	N/A	N/A	N/A
10*16837	B	9-7-25.2	TERRY L AND THELMA A POFF	THE EXPLORATION LLC	1/8	927 472	N/A	N/A	N/A	N/A
10*16838	B	9-7-25.2	ROBERT G FUMARI	THE EXPLORATION LLC	1/8	921 82	N/A	N/A	N/A	N/A
10*16839	B	9-7-25.2	JAMES B FOUNDS AND LYNN M MOWERY	THE EXPLORATION LLC	1/8	921 73	N/A	N/A	N/A	N/A
10*16863	B	9-7-25.2	TINA MOORE	THE EXPLORATION LLC	1/8	921 334	N/A	N/A	N/A	N/A
10*16868	B	9-7-25.2	CHARLES W STORTS AND JESSICA M STORTS	THE EXPLORATION LLC	1/8	921 508	N/A	N/A	N/A	N/A
10*16870	B	9-7-25.2	MARK E AND LESLEY A STORTS	THE EXPLORATION LLC	1/8	921 501	N/A	N/A	N/A	N/A
10*16880	B	9-7-25.2	BEVERLY ANN STORTS	THE EXPLORATION LLC	1/8	923 498	N/A	N/A	N/A	N/A
10*16902	B	9-7-25.2	MARY BARCAV DUKE	THE EXPLORATION LLC	1/8	923 105	N/A	N/A	N/A	N/A
10*16962	B	9-7-25.2	DENNIS P AND BARBARA EZZLE FLODY	THE EXPLORATION LLC	1/8	923 70	N/A	N/A	N/A	N/A
10*16976	B	9-7-25.2	LESTER G AND CONSTANCE B NICKOLSON	THE EXPLORATION LLC	1/8	923 343	N/A	N/A	N/A	N/A
10*16977	B	9-7-25.2	DAVID C KOHNOUR	THE EXPLORATION LLC	1/8	923 109	N/A	N/A	N/A	N/A
10*16987	B	9-7-25.2	LAURIE EZZLE PI RAY	THE EXPLORATION LLC	1/8	923 355	N/A	N/A	N/A	N/A
10*16989	B	9-7-25.2	BRITTANY RICHARDSON	THE EXPLORATION LLC	1/8	921 376	N/A	N/A	N/A	N/A
10*16991	B	9-7-25.2	MARYELLEN FOUNDS AND LAUREN FOUNDS	THE EXPLORATION LLC	1/8	921 79	N/A	N/A	N/A	N/A
10*16996	B	9-7-25.2	THOMAS RAMIN	THE EXPLORATION LLC	1/8	927 75	N/A	N/A	N/A	N/A
10*17150	B	9-7-25.2	CORBY R BARGER	THE EXPLORATION LLC	1/8	921 137	N/A	N/A	N/A	N/A
10*17155	B	9-7-25.2	JESSE LEON JR AND TERESA GAIL EZZLE	THE EXPLORATION LLC	1/8	921 118	N/A	N/A	N/A	N/A
10*17156	B	9-7-25.2	HENRI NELL JACKSON KENT BARNES	THE EXPLORATION LLC	1/8	921 139	N/A	N/A	N/A	N/A
10*17157	B	9-7-25.2	JAMES H REEVES AND RITA M REEVES	THE EXPLORATION LLC	1/8	921 167	N/A	N/A	N/A	N/A
10*17198	B	9-7-25.2	THOMAS G AND DIANE W BAYLESS	THE EXPLORATION LLC	1/8	921 141	N/A	N/A	N/A	N/A
10*17205	B	9-7-25.2	SANDRA JEAN WILSON	THE EXPLORATION LLC	1/8	921 524	N/A	N/A	N/A	N/A
10*17208	B	9-7-25.2	PATRICK S GALLAGHER AND JOYCE ANN FOUNDS	THE EXPLORATION LLC	1/8	921 86	N/A	N/A	N/A	N/A
10*17274	B	9-7-25.2	DAVID H WILSON	THE EXPLORATION LLC	1/8	921 474	N/A	N/A	N/A	N/A
10*17275	B	9-7-25.2	JOHN R REEVES AND MONA G REEVES	THE EXPLORATION LLC	1/8	921 373	N/A	N/A	N/A	N/A
10*17276	B	9-7-25.2	BERTHA EZZLE WYATT	THE EXPLORATION LLC	1/8	921 526	N/A	N/A	N/A	N/A
10*17278	B	9-7-25.2	MICHAEL L EZZLE	THE EXPLORATION LLC	1/8	921 121	N/A	N/A	N/A	N/A
10*17339	B	9-7-25.2	JOSEPH W FOUNDS	THE EXPLORATION LLC	1/8	921 76	N/A	N/A	N/A	N/A
10*17377	B	9-7-25.2	MILTON HOWARD EZZLE JR AND ELIZABETH A EZZLE	THE EXPLORATION LLC	1/8	921 123	N/A	N/A	N/A	N/A
10*17416	B	9-7-25.2	ANDREW M ORTIZ	THE EXPLORATION LLC	1/8	921 346	N/A	N/A	N/A	N/A
10*17438	B	9-7-25.2	DENNIS M WILSON	THE EXPLORATION LLC	1/8	921 476	N/A	N/A	N/A	N/A
10*17440	B	9-7-25.2	KEINDA WALSA	THE EXPLORATION LLC	1/8	927 484	N/A	N/A	N/A	N/A
10*17441	B	9-7-25.2	RALPH J WILSON	THE EXPLORATION LLC	1/8	923 522	N/A	N/A	N/A	N/A
10*17442	B	9-7-25.2	SHANE ALLEN AND KENNEDY JEAN ALLEN	THE EXPLORATION LLC	1/8	923 334	N/A	N/A	N/A	N/A
10*17443	B	9-7-25.2	MICHELE MORROW BACE	THE EXPLORATION LLC	1/8	921 137	N/A	N/A	N/A	N/A
10*17444	B	9-7-25.2	KELLY FOUNDS CAMPBELL	THE EXPLORATION LLC	1/8	921 99	N/A	N/A	N/A	N/A
10*17449	B	9-7-25.2	PHYLLIS J BLAKE	THE EXPLORATION LLC	1/8	921 150	N/A	N/A	N/A	N/A
10*17482	B	9-7-25.2	TERESA EZZLE RALVA AND DAVID L RALVA	THE EXPLORATION LLC	1/8	927 487	N/A	N/A	N/A	N/A
10*17483	B	9-7-25.2	RICHARD J PYLE	THE EXPLORATION LLC	1/8	921 359	N/A	N/A	N/A	N/A
10*17484	B	9-7-25.2	REIDA S JACKSON	THE EXPLORATION LLC	1/8	921 330	N/A	N/A	N/A	N/A
10*17485	B	9-7-25.2	MARGIE ANN JACKSON ROBBINS GRAHAM	THE EXPLORATION LLC	1/8	921 93	N/A	N/A	N/A	N/A
10*17526	B	9-7-25.2	JEFFREY L REEVES AND JOEY L REEVES	THE EXPLORATION LLC	1/8	921 370	N/A	N/A	N/A	N/A
10*17527	B	9-7-25.2	JAMES MICHAEL EZZLE AND LUCILLE D EZZLE	THE EXPLORATION LLC	1/8	921 131	N/A	N/A	N/A	N/A
10*17532	B	9-7-25.2	JOHN BEVACQUA AND PATRICIA A BEVACQUA	THE EXPLORATION LLC	1/8	923 144	N/A	N/A	N/A	N/A
10*17544	B	9-7-25.2	MICHAEL J RAMSON	THE EXPLORATION LLC	1/8	923 361	N/A	N/A	N/A	N/A
10*17561	B	9-7-25.2	ROGER L TYRELL AND KATHRYN L TYRELL	THE EXPLORATION LLC	1/8	921 333	N/A	N/A	N/A	N/A
10*17564	B	9-7-25.2	JAMES RONALD NICKOLSON AND TRACEY E NICKOLSON	THE EXPLORATION LLC	1/8	923 340	N/A	N/A	N/A	N/A
10*17565	B	9-7-25.2	JESSE ALLEN JACKSON AND ELIZABETH D JACKSON	THE EXPLORATION LLC	1/8	921 327	N/A	N/A	N/A	N/A
10*17566	B	9-7-25.2	NATHAN P ERDOSSY AND BARBARA T ERDOSSY	THE EXPLORATION LLC	1/8	921 108	N/A	N/A	N/A	N/A
10*17588	B	9-7-25.2	JAMES M JACKSON							



July 18, 2017

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

RE: Ten High 1S-17HU

Dear Laura:

Tug Hill Operating, LLC (ThO) hereby submits this letter as confirmation that THO has obtained the right to drill, extract and produce the minerals under Marshall County Route 21/9 and 21/11 in the area reflected on the Ten High 1S-17HU 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 at 304-376-0111 or by email at amiller@tug-hilop.com.

Sincerely,

A handwritten signature in cursive script that reads "Amy L. Miller".

Amy L. Miller

Permit Specialist – Appalachia

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Office of Oil and Gas

APR 16 2018

WV Department of
Environmental Protection



Well Site Safety Plan

Tug Hill Operating, LLC

JW
4/12/18

Well Name: Ten High 1S-17HU

Pad Location: Ten High
Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:
NORTHING -4,406,360.53
EASTING -527,320.34

April 2018

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Office of Oil and Gas

APR 16 2018

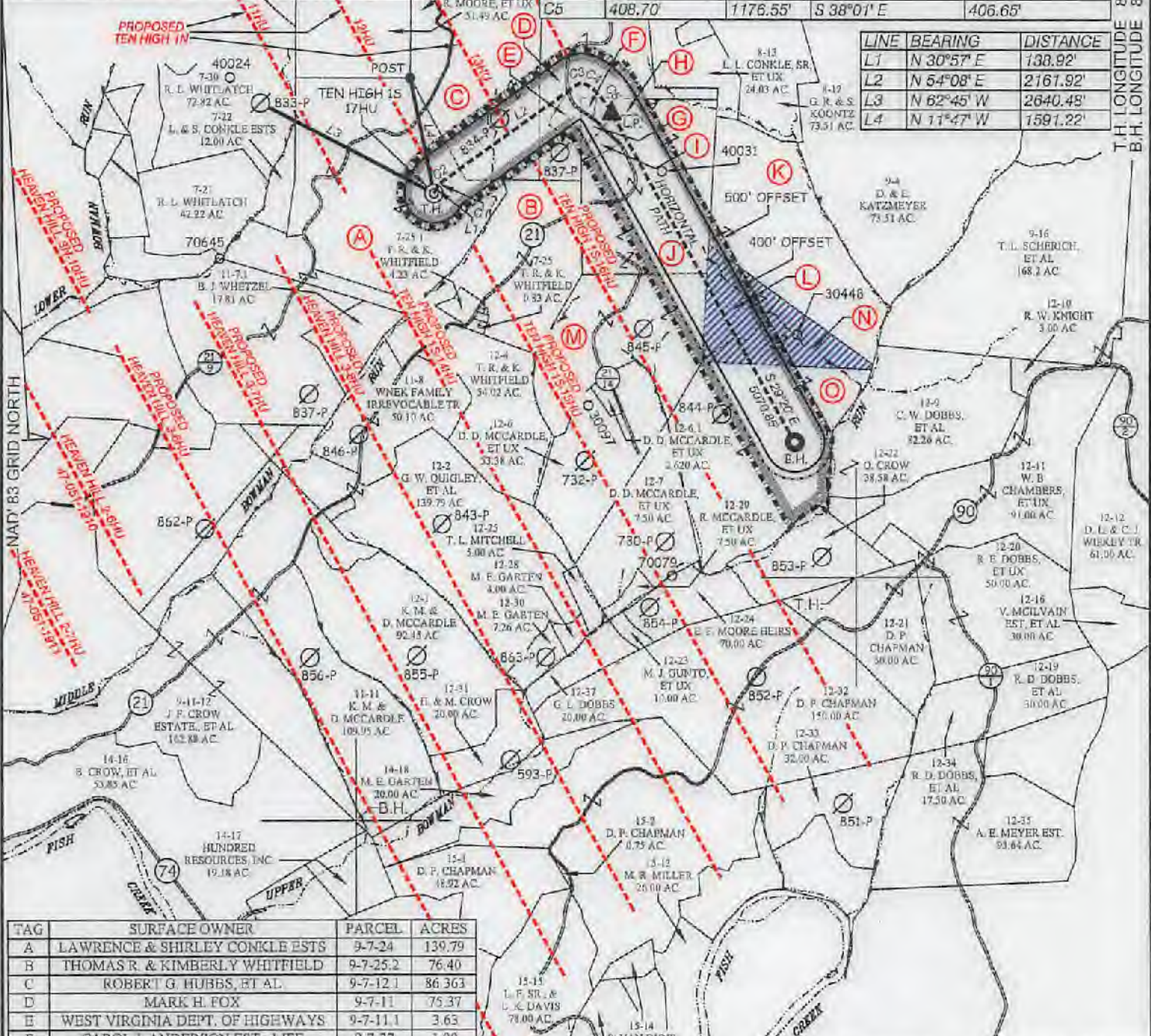
WV Department of
Environmental Protection

**TEN HIGH 1S LEASE
UTICA UNIT - 221.76 AC ±
WELL 17HU
TUG HILL OPERATING**

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

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	19.84'	105.32'	N 44°08' E	19.81'
C2	137.59'	1848.13'	N 52°50' E	137.56'
C3	80.93'	96.99'	N 84°24' E	78.61'
C4	152.21'	367.23'	S 59°52' E	151.12'
C5	408.70'	1176.55'	S 38°01' E	406.65'

LINE	BEARING	DISTANCE
L1	N 30°57' E	138.92'
L2	N 64°08' E	2161.92'
L3	N 62°45' W	2640.45'
L4	N 11°47' W	1591.22'



TAG	SURFACE OWNER	PARCEL	ACRES
A	LAWRENCE & SHIRLEY CONKLE ESTS	9-7-24	139.79
B	THOMAS R. & KIMBERLY WHITFIELD	9-7-25.2	76.40
C	ROBERT G. HUBBS, ET AL.	9-7-12.1	86.363
D	MARK H. FOX	9-7-11	75.37
E	WEST VIRGINIA DEPT. OF HIGHWAYS	9-7-11.1	3.65
F	CAROL J. ANDERSON EST - LIFE	9-7-27	1.00
G	VICTOR & CLAIRE CAMERON	9-7-28	1.983
H	CAROL J. ANDERSON EST - LIFE	9-7-29.1	5.004
I	NATHAN WILLIAMS	9-7-28.1	2.768
J	CAROL J. ANDERSON EST - LIFE	9-7-29	85.540
K	CONSOLIDATION COAL COMPANY	9-9-3	84.50
L	DONALD DALE MCCARDLE, ET UX	9-9-2	21.11

TAG	SURFACE OWNER	PARCEL	ACRES
M	DONALD DALE MCCARDLE, ET UX	9-12-5	75.28
N	DONALD DALE MCCARDLE, ET UX	9-9-1	20.89
O	DONALD DALE MCCARDLE, ET UX	9-12-8	117.85

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www.slsenergy.com

P.S. 677
Gregory A. Smith

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

NAD83 S.P.C.(FT)	N. 478,149.83	E. 1,836,770.22
NAD83 GEO.	LAT-(N) 39.806778	LONG-(W) 80.680867
NAD83 UTM (M)	N. 4,408,360.53	E. 527,320.34

LANDING POINT

NAD83 S.P.C.(FT)	N. 478,244.8	E. 1,839,176.5
NAD83 GEO.	LAT-(N) 39.809889	LONG-(W) 80.672223
NAD83 UTM (M)	N. 4,408,708.2	E. 528,047.8

BOTTOM HOLE

NAD83 S.P.C.(FT)	N. 474,823.5	E. 1,641,680.4
NAD83 GEO.	LAT-(N) 39.797822	LONG-(W) 80.683278
NAD83 UTM (M)	N. 4,405,372.1	E. 528,827.1



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

LEGEND

- UNIT BOUNDARY
- LEASED TRACTS INSIDE
- UNIT BOUNDARY
- SURFACE LINE
- WELL LATERAL
- 400' OFFSET LINE
- 500' OFFSET LINE
- TIE LINE
- CREEK
- ROAD
- FORCED POOL TRACT
- COUNTY ROUTE
- PROPOSED WELL
- EXISTING WELL
- PERMITTED WELL
- TAX MAP-PARCEL
- SURFACE OWNER (SEE TABLE)
- LEASE # (SEE SHEET 3)

SCALE 1" = 2000' FILE NO. 8655P17HUR2.dwg

DATE AUGUST 29 20 17

REVISED JANUARY 15 & APRIL 12 20 18

OPERATORS WELL NO. TEN HIGH 1S-17HU

API WELL NO. 47 - 051 - 02033H6A

NO. STATE COUNTY PERMIT

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

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

T.H. LONGITUDE 80°40'00"
B.H. LONGITUDE 80°37'30"
NAD 83 GRID NORTH
12,935' B.H.
9,674' T.H.

TEN HIGH 1S LEASE
UTICA UNIT - 221.76 AC ±
WELL 17HU
TUG HILL OPERATING



Table with 6 columns: NO., Lease Name or No., Tag, Parcel, Oil and Gas Royalty Owner, Deed Book, Page. Lists lease details for various parcels.

Table with 6 columns: NO., Lease Name or No., Tag, Parcel, Oil and Gas Royalty Owner, Deed Book, Page. Lists lease details for various parcels, ending with a note: **FORCE POOL INTEREST

47-051-02033H6A

FILE NO. 8655P17HUR2.dwg
DATE AUGUST 29, 20 17
REVISED JANUARY 15 & APRIL 12, 20 18
OPERATORS WELL NO. TEN HIGH 1S-17HU
API WELL NO. 47
STATE COUNTY PERMIT



STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS
P.S. 677
Gregory A. Smith

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

**TEN HIGH 1S LEASE
UTICA UNIT - 221.76 AC±
WELL 17HU
TUG HILL OPERATING**

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

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

NAD'83 S.P.C.(FT)	N. 478,149.83	E. 1,636,770.22
NAD'83 GEO.	LAT-(N) 39.806776	LONG-(W) 80.680637
NAD'83 UTM (M)	N. 4,406,360.53	E. 527,320.34

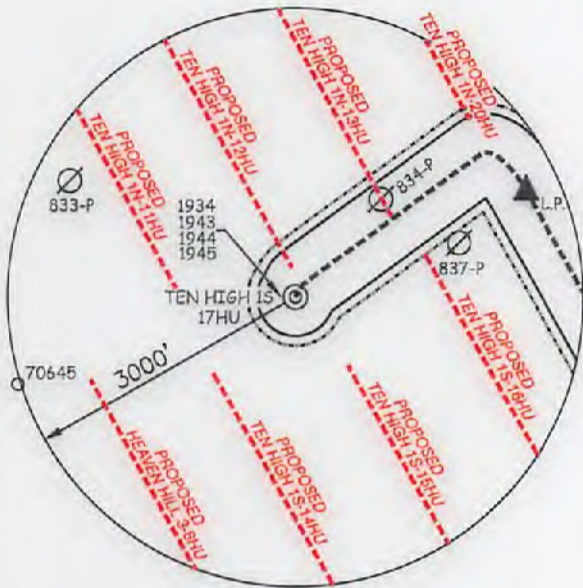
LANDING POINT

NAD'83 S.P.C.(FT)	N. 479,244.3	E. 1,639,176.5
NAD'83 GEO.	LAT-(N) 39.809869	LONG-(W) 80.672323
NAD'83 UTM (M)	N. 4,406,706.2	E. 528,047.9

BOTTOM HOLE

NAD'83 S.P.C.(FT)	N. 474,823.5	E. 1,641,660.4
NAD'83 GEO.	LAT-(N) 39.797822	LONG-(W) 80.663278
NAD'83 UTM (M)	N. 4,405,372.1	E. 526,827.1

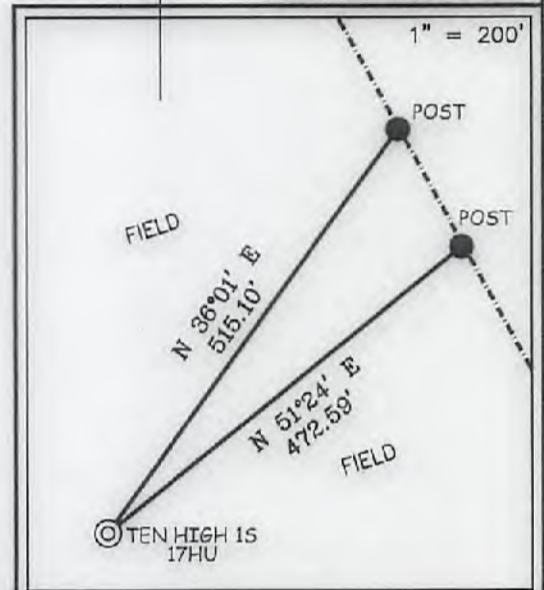
T.H. LONGITUDE 80°40'00"
B.H. LONGITUDE 80°37'30"



NOTES ON SURVEY

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS > 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'
- PROPOSED LATERAL OR TOP HOLE OF TEN HIGH 1N-12HU IS WITHIN 3000' OF THE TOP HOLES OR LATERALS OF PROPOSED WELLS HEAVEN HILL 3-8HU, TEN HIGH 1S-14HU, TEN HIGH 1S-15HU, TEN HIGH 1S-16HU, TEN HIGH 1N-11HU, TEN HIGH 1N-12HU, TEN HIGH 1N-13HU, AND TEN HIGH 1N-20HU.

REFERENCES



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www.slsurveys.com

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

P.S. 677 *Gregory A. Smith*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE AUGUST 29, 20 17
REVISED JANUARY 15 & APRIL 12, 20 18
OPERATORS WELL NO. TEN HIGH 1S-17HU
API WELL NO. 47-051-02033
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8655P17HUR2.dwg
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

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



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

LOCATION: ELEVATION GROUND = 1,322.30' PROPOSED = 1,310.06' WATERSHED MIDDLE BOWMAN RUN OF FISH CREEK (HUC 10)
DISTRICT MEADE COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'

SURFACE OWNER LAWRENCE & SHIRLEY CONKLE ESTS ACREAGE 139.79±
ROYALTY OWNER ANDY PAUL & JACKIE KUHN, ET AL - SEE SHEET 3 ACREAGE 139.79±

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

PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION POINT PLEASANT
ESTIMATED DEPTH TVD: 11,878' / TMD: 17,519'

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

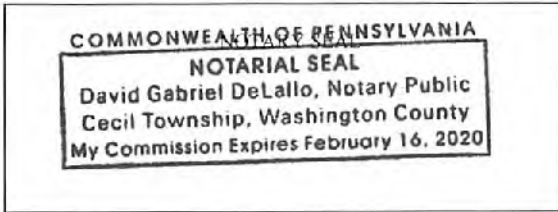
DESIGNATED AGENT DIANNA STAMPER CT CORPORATION SYSTEM
ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313

COUNTY NAME
PERMIT

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 Blvd, Southpointe Plaza II, Suite 200</u>
By:	Amy Miller <u><i>Amy Miller</i></u>		<u>Canonsburg, PA 15317</u>
Its:	<u>Permit Specialist - Appalachia</u>	Facsimile:	<u>724-338-2030</u>
Telephone:	<u>724-749-8388</u>	Email:	<u>amiller@tug-hilltop.com</u>



Subscribed and sworn before me this 13 day of APRIL, 2018.

D. DeLallo Notary Public

My Commission Expires 2/16/2018

Oil and Gas Privacy Notice:

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

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APR 16 2018

WV Department of
Environmental Protection

41001040003

WW-6A
(9-13)

API NO. 47- 051 -
OPERATOR WELL NO. Ten High 1S-17HU
Well Pad Name: Ten High

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: 4/13/2018 **Date Permit Application Filed:** 4/13/2018

Notice of:

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

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

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice WSSP Notice E&S Plan Notice Well Plat Notice is hereby provided to:

SURFACE OWNER(s)
 Name: Estate of Lawrence & Shirley Mae Conkle c/o Roy Conkle
 Address: 75 Arlington Avenue
Moundsville, WV 26041
 Name: Roy A. Conkle, Sr., and Lorie A.
 Address: 75 Arlington Avenue
Moundsville, WV 26041 *See Attached*

SURFACE OWNER(s) (Road and/or Other Disturbance)
 Name: Robert G. Hubbs and Scarlett E. Otta
 Address: 132 Shepherds Ridge Lane
Glen Easton, WV 26039
 Name: _____
 Address: _____

SURFACE OWNER(s) (Impoundments or Pits)
 Name: None
 Address: _____

COAL OWNER OR LESSEE
 Name: Murray Energy Corporation
 Address: 46225 National Road
St. Clairsville, OH 43950
 COAL OPERATOR
 Name: Same as above coal owner
 Address: _____

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
 Name: *See supplement page 1A attached
 Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD
 Name: None
 Address: _____

*Please attach additional forms if necessary

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Office of Oil and Gas

APR 16 2018

WV Department of
Environmental Protection

4705102033

WW-6A
(8-13)

RECEIVED
Office of Oil and Gas

API NO. 47- 051
OPERATOR WELL NO. Ten High 15-17HU
Well Pad Name: Ten High

APR 16 2018

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 a well impoundment or pit.

This Notice Shall Include:

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

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

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

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

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

Well Location Restrictions

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

WW-6A
(8-13)

API NO. 47-051 - 02033
OPERATOR WELL NO. Ten High 1S-17HU
Well Pad Name: Ten High

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

Water Well Testing:

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

Water Testing Laboratories:

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

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

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

Written Comment:

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

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

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

Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

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WW-6A
(8-13)

API NO. 47- 051 - 02033
OPERATOR WELL NO. Ten High 1S-17HU
Well Pad Name: Ten High

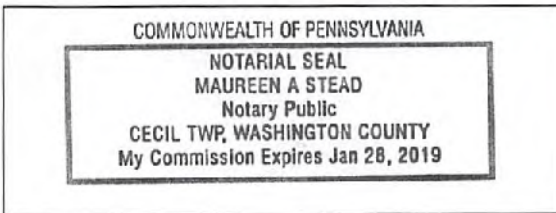
Notice is hereby given by:

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

Address: 380 Southpointe Blvd, Southpointe 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.



Subscribed and sworn before me this 13 day of APRIL 2018
Maureen A Stead Notary Public
My Commission Expires 1/28/19

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WW-6A Notice of Application Attachment 1 of 1

Surface Owner(s):

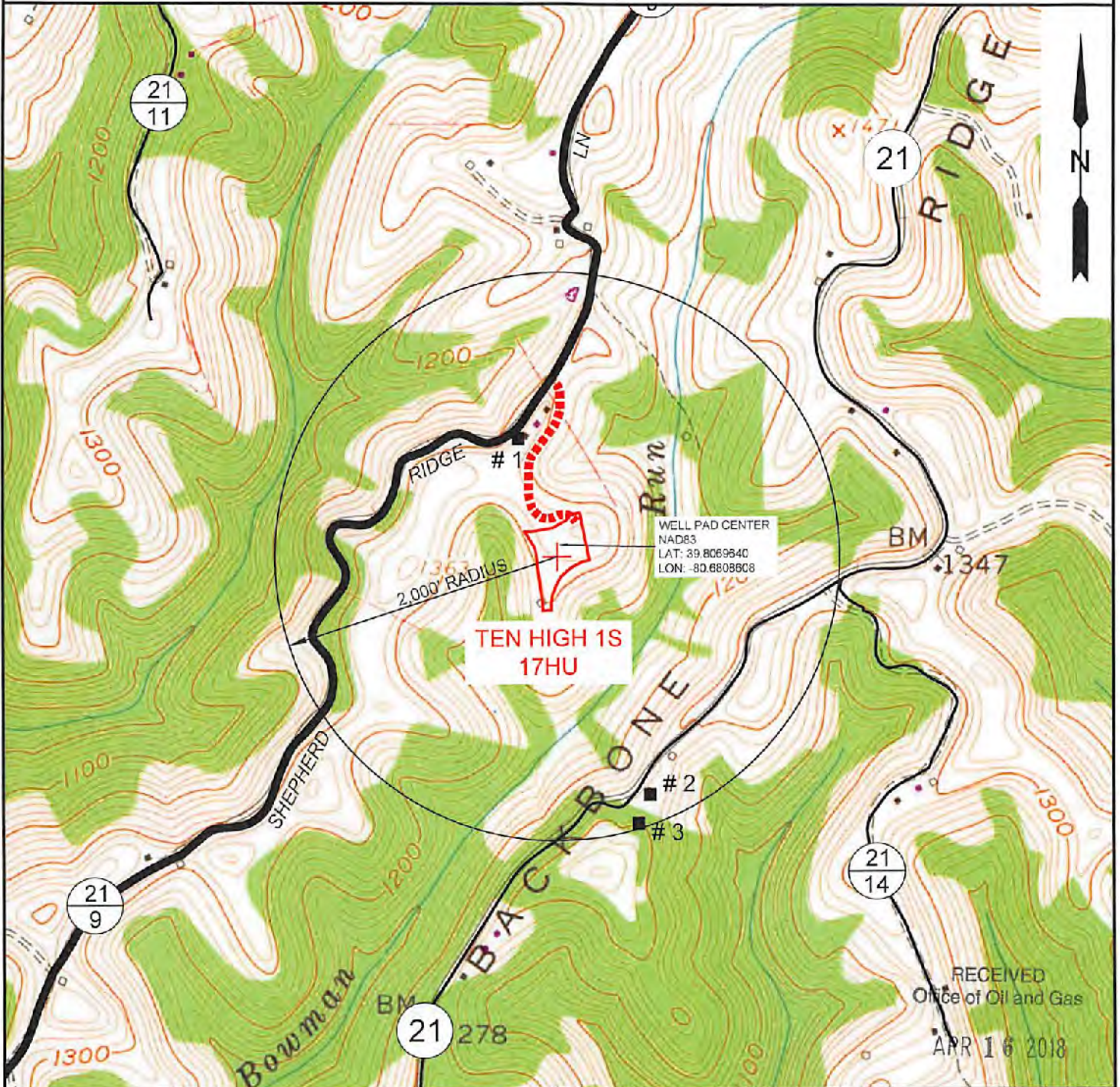
Name: Teresa Anne Hughes and Michael J.
Address: 252 Conkle Drive
Glen Easton, WV 26039

Brenda Joyce Whetzel
1863 Shepherds Ridge Lane
Glen Easton, WV 26039

Larry Lee Conkle and Donna D.
154 Conkle Drive
Glen Easton, WV 26039

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PROPOSED TEN HIGH 1S - 17HU



NOTE: THERE APPEARS TO BE THREE (3) POSSIBLE WATER SOURCES WITHIN 2,000'.

WV Department of
Environmental Protection

SLS
Land & Energy Development
Solutions from the ground up.
P.O. Box 190 • 12 Vanhorn Drive • Glenville, WV 26331 • (304) 462-5634
www.clsurveys.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	390 SOUTHPOINTE BLVD	
DRAWN BY		DATE	SCALE
K.G.M.		08-29-17	1" = 1000'

TUG HILL
OPERATING

51-02033

Exhibit WW-6A

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

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

Well: Ten High 15 – 17HU
District: Meade (House #'s 1-3)
State: WV

There are three (3) residences, no businesses, no churches, no schools or no emergency facilities within two-thousand feet (2,000') of the above referenced well location.

House 1 TM 7 Pcl. 24 Lawrence & Shirley Conkle Ests Phone: 304-845-1808; 304-848-1808 Physical Address: 77B Shepards Lane 932 Shepherd Ridge Ln. Glen Easton, WV 26039 Tax Address: 75 Arlington Ave. Moundsville, WV 26041	House 2 TM 7 Pcl. 25 Thomas R. & Kimberly Whitfield Phone: 304-843-1753 Physical Address: 53 Sallys Backbone Rd. 1834 Sally's Backbone Rd. Glen Easton, WV 26039 Tax Address: 1838 Sallys Backbone Rd. Glen Easton, WV 26039	House 3 TM 7 Pcl. 25 Thomas R. & Kimberly Whitfield Phone: 304-843-1753 Physical Address: 53 Sallys Backbone Rd. 1838 Sally's Backbone Rd. Glen Easton, WV 26039 Tax Address: Same
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WV Department of
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STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF ENTRY FOR PLAT SURVEY

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

Date of Notice: 2/9/2017 **Date of Planned Entry:** 2/20/2017

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: ESTATE OF LAWRENCE & SHIRLEY MAE CONKLE c/o Roy Conkle

Address: 75 ARLINGTON AVENUE
MOUNDSVILLE, WV 26041

Name: ROY A CONKLE, SR.

Address: 75 ARLINGTON AVENUE
MOUNDSVILLE, WV 26041

Name: LARRY CONKLE

Address: 154 CONKLE DRIVE
GLEN EASTON, WV 26039 ****SEE ATTACHED****

COAL OWNER OR LESSEE

Name: MURRAY ENERGY CORPORATION

Address: 4822B NATIONAL ROAD
ST. CLAIRSVILLE, OH 43950

MINERAL OWNER(s)

Name: ESTATE OF LAWRENCE & SHIRLEY MAE CONKLE c/o Roy Conkle

Address: 75 ARLINGTON AVENUE
MOUNDSVILLE, WV 26041 ****SEE ATTACHED****

**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(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>LAT 39.8067775 LONG -80.6809192</u>
County:	<u>MARSHALL</u>	Public Road Access:	<u>SHEPHERD RIDGE LANE (Co. RT. 21/9)</u>
District:	<u>MEADE</u>	Watershed:	<u>HUC-10 FISH CREEK</u>
Quadrangle:	<u>GLEN EASTON 7.5'</u>	Generally used farm name:	<u>LAWRENCE CONKLE, SR.</u>

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

Notice is hereby given by:

Well Operator:	<u>TUG HILL OPERATING, LLC</u>	Address:	<u>380 SOUTHPOINTE BLVD., SOUTHPOINTE PLAZA II, SUITE 200</u>
Telephone:	<u>(724) 749-8388</u>		<u>CANONSBURG, PA 15317</u>
Email:	<u>jwhite@tug-hillcop.com</u>	Facsimile:	<u>(724) 388-2030</u>

Oil and Gas Privacy Notice:

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

WW-6A3 Notice of Entry for Plat Survey Attachment 1 of 1

Surface Owner(s):

Name: Teresa Hughes
Address: 252 Conkle Drive
Glen Easton, WV 26039

Brenda Joyce Wetzel
RD 1, Box 79
Glen Easton, WV 26039

Surface Owner(s) Access Road:

Name: Robert G. Hubbs and Scarlett E. Otte
132 Sheperd Ridge Lane
Glen Easton, WV 26039

Mineral Owner(s):

Name: Roy A. Conkle, Sr.
75 Arlington Avenue
Moundsville, WV 26041

Larry Conkle
154 Conkle Drive
Glen Easton, WV 26039

Teresa Hughes
252 Conkle Drive
Glen Easton, WV 26039

Brenda Joyce Wetzel
RD 1, Box 79
Glen Easton, WV 26039

**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: 04/13/2018 **Date Permit Application Filed:** 04/13/2018

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

CERTIFIED MAIL **HAND**
RETURN RECEIPT REQUESTED **DELIVERY**

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

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

Name: Estate of Lawrence & Shirley Mae Conkle c/o Roy Conkle
Address: 75 Arlington Avenue
Moundsville, WV 26041

Name: Roy A. Conkle, Sr., and Lorie A.
Address: 75 Arlington Avenue
Moundsville, WV 26041 ****See Attached****

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>527,320.34</u>
County: <u>Marshall</u>		Northing: <u>4,406,360.53</u>
District: <u>Meade</u>	Public Road Access: <u>Shepherd Ridge Lane (Co. Rt. 21/9)</u>	
Quadrangle: <u>Glen Easton 7.5'</u>	Generally used farm name: <u>LAWRENCE & SHIRLEY CONKLE, ESTS</u>	
Watershed: <u>(HUC 10) Fish Creek</u>		

This Notice Shall Include:

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

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

Address: 380 Southpointe Blvd, Southpointe 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 of your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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WW-6A5 Notice of Planned Operation..... Attachment 1 of 1

Surface Owner(s):

Name: Teresa Anne Hughes and Michael J.
Address: 252 Conkle Drive
Glen Easton, WV 26039

Brenda Joyce Whetzel
1863 Shepherds Ridge Lane
Glen Easton, WV 26039

Larry Lee Conkle and Donna D.
154 Conkle Drive
Glen Easton, WV 26039

Robert G. Hubbs and Scarlett E. Otte
132 Shepherds Ridge Lane
Glen Easton, WV 26039

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51-02033



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

Jim Justice
Governor

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

May 16, 2017

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

Subject: DOH Permit for the Ten High 1N Pad, Marshall County
Ten High 1S Unit-17HU Well site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2017-0127 which has been issued to Tug Hill Operating, LLC for access to the State Road for a well site located off of Marshall County Route 21/9 SLS.

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

Very Truly Yours,

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

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WV Department of
Environmental Protection

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

51-02033



PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Ten High 1S-17HU

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

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

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

May 11, 2018

Susan Rose, Administrator
Oil and Gas Conservation Commission
601 57th Street SE
Charleston, WV 25304-2345

RE: Application of Tug Hill Operating, LLC
Ten High 1S – 17HU

Dear Ms. Rose,

The West Virginia Department of Transportation, Division of Highways (WVDOH), hereby withdraws its May 1, 2018 objection to an application submitted to the Oil and Gas Conservation Commission by Tug Hill Operating, LLC to intentionally deviate new deep wells in Marshall County (Ten High 1S – 17HU).

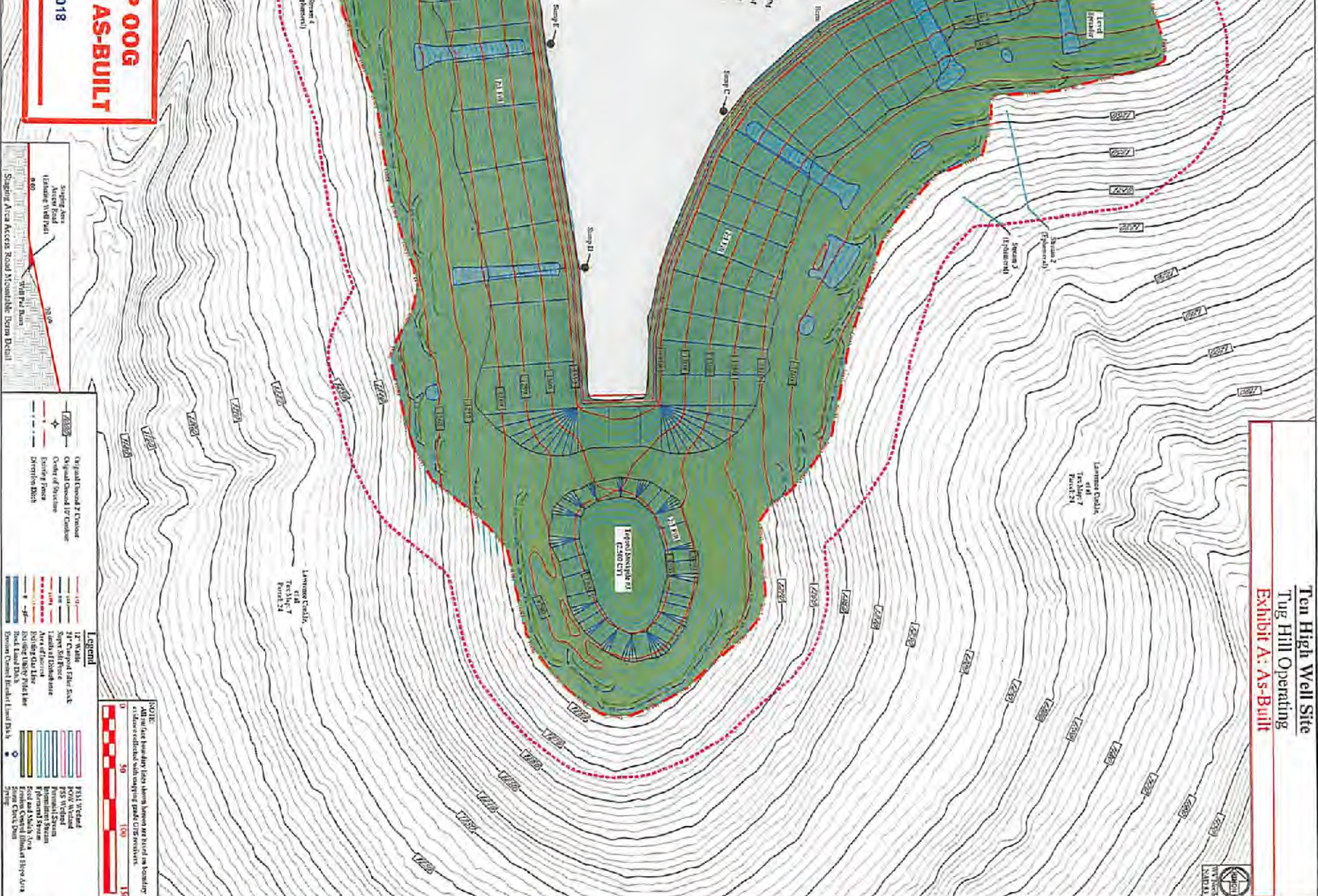
If you have any question concerning this matter, please contact me at (304) 558-9539 or cheryl.l.davis@wv.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read "Cheryl L. Davis".

Cheryl L. Davis
Attorney
Right of Way Division

Ten High Well Site
Tug Hill Operating
Exhibit A: As-Built



<p>Erosion and Sediment Control Plan</p> <p>Ten High Well Site</p> <p>Meade District Marshall County, WV</p>	<p>Kyle Sullivan Professional Engineer No. 12345</p>	<p>TUG HILL OPERATING</p>	<p>Date:</p> <p>02-17-2017</p> <p>12-06-2017</p>	<p>Revision:</p> <p>Design</p> <p>As-Built</p>
			<p>THIS DOCUMENT PREPARED FOR TUG HILL OPERATING</p>	<p>Date: 02/17/2017</p> <p>Scale: As Shown</p> <p>Designed By: ZS</p> <p>File No:</p> <p>Sheet 7 of 13</p>