



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

Harold D. Ward, Cabinet Secretary
www.dep.wv.gov

Tuesday, March 9, 2021
WELL WORK PERMIT
Horizontal 6A / New Drill

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

Re: Permit approval for VAN WINKLE S-9HM
47-051-02358-00-00

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.

A blue ink signature of James A. Martin.

James A. Martin
Chief

Operator's Well Number: VAN WINKLE S-9HM
Farm Name: XCL MIDSTREAM OPERATING
U.S. WELL NUMBER: 47-051-02358-00-00
Horizontal 6A New Drill
Date Issued: 3/9/2021

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.

API Number: _____

4705102358

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.

03/12/2021



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

Harold D. Ward, Cabinet Secretary
dep.wv.gov

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

TO: Tug Hill Operating, LLC
380 Southpointe Boulevard, Plaza II., Suite 200
Canonsburg, PA 15317

DATE: February 24, 2021
ORDER NO.: 2021-W-1

INTRODUCTION

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

FINDINGS OF THE CHIEF

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

1. OOG, an office within the West Virginia Department of Environmental Protection, is the agency with the duty and authority to execute and enforce W. Va. Code §22-6-1 and §22-6A-1 *et seq.*, and the rules and regulations promulgated thereunder.
2. Tug Hill is a "person" as defined by W. Va. Code §22-6-1(n), with a corporate address as 380 Southpointe Boulevard, Plaza II., Suite 200, Canonsburg, PA 15317.
3. On December 23, 2020, January 19, 22 and 25, 2021 Tug Hill submitted well work permit applications identified as API#s 47- 51-02347, 47-51-02348, 47-51-02349, 47-51-02350, 47-51-02351, 47-51-02352, 47-51-02353, 47-51-02354, 47-51-02355, 47-51-02356, 47-51-02357, 47-51-02358, 47-51-02359, 47-51-02360, 47-51-02361, 47-51-02362, 47-51-02363, 47-51-02364, 47-51-02365, 47-51-02366, 47-51-02367 and 47-51-02368. The wells are located on the Hunter Pethtel Pad in the Meade District of Marshall County, West Virginia.
4. On February 18, 2021 Tug Hill requested a waiver for Wetlands 03, 04, 07 and 08 as outlined in Attachment I, from well location restriction requirements in W. Va. Code §22-6A-12(b) for the well work permit applications identified as API#s 47- 51-02347, 47-51-02348, 47-51-02349, 47-51-02350, 47-51-02351, 47-51-02352, 47-51-02353, 47-51-02354, 47-51-02355, 47-51-02356, 47-51-02357, 47-51-02358, 47-51-02359, 47-51-02360, 47-51-02361, 47-51-02362, 47-51-02363, 47-51-02364, 47-51-02365, 47-51-02366, 47-51-02367 and 47-51-02368. Wetland 03 will be excluded from the waiver due to their location inside of the construction area and total coverage under the ACOE permit.

CONCLUSIONS OF LAW

1. West Virginia Code §22-1-6(d) requires, in part, that “in addition to other powers, duties and responsibilities granted and assigned to the secretary by this chapter, the secretary is authorized and empowered to... (3) Enter private lands to make surveys and inspections for environmental protection purposes; to investigate for violations of statutes or rules which the Office of Oil and Gas is charged with enforcing; to serve and execute warrants and processes; to make arrests; issue orders, which for the purposes of this chapter include consent agreements; and to otherwise enforce the statutes or rules which the Office of Oil and Gas is charged with enforcing.”
2. West Virginia Code §22-6A-2(a)(6) requires, in part, that “Concomitant with the broad powers to condition the issuance of well work permits, the secretary should also have broad authority to waive certain minimum requirements of this article when, in his or her discretion, such waiver is appropriate: *Provided*, That the secretary shall submit a written report of the number of waivers granted to the Legislature commencing January 1, 2013, and each year thereafter.”
3. West Virginia Code §22-6A-12(b) requires, in part, that “no well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the Office of Oil and Gas shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The Office of Oil and Gas may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary.”

ORDER

West Virginia Code §22-6A-12(b) requires, in part, that “no well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland. The Office of Oil and Gas grants the request for a waiver for Wetlands 04, 07 and 08 from well location restriction requirements in W. Va. Code §22-6A-12(b) for the well work permit applications identified as API#s 47- 51-02347, 47-51-02348, 47-51-02349, 47-51-02350, 47-51-02351, 47-51-02352, 47-51-02353, 47-51-02354, 47-51-02355, 47-51-02356, 47-51-02357, 47-51-02358, 47-51-02359, 47-51-02360, 47-51-02361, 47-51-02362, 47-51-02363, 47-51-02364, 47-51-02365, 47-51-02366, 47-51-02367 and 47-51-02368. The Office of Oil and Gas hereby **ORDERS** that Tug Hill shall meet the following site construction and operational requirements for the Hunter Pethtel Well Pad:

- a. A berm shall be constructed around the perimeter of the pad to contain any potential spills and storm water runoff. Berm is to be at least twenty-four inches (24”) in height;
- b. Erosion control blankets shall be installed on all slopes and down gradient locations of the pad as erosion and sediment controlling BMPs;
- c. Wetlands 04 and 08 shall be protected by a layer of both Super Silt Fence and twenty four inch (24”) compost filter sock. This along with temporary and permanent vegetative cover will prevent sediment from reaching the wetlands;
- d. Disturbed areas not used for operations shall be seeded and mulched per the seeding tables in the WVDEP-OOG Erosion and Sediment Control Manual;
- e. Drill cuttings and associated drilling mud shall be disposed of in a permitted landfill;
- f. Waste generated by the flowback treatment systems shall be sent to offsite disposal at a permitted landfill;
- g. Weekly site inspections shall be conducted to monitor and maintain the integrity of the BMP storm water controls;
- h. Weekly storm water and spill prevention inspections shall be conducted focusing on storm water and spill prevention BMPs and maintenance of these BMPs;
- i. Inspections of the storm water and spill prevention measures shall be conducted after any major storm event defined as a half inch (½”) rain within any twenty-four (24) hour period;
- j. Pad inspections shall be conducted no less than once a week to identify and mitigate potential deficiencies;
- k. All records from inspections shall be maintained on site for the life of the project and be available upon request.

Thus ORDERED, the 24th day of February, 2021.

IN THE NAME OF THE STATE OF WEST VIRGINIA:

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

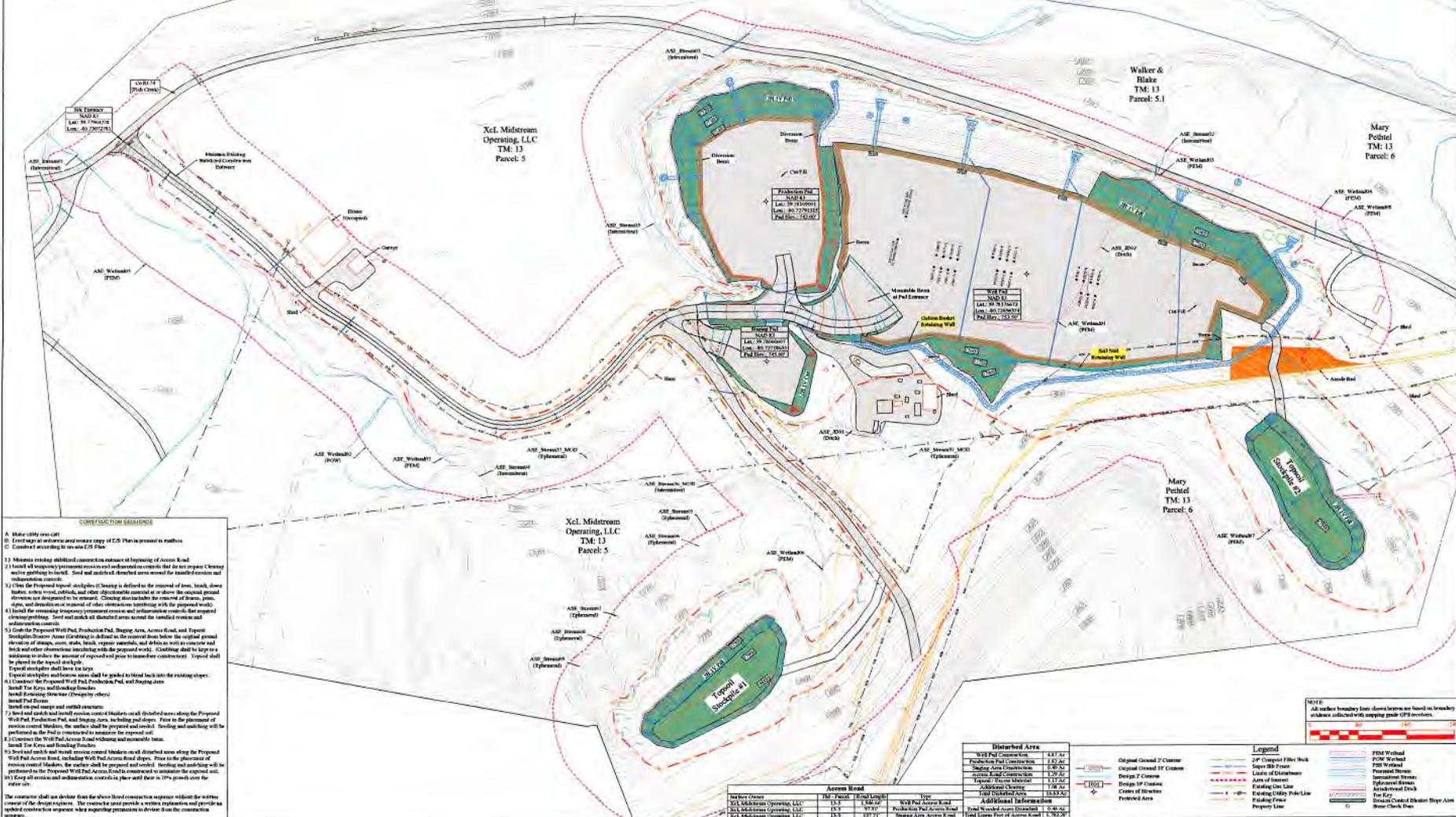
By: **James Martin** Digitally signed by James Martin
Date: 2021.02.24 13:14:36 -05'00'

JAMES A. MARTIN, CHIEF

Hunter Pethel Well Site
Tug Hill Operating
Exhibit A: Final Design: Issue for Permitting

Jurisdictional Discharge (Linear Feet)					
Discharge Type	Channel (LF)	Structure P&I (LF)	Slope P&I (LF)	Conduit Discharge (LF)	Total Impact (LF)
ASB (Wetland)	102.75	0	0	0	102.75
Intermittent Stream Impact (Linear Feet)					
Stream and Impact Name	Channel (LF)	Structure P&I (LF)	Slope P&I (LF)	Conduit Discharge (LF)	Total Impact (LF)
ASB (Wetland)	30.30	0	0	0	30.30
Total Stream Impact = 133.05					

Wetland Impact (Square Feet)					
Wetland Designation	Channel (SF)	Structure (SF)	Slope (SF)	Conduit (SF)	Total Impact (SF)
ASB (Wetland)	3414.7	0	0	0	3414.7
ASB (Wetland)	249.0	234.5	0	0	483.5
ASB (Wetland)	1,864.8	362.8	0	0	2,227.6
Total Impact = 4,925.8					
Final Impact (Acres) = 0.092					



- CONSTRUCTION SEQUENCE**
- A. Make utility one cut.
 - B. Erect sign at entrance and remove copy of EIS Plan present in mailbox.
 - C. Construct according to revised EIS Plan.
- 1) Address existing additional construction activities at beginning of Access Road.
 - 2) Install all necessary perimeter erosion and sedimentation controls that do not require clearing active pathways to be built. Seed and mulch all disturbed areas covered for erosion control and sedimentation control.
 - 3) Clear the Proposed Impact Analysis (PIA) to be defined as the removal of trees, brush, down brush, vines, weed, and other obstructions as shown on the site plan and as shown on the ground. Clearing shall include the removal of brush, vines, logs, and stumps and removal of other obstructions existing with the proposed work.
 - 4) Install the necessary temporary sedimentation control and sedimentation control. See proposed clearing plan. Seed and mulch all disturbed areas covered for erosion control and sedimentation control.
 - 5) Construct the Proposed Well Pad, Production Pad, Storage Area, Access Road, and Tug Hill Production Pad. Clearing to be defined as the removal of trees, brush, down brush, vines, weed, and other obstructions as shown on the site plan and as shown on the ground. Clearing shall include the removal of brush, vines, logs, and stumps and removal of other obstructions existing with the proposed work. Clearing shall be kept to a minimum to reduce the amount of exposed soil prior to erosion control construction. Topsoil shall be placed in the rapid weight. Topsoil weight shall be 100 lbs.
 - 6) Install all necessary erosion control to be placed to hold back soil on the existing slope.
 - 7) Construct the Proposed Well Pad, Production Pad, and Storage Area. Seed and mulch all disturbed areas covered for erosion control and sedimentation control.
 - 8) Construct the Proposed Well Pad, Production Pad, and Storage Area. Seed and mulch all disturbed areas covered for erosion control and sedimentation control.
 - 9) Seed and mulch all disturbed areas covered for erosion control and sedimentation control.
 - 10) Construct the Proposed Well Pad, Production Pad, and Storage Area. Seed and mulch all disturbed areas covered for erosion control and sedimentation control.
 - 11) Construct the Proposed Well Pad, Production Pad, and Storage Area. Seed and mulch all disturbed areas covered for erosion control and sedimentation control.
 - 12) Construct the Proposed Well Pad, Production Pad, and Storage Area. Seed and mulch all disturbed areas covered for erosion control and sedimentation control.
 - 13) Construct the Proposed Well Pad, Production Pad, and Storage Area. Seed and mulch all disturbed areas covered for erosion control and sedimentation control.
 - 14) Construct the Proposed Well Pad, Production Pad, and Storage Area. Seed and mulch all disturbed areas covered for erosion control and sedimentation control.
 - 15) Construct the Proposed Well Pad, Production Pad, and Storage Area. Seed and mulch all disturbed areas covered for erosion control and sedimentation control.
 - 16) Construct the Proposed Well Pad, Production Pad, and Storage Area. Seed and mulch all disturbed areas covered for erosion control and sedimentation control.
 - 17) Construct the Proposed Well Pad, Production Pad, and Storage Area. Seed and mulch all disturbed areas covered for erosion control and sedimentation control.
 - 18) Construct the Proposed Well Pad, Production Pad, and Storage Area. Seed and mulch all disturbed areas covered for erosion control and sedimentation control.
 - 19) Construct the Proposed Well Pad, Production Pad, and Storage Area. Seed and mulch all disturbed areas covered for erosion control and sedimentation control.
 - 20) Construct the Proposed Well Pad, Production Pad, and Storage Area. Seed and mulch all disturbed areas covered for erosion control and sedimentation control.
- The contractor shall not disturb any area shown on the site plan or otherwise indicated on the site plan. The contractor shall not disturb any area shown on the site plan or otherwise indicated on the site plan. The contractor shall not disturb any area shown on the site plan or otherwise indicated on the site plan.

Access Road	TM	Parcel	Final Length	WPA
Walker & Blake	13	5.1	1,500.00	Production Pad
Mary Pethel	13	6	1,500.00	Production Pad
Xcl. Midstream	13	5	1,500.00	Production Pad
Tug Hill	13	1	1,500.00	Production Pad

Disturbed Area	
WPA Construction	487.50
Production Pad Construction	1,822.50
Storage Area Construction	1,800.00
Access Road Construction	1,500.00
Legacy - Forest Mosaic	131.00
Additional Storage	178.00
ASB Wetland Area	133.05
Total Disturbed Area	10,252.50

Legend

- Original Ground 2' Contour
- Original Ground 5' Contour
- Design 2' Contour
- Design 5' Contour
- Circle of Influence
- Proposed Area
- 2' Contour Filter Risk
- 5' Contour Filter Risk
- Line of Disposition
- Area of Interest
- Existing Gas Line
- Existing Utility Pole Line
- Right-of-Way
- Property Line
- FEM Wetland
- PER Wetland
- ASB Wetland
- Production Pad
- Storage Area
- Access Road
- Additional Storage
- Gas Line
- Utility Pole Line
- Right-of-Way
- Property Line

TUG HILL OPERATING

THIS DOCUMENT PREPARED FOR TUG HILL OPERATING

Kelly Surviving
 A Division of Tug Hill Operating

Hunter Pethel Well Site
 Meade District
 Marshall County, WV

Date: 12/04/2020
 Scale: As Shown
 Designer: BJ, ZS
 Title: N
 Sheet 5 of 13

WW-6B
(04/15)

4705102358
API NO. 47-051 -
OPERATOR WELL NO. Van Winkle S-9HM
Well Pad Name: Hunter Pethel

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: Van Winkle S-9HM Well Pad Name: Hunter Pethel

3) Farm Name/Surface Owner: XcL Midstream Operating, LLC Public Road Access: County Route 74

4) Elevation, current ground: 754' Elevation, proposed post-construction: 754'

5) Well Type (a) Gas Oil _____ Underground Storage _____

Other _____

(b) If Gas Shallow Deep _____

Horizontal _____

6) Existing Pad: Yes or No Yes

Barry Stalup
1-20-21

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus is the target formation at a depth of 6086' - 6136', thickness of 50' and anticipated pressure of approx. 3800 psi.

8) Proposed Total Vertical Depth: 6,236'

9) Formation at Total Vertical Depth: Onondaga

10) Proposed Total Measured Depth: 21,943'

11) Proposed Horizontal Leg Length: 14,713.16'

12) Approximate Fresh Water Strata Depths: 70; 415'

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: 870'

15) Approximate Coal Seam Depths: Sewickley Coal - 314' and Pittsburgh Coal - 409'

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: _____
Depth: _____
Seam: _____
Owner: _____

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Environmental Protection

WW-6B
(04/15)

4705102358
API NO. 47-051 -
OPERATOR WELL NO. Van Winkle S-9HM
Well Pad Name: Hunter Pethel

18) CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	30"	NEW	BW	BW	120'	120'	259ft ³ (CTS)
Fresh Water	13 3/8"	NEW	J55	54.5#	515'	515'	708ft ³ (CTS)
Coal	13 3/8"	NEW	J55	54.5#	515'	515'	708ft ³ (CTS)
Intermediate	9 5/8"	NEW	J55	36#	2,248'	2,248'	730ft ³ (CTS)
Production	5 1/2"	NEW	P110	20#	21,943'	21,943'	5592ft ³ (CTS)
Tubing	2 3/8"	NEW	N80	4.7#		6,698'	
Liners							

Bony Stellys
1-20-21

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	13 3/8"	17 1/2"	.38	2,740	2,192	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"	.352	3,520	2,816	SEE #24	1.19
Production	5 1/2"	8 7/8" _ 8 3/4"	.361	12,640	10,112	SEE #24	1.17/1.19
Tubing	2 3/8"		.19	11,200	8,960		
Liners							

PACKERS

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

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Environmental Protection

WW-6B
(10/14)

API NO. 47- 051 -
OPERATOR WELL NO. Van Winkle S-9HM
Well Pad Name: Hunter Pethtel

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

Drill through the Marcellus and TD Pilot Hole 100' into the Onondaga. 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 37,000,000 lb proppant and 665,000 bbl of water. Max rate = 80 bpm; max psi = 9,000#.

BS 1-28-21

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 16.63 acres

22) Area to be disturbed for well pad only, less access road (acres): 4.87 acres

23) Describe centralizer placement for each casing string:

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

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

Sfc - Premium NE-1 + 2% CaCl; Int1 - Premium NE-1 + 1.5% CaCL + Flake; Int2 - 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; Kick Plug - Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L; Prod - 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

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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FEB 03 2021

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Environmental Protection

*Note: Attach additional sheets as needed.

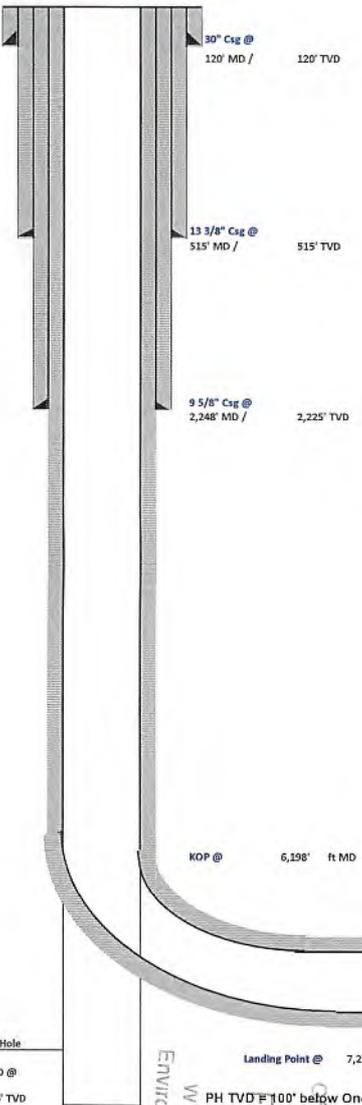


WELL NAME: Van Winkle S-9HM
 STATE: WV COUNTY: Marshall
 DISTRICT: Meade
 DF Elev: 754' GL Elev: 754'
 TD: 21,943'
 TH Latitude: 39.781722
 TH Longitude: -80.726739
 BH Latitude: 39.742307
 BH Longitude: -80.708745

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	415
Sewickley Coal	314
PITTSBURGH Coal	409
Big Lime	1573
Weir	1865
Berea	2064
Gordon	2334
Rhinestreet	5451
Geneseo/Burkett	5956
Tully	5983
Hamilton	6018
Marcellus	6086
Landing Depth	6121
Onondaga	6136
Pilot Hole Depth	6236

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	120'	120'	BW	BW	Surface
Surface	17.5	13 3/8	515'	515'	54.5	J55	Surface
Intermediate 1	12 1/4	9 5/8	2,248'	2,225'	36	J55	Surface
Production	8 7/8 x 8 3/4	5 1/2	21,943'	6,379'	20	CYHP110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	687	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	764	A	15	Air	1 Centralizer every other jt
Production	5,150	A	14.5	Air / SOBM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc



Bray Stelly 1-20-21

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 WV Department of
 Environmental Protection

Lateral TD @ 21,943' ft MD
 6,379' ft TVD

4705102358

4705102358



Tug Hill Operating, LLC Casing and Cement Program

Van Winkle S-9HM

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	13 3/8"	J55	17 1/2"	515'	CTS
Intermediate	9 5/8"	J55	12 1/4"	2,248'	CTS
Production	5 1/2"	CYHP110	8 7/8 x 8 3/4	21,943'	CTS

Cement

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

03/12/2021

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 Adam Picard 724-485-9331, apicard@dpslandservices.com, DPS GIS (12/04/2020) to have him make maps of the wellbores with his information. DPS utilizes WVGES maps for their mapping seems it as the best publicly available. See attached map he provided.

Request maps for:

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

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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

Permit well - Van Winkle S-9HM

Wells within 500' Buffer

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

API Number	Operator Name	Total Depth	Perforated Fms	Producing zones not perforated	Is this well "known or reasonably expected to penetrate a depth that could be within the range of Fracture propagation"? 1000' is max limit I would assign to wells that might be within in range of fracture propagation	Comments
4705101330	Tug Hill Operating	10154' MD, 6151' TVD	Marcellus	Unknown	Yes, existing Marcellus producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore.	Producing Marcellus horizontal well. Tug Hill Operating is considering plugging this well.
4705101284	Tug Hill Operating	6340' TVD	None	None	Yes, existing vertical pilot drilled into Onondaga. Well was not perforated. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore.	Well is not producing.
4705101859	EQT Production Company	No Depth/Not Drilled	None	None	No, well is a proposed well. The well was not drilled. This is a canceled permit.	A canceled permit.
4705101860	EQT Production Company	No Depth/Not Drilled	None	None	No, well is a proposed well. The well was not drilled. This is a canceled permit.	A canceled permit.
4705101856	EQT Production Company	No Depth/Not Drilled	None	None	No, well is a proposed well. The well was not drilled. This is a canceled permit.	A canceled permit.
4705101846	EQT Production Company	No Depth/Not Drilled	None	None	No, well is a proposed well. The well was not drilled. This is a canceled permit.	A canceled permit.
4705101847	EQT Production Company	No Depth/Not Drilled	None	None	No, well is a proposed well. The well was not drilled. This is a canceled permit.	A canceled permit.
4705100505	Fruchtman, M.	2444' TVD	Big Injun	Unknown	No, the well is not deep enough to be within the expected fracture propagation from a Marcellus stimulation. Well is plugged.	Well was plugged 9/4/1963.
4705170196	Tri-State Oil & Gas	Unknown	Unknown	Unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Marcellus well.	State records are incomplete.

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WV Geological & Economic Survey:

Well: County = 51 Permit = 00505

Report Time: Thursday, December 03, 2020 5:28:33 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_16	LAT_DD	LONG_DD	UTME	UTMN
4705100505	Marshall	505	Meade	Glen Easton	Cameron	39.780144	-80.733702	522803.9	4403389.7

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705100505	7/17/1963	Original Loc	Completed	C B Smith et al	1				C B Smith	Fruchtmann, M.			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AFT	TL_AFT	BH_P_BEF	BH_P_AFT	G_MSRD_BY
4705100505	7/17/1963	6/10/1963	662	Ground Level	Unnamed	Price Fm & equivs	Price Fm & equivs	Outpost (Extension) Test	Unsuccessful	Dry w/ Gas Show	Cable Tool	Fractured	2444		2444		0	16	0	0			0	0	415	40		

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4705100505	7/17/1963	Water	Unknown Water	Vertical			180						3
4705100505	7/17/1963	Water	Unknown Water	Vertical			1042						0

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
4705100505	Original Loc	Pittsburgh coal	Well Record	310	Reasonable	7	Reasonable	661	Ground Level
4705100505	Original Loc	1st Cow Rn/Mounds via	Past WVGES Staff Geologist	672	Reasonable	18	Reasonable	661	Ground Level
4705100505	Original Loc	1st Salt Sand	Past WVGES Staff Geologist	1033	Reasonable	23	Reasonable	661	Ground Level
4705100505	Original Loc	2nd Salt Sand	Past WVGES Staff Geologist	1118	Reasonable	47	Reasonable	661	Ground Level
4705100505	Original Loc	3rd Salt Sand	Past WVGES Staff Geologist	1235	Reasonable	90	Reasonable	661	Ground Level
4705100505	Original Loc	Big Lime	Well Record	1358	Reasonable	52	Reasonable	661	Ground Level
4705100505	Original Loc	Greentriar Group	Well Record	1358	Reasonable	52	Reasonable	661	Ground Level
4705100505	Original Loc	Big Injun (Price&Seq)	Past WVGES Staff Geologist	1410	Reasonable	260	Reasonable	661	Ground Level

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

Plugging Information:

API	PLG_DT	DEPTH_PBT
4705100505	9/4/1963	0

There is no Sample data for this well

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4705102358

Location Information: View Map

Table with columns: API, COUNTY, PERMIT, TAX_DISTRICT, QUAD_75, QUAD_15, LAT_DD, LONG_DD, UTM_E, UTM_N. Row 1: 4705101284, Marshall, 1234, Meade, Glen Easton, Cameron, 39.781304, -90.727076, 523302.4, 4403519.9

There is no Bottom Hole Location data for this well

Owner Information:

Table with columns: API, CMP_DT, SUFFIX, STATUS, SURFACE_OWNER, WELL_NUM, CO_NUM, LEASE, LEASE_NUM, MINERAL_OWN, OPERATOR, LAT_COMPLETION, PROP_VD, PROP_TRGT_FM, TFM_EST_FR. Row 1: 4705101284, 11/25/2009, Original Loc, Completed, Derek W Hunter, 1, Hunter, Derek W Hunter, Stone Energy Corporation, 6295, Marcellus Fm

Completion Information:

Table with columns: API, CMP_DT, SPUD_DT, ELEV DATUM, FIELD, DEEPEST_FM, DEEPEST_FMT, INITIAL_CLASS, FINAL_CLASS, TYPE, RIG, CMP_MTHD, TVD, TMD, NEW_FTG, KOD, G_BEF, G_AFT, O_BEF, O_AFT, NGL_BEF, NGL_AFT, P_BEF, TL_BEF, P_AFT, TL_AFT, BH_P_BEF, BH_T_AFT, G_MSRD_BY. Row 1: 4705101284, 11/25/2009, 8/29/2009, 752, Ground Level, Cameron-Garner, Onondaga Ls, Marcellus Fm, Development Well, Development Well, Gas, Rotary, Fractured, 6240, 6340, 220, 200, 1615, 440

Pay/Show/Water Information:

Table with columns: API, CMP_DT, ACTIVITY, PRODUCT, SECTION, DEPTH_TOP, FM_TOP, DEPTH_BOT, FM_BOT, G_BEF, G_AFT, O_BEF, O_AFT, WATER_QNTY. Rows include Water, Gas, Gas activities for various sections and depths.

Production Gas Information: (Volumes in Mcf)

Table with columns: API, PRODUCING_OPERATOR, PRD_YEAR, ANN_GAS, JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DCM. Rows for Stone Energy Corporation and EDT Production Company from 2011 to 2019.

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

Table with columns: API, PRODUCING_OPERATOR, PRD_YEAR, ANN_OIL, JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DCM. Rows for Stone Energy Corporation and EDT Production Company from 2011 to 2019.

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

Table with columns: API, PRODUCING_OPERATOR, PRD_YEAR, ANN_NGL, JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DCM. Rows for Stone Energy Corporation and EDT Production Company from 2011 to 2019.

Production Water Information: (Volumes in Gallons)

Table with columns: API, PRODUCING_OPERATOR, PRD_YEAR, ANN_WTR, JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DCM. Rows for EDT Production Company from 2018 to 2019.

Stratigraphy Information:

Table with columns: API, SUFFIX, FILL, FM, QUALITY, DEPTH_TOP, DEPTH_QUALITY, THICKNESS, THICKNESS_QUALITY, ELEV, DATUM. Lists various geological layers like Pittsburgh coal, Little Lime, Greenstone Group, etc.

Wireline (E-Log) Information:

Table with columns: API, LOG_TOP, LOG_BOT, DEEPEST_FML, LOGS_AVAIL, SCAN, DIGITIZED, GR_TOP, GR_BOT, D_TOP, D_BOT, N_TOP, N_BOT, I_TOP, I_BOT, T_TOP, T_BOT, S_TOP, S_BOT, O_TOP, O_BOT, INCH2, INCH5, REDUCED, KOP, LOGMD, ELEV_KB, ELEV_GL, ELEV_DF, LOG_MSRD_FROM. Row 1: 4705101284, 100, 6360, G.D.I.I.C., Y, N, 100, 6360, 2011, 6355, 2011, 6360, 2037, 6360, 2011, 6357, Y, Y, N

Comment: *logs: caliper, pe, tension, lt, amplitude, ccl, vcl, bit size.

Downloadable Log Images: We advise you to save the log image file to your PC for viewing. To do so, right-click the .tif image of interest and select the save option. Then you can direct the file to a location of your choice. Please note these images vary in size and some may take several minutes to download, especially if using a 56k or slower dialup connection.

Quick Reference Guide for Log File Names: For more info about WVGES scanned logs click here

geologic log types:

- g density includes bulk density, compensated density, density, density, porosity, grain density, matrix density, etc.)
a photoelectric absorption (PE or Pe, etc.)
o gamma ray
i induction (includes dual induction, medium induction, deep induction, etc.)
l laterolog
m dipmeter
n neutron (includes neutron porosity, sidewall neutron-SWN, etc.)
e other
s sonic or velocity
t temperature (includes borehole temperature, BHT differential temperature, etc.)
z spontaneous-potential or potential
mechanical log types:
b cement bond
c caliper
e other
p perforation depth control or perforator

*other logs may include but are not limited to: suez curves as audio, bit size, CCL--casing collar locator, continuous meter, directional survey, gas detector, guard, NCTL--fluids/Cement Top Locator, radioactive tracer, tension

There is no Plugging data for this well

There is no Sample data for this well

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4705102358

Location Information: View Map

Table with columns: API, COUNTY, PERMIT, TAX_DISTRICT, QUAD_76, QUAD_15, LAT_DD, LON_DD, UTM_E, UTM_N

Bottom Hole Location Information:

Table with columns: API, EP_FLAG, UTM_E, UTM_N, LON_DD, LAT_DD

Owner Information:

Table with columns: API, CMP_DT, SUFFIX, STATUS, SURFACE_OWNER, WELL_NUM, CO_NUM, LEASE, LEASE_NUM, MINERAL_OWN, OPERATOR, AT_COMPLETION, PROP_VD, PROP_TRGT_FM, TFM_EST_PR

Completion Information:

Table with columns: API, CMP_DT, SPOD_DT, ELEV, DATUM, FIELD, DEEPEST_FM, DEEPEST_FMT, INITIAL_CLASS, FINAL_CLASS, TYPE, RIG, CMP_MTHD, TVD, TMD, NEW_FTG, KOD, G_BEF, G_AFT, O_BEF, O_AFT, NGL_BEF, NGL_AFT, P_BEF, TI_BEF, P_AFT, TI_AFT, BH_P_BEF, BH_P_AFT, G_MSRO, BY

Pay/Show/Water Information:

Table with columns: API, CMP_DT, ACTIVITY, PRODUCT, SECTION, DEPTH_TOP, FM_TOP, DEPTH_BOT, FM_BOT, G_BEF, G_AFT, O_BEF, O_AFT, WATER_QNTY

Production Gas Information: (Volumes in Mcf)

Table with columns: API, PRODUCING_OPERATOR, PRD_YEAR, ANN_GAS, JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DCM

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

Table with columns: API, PRODUCING_OPERATOR, PRD_YEAR, ANN_OIL, JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DCM

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

Table with columns: API, PRODUCING_OPERATOR, PRD_YEAR, ANN_NGL, JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DCM

Production Water Information: (Volumes in Gallons)

Table with columns: API, PRODUCING_OPERATOR, PRD_YEAR, ANN_WTR, JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DCM

Stratigraphy Information:

Table with columns: API, SUFFIX, FM, FM_QUALITY, DEPTH_TOP, DEPTH_QUALITY, THICKNESS, THICKNESS_QUALITY, ELEV, DATUM

Wireline (E-Log) Information:

Table with columns: API, LOG_TOP, LOG_BOT, DEEPEST_FML, LOGS_AVAIL, SCAN, DIGITIZED, GR_TOP, GR_BOT, D_TOP, D_BOT, N_TOP, N_BOT, L_TOP, L_BOT, T_TOP, T_BOT, S_TOP, S_BOT, O_TOP, O_BOT, INCH2, INCH6, REDUCED, KOP, LOGMD, ELEV_KB, ELEV_GL, ELEV_DF, LOG_MSRO, FROM

Comment: *logs: ROP, tool temp

Downloadable Log Images: We advise you to save the log image file to your PC for viewing. To do so, right-click the .tif image of interest and select the save option.

Table with columns: FILENAME, 4705101330log_Sm_md_tvd.tif, 4705101330log_Sm_md_tvd.tif

- Quick Reference Guide for Log File Names: For more info about WVGES scanned logs click here. geologic log types: d: density, e: photoelectric absorption, g: gamma ray, i: induction, m: dipmeter, n: neutron, o: other, s: sonic, t: temperature, z: spontaneous potential, mechanical log types: b: cement bond, c: caliper, o: other, p: perforation depth control or perforate

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There is no Plugging data for this well

There is no Sample data for this well

4705102358

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_16	LAT_DD	LONG_DD	UTME	UTMN
4705101846	Marshall	1846	Meade	Glen Easton	Cameron	39.781827	-80.726802	523411.3	4403578.3

Bottom Hole Location Information:

API	EP	FLAG	UTME	UTMN	LONG_DD	LAT_DD
4705101846	1	As Proposed	521973.8	4404978.5	-80.743342	39.794481

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705101846	1/1		Cancelled	Dennis W Hunter	9H		Hunter Poethel		Dennis W Hunter et al	Stone Energy Corporation	6140	Marcellus Fm	

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AFT	TI_AFT	BH_P_BEF	BH_P_AFT	G_MSRD_BY
4705101846	1/1	1/1	755	Ground Level																									

There is no Pay data for this well

Production Gas Information: (Volumes in Mcf)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101846	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101846	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101846	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101846	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

There is no Stratigraphy data for this well

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

There is no Plugging data for this well

There is no Sample data for this well

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4705102358

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705101847	Marshall	1847	Meade	Glen Easton	Cameron	39.781755	-80.72847	523422.6	4403570.4

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101847	1	As Proposed	523970	4401941.7	-80.729137

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705101847	..	Divd Orgnl Loc	Cancelled	Dennis W Hunter	4H		Hunter Pethtel		Dennis W Hunter et al	Stone Energy Corporation	6250	Marcellus Fm	

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AFT	TI_AFT	BH_P_BEF	BH_P_AFT	G_MSRD_BY
4705101847	755	Ground Level																									

There is no Pay data for this well

Production Gas Information: (Volumes in Mcf)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101847	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101847	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101847	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101847	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

There is no Stratigraphy data for this well

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

There is no Plugging data for this well

There is no Sample data for this well

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4705102358

WV Geological & Economic Survey:

Well: County = 51 Permit = 01859

Report Time: Thursday, December 03, 2020 3:58:46 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_76	QUAD_16	LAT_DD	LON_DD	UTME	UTMN
4705101859	Marshall	1859	Meade	Glen Easton	Cameron	39.78158	-80.728875	523388	4403548.6

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101859	1	As Proposed	SZ1903.3	4404881.6	-80.744175

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRCT_FM	TFM_EST_PR
4705101859	---	---	Cancelled	Dennis W Hunter	8H		Hunter Pethtel		Dennis W Hunter et al	Stone Energy Corporation	6140	Marcellus Fr	

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TL_BEF	P_AFT	TL_AFT	BH_P_BEF	BH_P_AFT	G_MSRD_BY
4705101859	---	---	755	Ground Level																									

Comment: --- Plat coordinates hard to read, blurry Per WVDEP OOG website, well was cancelled 12/11/2017. No cancellation documents available.

There is no Pay data for this well

Production Gas Information: (Volumes in Mcf)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101859	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101859	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101859	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101859	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

There is no Stratigraphy data for this well

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

There is no Plugging data for this well

There is no Sample data for this well

4705102358

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Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX	DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
4705101860	Marshall	1860	Meade		Glen Easton	Cameron	39.781673	-80.726548	523416	4403561.3

Bottom Hole Location Information:

API	EP	FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101860	1	As Proposed	522074.3	4405230.4	-80.74216	39.796748

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705101860	--	Dvld Orngl Lee	Cancelled	Dennis W Hunter	10H		Hunter Pethel		Dennis W Hunter et al	Stone Energy Corporation		6140	Marcelus Fm

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AFT	TI_AFT	BH_P_BEF	BH_P_AFT	G_MSRD_BY
4705101860	--	--	755	Ground Level																									

Comment: -- Per WVDEP OOG website, well was cancelled 12/11/2017. No cancellation documents available.

There is no Pay data for this well

Production Gas Information: (Volumes in Mcf)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101860	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101860	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101860	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101860	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

There is no Stratigraphy data for this well

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

There is no Plugging data for this well

There is no Sample data for this well

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Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_76	QUAD_16	LAT_DD	LONG_DD	UTME	UTMN
4705101866	Marshall	1866	Meade	Glen Easton	Cameron	39.781782	-80.728409	523427.8	4403573.4

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LONG_DD	LAT_DD
4705101866	1	As Proposed	524237.2	4402287.1	-80.717005

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705101866	1/1	Drill Ornd Loc.	Cancelled	Dennis W Hunter	SH		Hunter/Pebltel		Dennis W Hunter et al	Stone Energy Corporation	6250	Marcellus Fin	4200

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TL_BEF	P_AFT	TL_AFT	BH_P_BEF	BH_P_AFT	G_MSRD_BY
4705101866	1/1	1/1	795	Ground Level																								

Comment: 1/1 Per WVDEP OOG website, well was cancelled 12/11/2017. No cancellation documents available.

There is no Pay data for this well

Production Gas Information: (Volumes in Mcf)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101866	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101866	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101866	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101866	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

There is no Stratigraphy data for this well

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

There is no Plugging data for this well

There is no Sample data for this well

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Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_76	QUAD_16	LAT_DD	LONG_DD	UTME	UTMN
4705170196	Marshall	70196	Meade	Gen Easton	Cameron	39.763323	-80.723738	523662.9	4401525.5

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705170196	--		Original Loc Completed	Joseph Shuttler		4				Th-Stats Oil & Gas			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FYD	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AFT	TI_AFT	BH_P_BEF	BH_P_AFT	G_MSRD_BY
4705170196	--	--						unclassified	unclassified	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

There is no Plugging data for this well

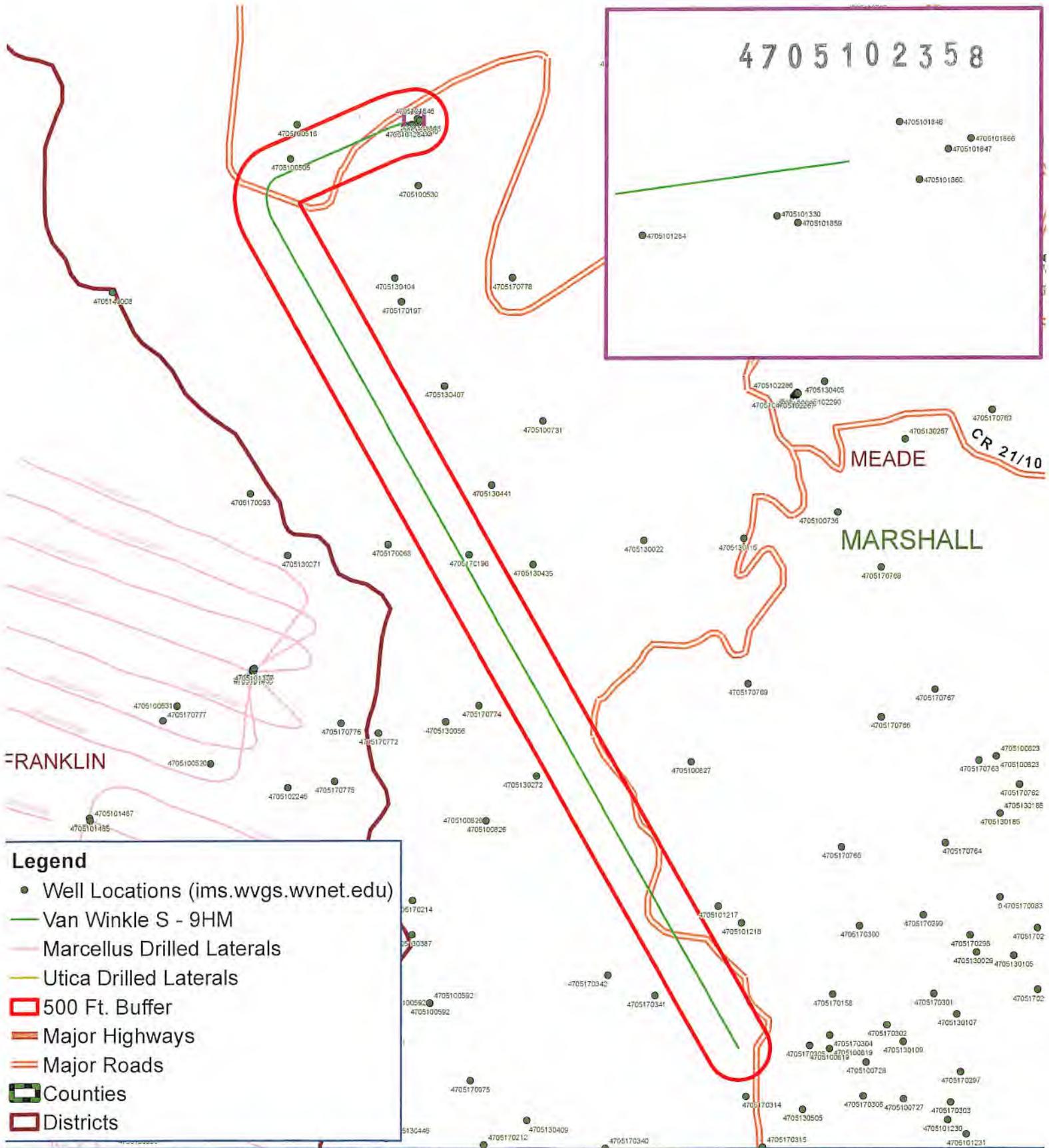
There is no Sample data for this well

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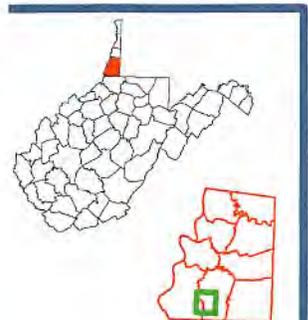
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Legend

- Well Locations (ims.wvgs.wvnet.edu)
- Van Winkle S - 9HM
- Marcellus Drilled Laterals
- Utica Drilled Laterals
- 500 Ft. Buffer
- Major Highways
- Major Roads
- ▭ Counties
- ▭ Districts



Van Winkle S - 9HM
 Meade District
 Marshall County, WV



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

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03/12/2021





Well: Van Winkle S-09 HM (slot J)
 Site: Van Winkle
 Project: Marshall County, West Virginia
 Design: rev1
 Rig:

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	Annotation
1	0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.000	0.00	
2	1200.00	0.00	0.000	1200.00	0.00	0.00	0.00	0.000	0.00	KOP Begin 2°/100' build
3	2200.00	20.00	260.000	2179.82	-30.00	-170.14	2.00	260.000	-28.78	Begin 2°/100' build/turn
4	2973.31	34.28	246.539	2866.80	-140.35	-502.20	2.00	-29.455	-36.15	Begin 34.28° tangent
5	6197.62	34.28	246.539	5530.88	-863.47	-2168.33	0.00	0.000	86.49	Begin 8°/100' build/turn
6	6735.61	50.00	184.119	5945.73	-1142.57	-2329.79	8.00	-95.806	295.30	Begin 10°/100' build/turn
7	7232.67	88.99	150.179	6120.97	-1575.56	-2212.43	10.00	-47.045	742.58	Begin 88.99° lateral
8	21943.17	88.99	150.179	6379.00-14336.13	5101.93	0.00	0.000	5216.91		PBHL/TD 21943.17 MD/6379.00 TVD

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Van Winkle S-09HM LP r1 - plan misses target center by 0.26ft at 7232.56ft MD (6120.97 TVD, -1575.46 N, -2212.49 E)	6121.00	-1575.33	-2212.26	14447368.28	1714974.57	39.77741400	-80.73463000
Van Winkle S-09HM PBHL r1 - plan hits target center	6379.00	-14336.13	5101.93	1722288.75	1722288.75	39.74230700	-80.70874500

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

System Datum: Mean Sea Level
 Depth Reference: GL @ 754.00ft

Northing	Easting	Latitude	Longitude
14447368.28	1717186.83	39.78172200	-80.72673900

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.821°

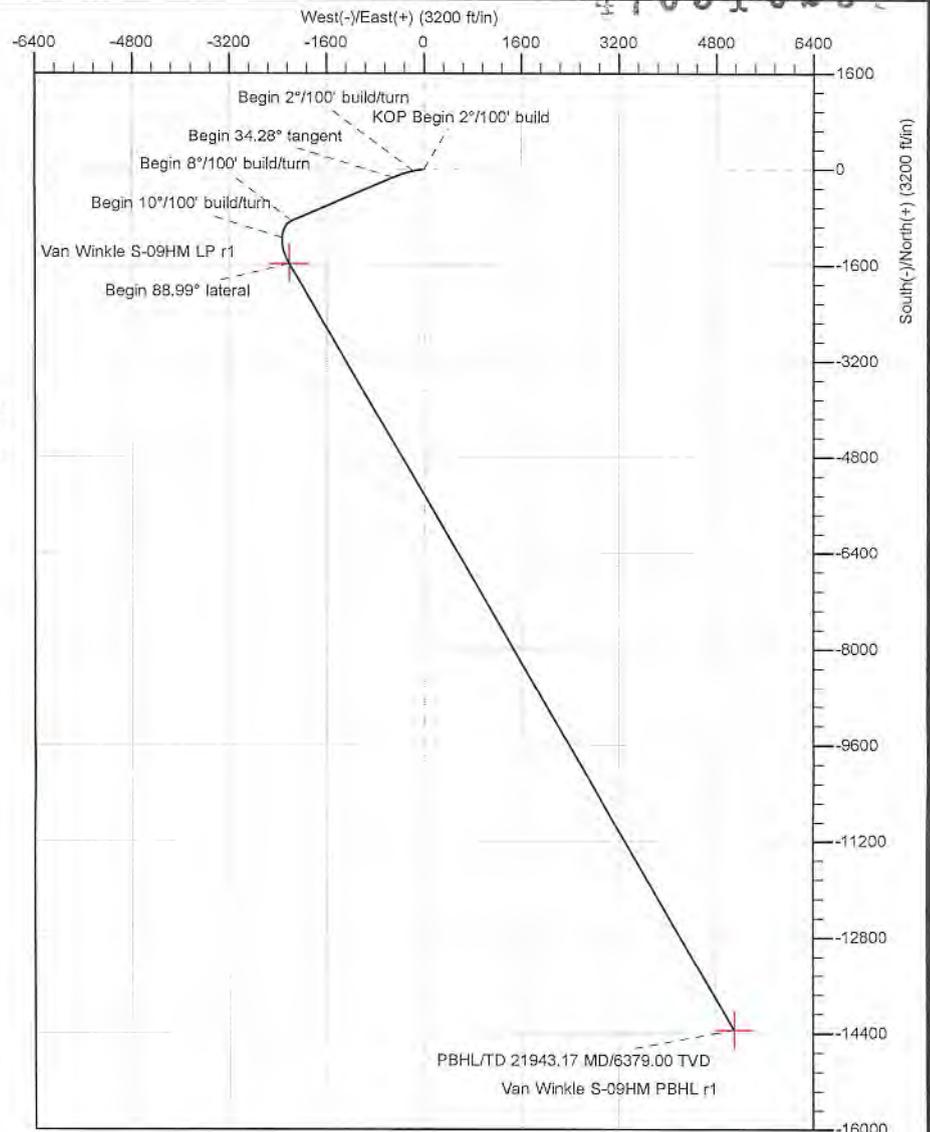
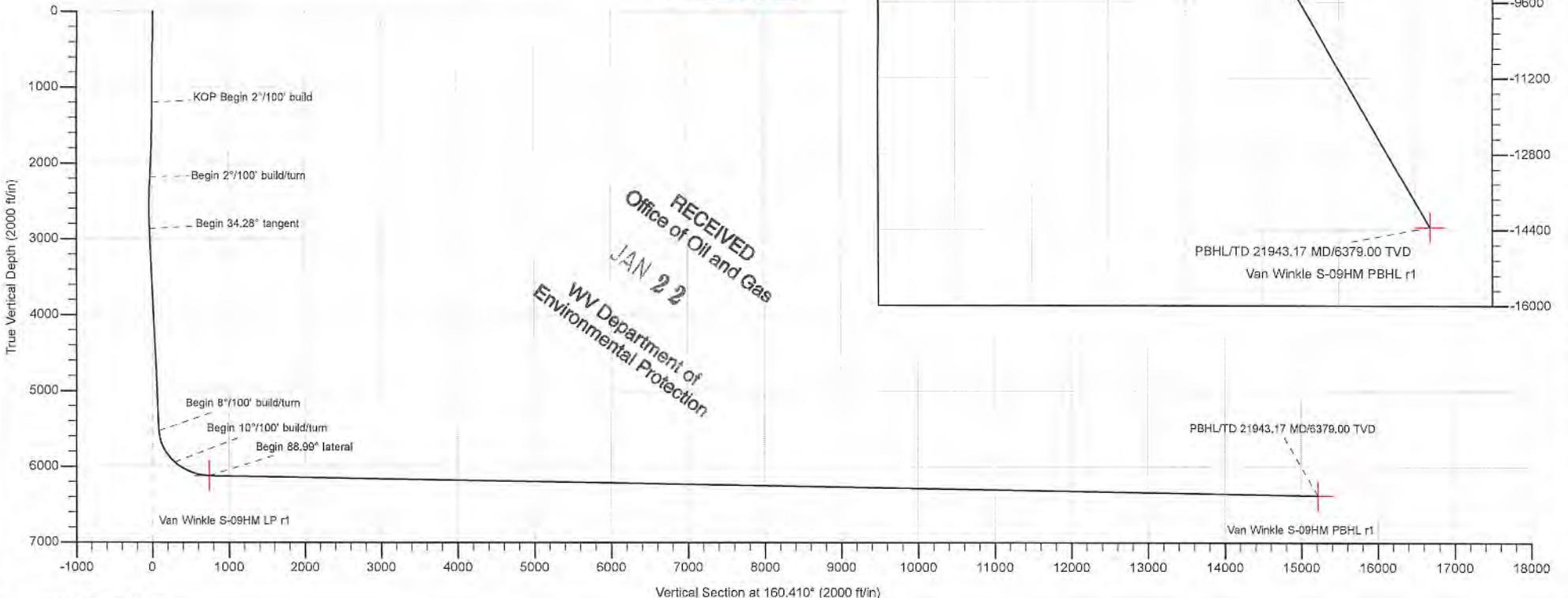


Azimuths to Grid North
 True North: -0.17°
 Magnetic North: -8.82°

Magnetic Field
 Strength: 51812.2snT
 Dip Angle: 66.60°
 Date: 11/13/2020
 Model: IGRF2020



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PBHL/TD 21943.17 MD/6379.00 TVD
 Van Winkle S-09HM PBHL r1

PBHL/TD 21943.17 MD/6379.00 TVD

Van Winkle S-09HM PBHL r1

4705102358

4705102358



Planning Report

4705102358



Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Van Winkle S-09 HM (slot J)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 754.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 754.00ft
Site:	Van Winkle	North Reference:	Grid
Well:	Van Winkle S-09 HM (slot J)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

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

Site	Van Winkle				
Site Position:		Northing:	14,447,369.50 usft	Latitude:	39.78172533
From:	Lat/Long	Easting:	1,717,188.44 usft	Longitude:	-80.72673327
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.175 °

Well	Van Winkle S-09 HM (slot J)					
Well Position	+N/-S	-1.22 ft	Northing:	14,447,368.28 usft	Latitude:	39.78172200
	+E/-W	-1.61 ft	Easting:	1,717,186.83 usft	Longitude:	-80.72673900
Position Uncertainty	0.00 ft	Wellhead Elevation:		Ground Level:	754.00 ft	

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	11/13/2020	-8.646	66.595	51,812.22715665

Design	rev1				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	160.410	

Plan Survey Tool Program	Date	11/17/2020			
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	21,943.17	rev1 (Original Hole)	MWD	
				MWD - Standard	

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Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.000	
1,200.00	0.00	0.000	1,200.00	0.00	0.00	0.00	0.00	0.00	0.000	
2,200.00	20.00	260.000	2,179.82	-30.00	-170.14	2.00	2.00	0.00	260.000	
2,973.31	34.28	246.539	2,866.80	-140.35	-502.20	2.00	1.85	-1.74	-29.455	
6,197.62	34.28	246.539	5,530.88	-863.47	-2,168.33	0.00	0.00	0.00	0.000	
6,735.61	50.00	184.119	5,945.73	-1,142.57	-2,329.79	8.00	2.92	-11.60	-95.806	
7,232.67	88.99	150.179	6,120.97	-1,575.56	-2,212.44	10.00	7.85	-6.83	-47.045	
21,943.17	88.99	150.179	6,379.00	-14,336.13	5,101.93	0.00	0.00	0.00	0.000	Van Winkle S-09HM F



Planning Report

4705102358



Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Van Winkle S-09 HM (slot J)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 754.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 754.00ft
Site:	Van Winkle	North Reference:	Grid
Well:	Van Winkle S-09 HM (slot J)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.000	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.000	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.000	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.000	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.000	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.000	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.000	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.000	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.000	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.000	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.000	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.000	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP Begin 2°/100' build									
1,300.00	2.00	260.000	1,299.98	-0.30	-1.72	-0.29	2.00	2.00	0.00
1,400.00	4.00	260.000	1,399.84	-1.21	-6.87	-1.16	2.00	2.00	0.00
1,500.00	6.00	260.000	1,499.45	-2.73	-15.46	-2.61	2.00	2.00	0.00
1,600.00	8.00	260.000	1,598.70	-4.84	-27.46	-4.64	2.00	2.00	0.00
1,700.00	10.00	260.000	1,697.47	-7.56	-42.86	-7.25	2.00	2.00	0.00
1,800.00	12.00	260.000	1,795.62	-10.87	-61.65	-10.43	2.00	2.00	0.00
1,900.00	14.00	260.000	1,893.06	-14.78	-83.80	-14.18	2.00	2.00	0.00
2,000.00	16.00	260.000	1,989.64	-19.27	-109.29	-18.49	2.00	2.00	0.00
2,100.00	18.00	260.000	2,085.27	-24.35	-138.08	-23.36	2.00	2.00	0.00
2,200.00	20.00	260.000	2,179.82	-30.00	-170.14	-28.78	2.00	2.00	0.00
Begin 2°/100' build/turn									
2,300.00	21.76	257.347	2,273.25	-37.03	-205.08	-33.87	2.00	1.76	-2.65
2,400.00	23.56	255.077	2,365.52	-46.24	-242.48	-37.74	2.00	1.80	-2.27
2,500.00	25.39	253.115	2,456.53	-57.62	-282.31	-40.37	2.00	1.83	-1.96
2,600.00	27.24	251.401	2,546.17	-71.14	-324.52	-41.78	2.00	1.85	-1.71
2,700.00	29.11	249.890	2,634.32	-86.81	-369.06	-41.96	2.00	1.87	-1.51
2,800.00	30.99	248.548	2,720.87	-104.59	-415.86	-40.90	2.00	1.88	-1.34
2,900.00	32.89	247.345	2,805.73	-124.46	-464.89	-38.61	2.00	1.89	-1.20
2,973.31	34.28	246.539	2,866.80	-140.35	-502.20	-36.15	2.00	1.91	-1.10
Begin 34.28° tangent									
3,000.00	34.28	246.539	2,888.85	-146.34	-515.99	-35.13	0.00	0.00	0.00
3,100.00	34.28	246.539	2,971.48	-168.76	-567.66	-31.33	0.00	0.00	0.00
3,200.00	34.28	246.539	3,054.10	-191.19	-619.34	-27.53	0.00	0.00	0.00
3,300.00	34.28	246.539	3,136.73	-213.62	-671.01	-23.72	0.00	0.00	0.00
3,400.00	34.28	246.539	3,219.35	-236.04	-722.68	-19.92	0.00	0.00	0.00
3,500.00	34.28	246.539	3,301.98	-258.47	-774.36	-16.12	0.00	0.00	0.00
3,600.00	34.28	246.539	3,384.60	-280.90	-826.03	-12.31	0.00	0.00	0.00
3,700.00	34.28	246.539	3,467.23	-303.33	-877.71	-8.51	0.00	0.00	0.00
3,800.00	34.28	246.539	3,549.85	-325.75	-929.38	-4.71	0.00	0.00	0.00
3,900.00	34.28	246.539	3,632.48	-348.18	-981.05	-0.90	0.00	0.00	0.00
4,000.00	34.28	246.539	3,715.10	-370.61	-1,032.73	2.90	0.00	0.00	0.00
4,100.00	34.28	246.539	3,797.73	-393.03	-1,084.40	6.71	0.00	0.00	0.00
4,200.00	34.28	246.539	3,880.35	-415.46	-1,136.08	10.51	0.00	0.00	0.00
4,300.00	34.28	246.539	3,962.97	-437.89	-1,187.75	14.31	0.00	0.00	0.00
4,400.00	34.28	246.539	4,045.60	-460.31	-1,239.42	18.12	0.00	0.00	0.00
4,500.00	34.28	246.539	4,128.22	-482.74	-1,291.10	21.92	0.00	0.00	0.00
4,600.00	34.28	246.539	4,210.85	-505.17	-1,342.77	25.72	0.00	0.00	0.00
4,700.00	34.28	246.539	4,293.47	-527.59	-1,394.45	29.53	0.00	0.00	0.00
4,800.00	34.28	246.539	4,376.10	-550.02	-1,446.12	33.33	0.00	0.00	0.00

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 Environmental Protection

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Van Winkle S-09 HM (slot J)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 754.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 754.00ft
Site:	Van Winkle	North Reference:	Grid
Well:	Van Winkle S-09 HM (slot J)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
4,900.00	34.28	246.539	4,458.72	-572.45	-1,497.79	37.13	0.00	0.00	0.00	
5,000.00	34.28	246.539	4,541.35	-594.88	-1,549.47	40.94	0.00	0.00	0.00	
5,100.00	34.28	246.539	4,623.97	-617.30	-1,601.14	44.74	0.00	0.00	0.00	
5,200.00	34.28	246.539	4,706.60	-639.73	-1,652.82	48.54	0.00	0.00	0.00	
5,300.00	34.28	246.539	4,789.22	-662.16	-1,704.49	52.35	0.00	0.00	0.00	
5,400.00	34.28	246.539	4,871.85	-684.58	-1,756.16	56.15	0.00	0.00	0.00	
5,500.00	34.28	246.539	4,954.47	-707.01	-1,807.84	59.96	0.00	0.00	0.00	
5,600.00	34.28	246.539	5,037.10	-729.44	-1,859.51	63.76	0.00	0.00	0.00	
5,700.00	34.28	246.539	5,119.72	-751.86	-1,911.18	67.56	0.00	0.00	0.00	
5,800.00	34.28	246.539	5,202.34	-774.29	-1,962.86	71.37	0.00	0.00	0.00	
5,900.00	34.28	246.539	5,284.97	-796.72	-2,014.53	75.17	0.00	0.00	0.00	
6,000.00	34.28	246.539	5,367.59	-819.15	-2,066.21	78.97	0.00	0.00	0.00	
6,100.00	34.28	246.539	5,450.22	-841.57	-2,117.88	82.78	0.00	0.00	0.00	
6,197.62	34.28	246.539	5,530.88	-863.47	-2,168.33	86.49	0.00	0.00	0.00	
Begin 8°/100' build/turn										
6,200.00	34.27	246.202	5,532.84	-864.00	-2,169.55	86.58	8.00	-0.79	-14.14	
6,300.00	34.32	231.978	5,615.60	-892.77	-2,217.59	97.58	8.00	0.05	-14.22	
6,400.00	35.97	218.353	5,697.49	-933.23	-2,258.09	122.12	8.00	1.65	-13.62	
6,500.00	39.01	206.173	5,776.94	-984.59	-2,290.24	159.72	8.00	3.04	-12.18	
6,600.00	43.15	195.734	5,852.40	-1,045.84	-2,313.44	209.66	8.00	4.14	-10.44	
6,700.00	48.09	186.919	5,922.39	-1,115.81	-2,327.21	270.95	8.00	4.94	-8.82	
6,735.61	50.00	184.119	5,945.73	-1,142.57	-2,329.79	295.30	8.00	5.36	-7.86	
Begin 10°/100' build/turn										
6,800.00	54.54	178.335	5,985.15	-1,193.44	-2,330.80	342.89	10.00	7.04	-8.98	
6,900.00	62.04	170.558	6,037.73	-1,277.93	-2,322.35	425.32	10.00	7.51	-7.78	
7,000.00	69.93	163.819	6,078.43	-1,366.82	-2,301.97	515.90	10.00	7.89	-6.74	
7,100.00	78.05	157.737	6,106.01	-1,457.43	-2,270.26	611.89	10.00	8.12	-6.08	
7,200.00	86.29	152.014	6,119.63	-1,546.98	-2,228.21	710.37	10.00	8.24	-5.72	
7,232.67	88.99	150.179	6,120.97	-1,575.56	-2,212.44	742.58	10.00	8.28	-5.62	
Begin 88.99° lateral										
7,300.00	88.99	150.179	6,122.16	-1,633.96	-2,178.96	808.82	0.00	0.00	0.00	
7,400.00	88.99	150.179	6,123.91	-1,720.71	-2,129.24	907.22	0.00	0.00	0.00	
7,500.00	88.99	150.179	6,125.66	-1,807.45	-2,079.51	1,005.61	0.00	0.00	0.00	
7,600.00	88.99	150.179	6,127.42	-1,894.20	-2,029.79	1,104.01	0.00	0.00	0.00	
7,700.00	88.99	150.179	6,129.17	-1,980.94	-1,980.07	1,202.40	0.00	0.00	0.00	
7,800.00	88.99	150.179	6,130.93	-2,067.68	-1,930.35	1,300.80	0.00	0.00	0.00	
7,900.00	88.99	150.179	6,132.68	-2,154.43	-1,880.63	1,399.19	0.00	0.00	0.00	
8,000.00	88.99	150.179	6,134.43	-2,241.17	-1,830.90	1,497.59	0.00	0.00	0.00	
8,100.00	88.99	150.179	6,136.19	-2,327.92	-1,781.18	1,595.98	0.00	0.00	0.00	
8,200.00	88.99	150.179	6,137.94	-2,414.66	-1,731.46	1,694.37	0.00	0.00	0.00	
8,300.00	88.99	150.179	6,139.70	-2,501.41	-1,681.74	1,792.77	0.00	0.00	0.00	
8,400.00	88.99	150.179	6,141.45	-2,588.15	-1,632.02	1,891.16	0.00	0.00	0.00	
8,500.00	88.99	150.179	6,143.20	-2,674.90	-1,582.29	1,989.56	0.00	0.00	0.00	
8,600.00	88.99	150.179	6,144.96	-2,761.64	-1,532.57	2,087.95	0.00	0.00	0.00	
8,700.00	88.99	150.179	6,146.71	-2,848.39	-1,482.85	2,186.35	0.00	0.00	0.00	
8,800.00	88.99	150.179	6,148.47	-2,935.13	-1,433.13	2,284.74	0.00	0.00	0.00	
8,900.00	88.99	150.179	6,150.22	-3,021.88	-1,383.41	2,383.14	0.00	0.00	0.00	
9,000.00	88.99	150.179	6,151.97	-3,108.62	-1,333.68	2,481.53	0.00	0.00	0.00	
9,100.00	88.99	150.179	6,153.73	-3,195.37	-1,283.96	2,579.93	0.00	0.00	0.00	
9,200.00	88.99	150.179	6,155.48	-3,282.11	-1,234.24	2,678.32	0.00	0.00	0.00	
9,300.00	88.99	150.179	6,157.24	-3,368.85	-1,184.52	2,776.71	0.00	0.00	0.00	
9,400.00	88.99	150.179	6,158.99	-3,455.60	-1,134.79	2,875.11	0.00	0.00	0.00	
9,500.00	88.99	150.179	6,160.74	-3,542.34	-1,085.07	2,973.50	0.00	0.00	0.00	



Planning Report

4705102358



Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Van Winkle S-09 HM (slot J)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 754.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 754.00ft
Site:	Van Winkle	North Reference:	Grid
Well:	Van Winkle S-09 HM (slot J)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
9,600.00	88.99	150.179	6,162.50	-3,629.09	-1,035.35	3,071.90	0.00	0.00	0.00	
9,700.00	88.99	150.179	6,164.25	-3,715.83	-985.63	3,170.29	0.00	0.00	0.00	
9,800.00	88.99	150.179	6,166.01	-3,802.58	-935.91	3,268.69	0.00	0.00	0.00	
9,900.00	88.99	150.179	6,167.76	-3,889.32	-886.18	3,367.08	0.00	0.00	0.00	
10,000.00	88.99	150.179	6,169.51	-3,976.07	-836.46	3,465.48	0.00	0.00	0.00	
10,100.00	88.99	150.179	6,171.27	-4,062.81	-786.74	3,563.87	0.00	0.00	0.00	
10,200.00	88.99	150.179	6,173.02	-4,149.56	-737.02	3,662.27	0.00	0.00	0.00	
10,300.00	88.99	150.179	6,174.78	-4,236.30	-687.30	3,760.66	0.00	0.00	0.00	
10,400.00	88.99	150.179	6,176.53	-4,323.05	-637.57	3,859.06	0.00	0.00	0.00	
10,500.00	88.99	150.179	6,178.28	-4,409.79	-587.85	3,957.45	0.00	0.00	0.00	
10,600.00	88.99	150.179	6,180.04	-4,496.54	-538.13	4,055.84	0.00	0.00	0.00	
10,700.00	88.99	150.179	6,181.79	-4,583.28	-488.41	4,154.24	0.00	0.00	0.00	
10,800.00	88.99	150.179	6,183.55	-4,670.02	-438.69	4,252.63	0.00	0.00	0.00	
10,900.00	88.99	150.179	6,185.30	-4,756.77	-388.96	4,351.03	0.00	0.00	0.00	
11,000.00	88.99	150.179	6,187.05	-4,843.51	-339.24	4,449.42	0.00	0.00	0.00	
11,100.00	88.99	150.179	6,188.81	-4,930.26	-289.52	4,547.82	0.00	0.00	0.00	
11,200.00	88.99	150.179	6,190.56	-5,017.00	-239.80	4,646.21	0.00	0.00	0.00	
11,300.00	88.99	150.179	6,192.32	-5,103.75	-190.08	4,744.61	0.00	0.00	0.00	
11,400.00	88.99	150.179	6,194.07	-5,190.49	-140.35	4,843.00	0.00	0.00	0.00	
11,500.00	88.99	150.179	6,195.82	-5,277.24	-90.63	4,941.40	0.00	0.00	0.00	
11,600.00	88.99	150.179	6,197.58	-5,363.98	-40.91	5,039.79	0.00	0.00	0.00	
11,700.00	88.99	150.179	6,199.33	-5,450.73	8.81	5,138.18	0.00	0.00	0.00	
11,800.00	88.99	150.179	6,201.09	-5,537.47	58.54	5,236.58	0.00	0.00	0.00	
11,900.00	88.99	150.179	6,202.84	-5,624.22	108.26	5,334.97	0.00	0.00	0.00	
12,000.00	88.99	150.179	6,204.59	-5,710.96	157.98	5,433.37	0.00	0.00	0.00	
12,100.00	88.99	150.179	6,206.35	-5,797.71	207.70	5,531.76	0.00	0.00	0.00	
12,200.00	88.99	150.179	6,208.10	-5,884.45	257.42	5,630.16	0.00	0.00	0.00	
12,300.00	88.99	150.179	6,209.86	-5,971.19	307.15	5,728.55	0.00	0.00	0.00	
12,400.00	88.99	150.179	6,211.61	-6,057.94	356.87	5,826.95	0.00	0.00	0.00	
12,500.00	88.99	150.179	6,213.36	-6,144.68	406.59	5,925.34	0.00	0.00	0.00	
12,600.00	88.99	150.179	6,215.12	-6,231.43	456.31	6,023.74	0.00	0.00	0.00	
12,700.00	88.99	150.179	6,216.87	-6,318.17	506.03	6,122.13	0.00	0.00	0.00	
12,800.00	88.99	150.179	6,218.63	-6,404.92	555.76	6,220.53	0.00	0.00	0.00	
12,900.00	88.99	150.179	6,220.38	-6,491.66	605.48	6,318.92	0.00	0.00	0.00	
13,000.00	88.99	150.179	6,222.14	-6,578.41	655.20	6,417.31	0.00	0.00	0.00	
13,100.00	88.99	150.179	6,223.89	-6,665.15	704.92	6,515.71	0.00	0.00	0.00	
13,200.00	88.99	150.179	6,225.64	-6,751.90	754.64	6,614.10	0.00	0.00	0.00	
13,300.00	88.99	150.179	6,227.40	-6,838.64	804.37	6,712.50	0.00	0.00	0.00	
13,400.00	88.99	150.179	6,229.15	-6,925.39	854.09	6,810.89	0.00	0.00	0.00	
13,500.00	88.99	150.179	6,230.91	-7,012.13	903.81	6,909.29	0.00	0.00	0.00	
13,600.00	88.99	150.179	6,232.66	-7,098.88	953.53	7,007.68	0.00	0.00	0.00	
13,700.00	88.99	150.179	6,234.41	-7,185.62	1,003.25	7,106.08	0.00	0.00	0.00	
13,800.00	88.99	150.179	6,236.17	-7,272.36	1,052.98	7,204.47	0.00	0.00	0.00	
13,900.00	88.99	150.179	6,237.92	-7,359.11	1,102.70	7,302.87	0.00	0.00	0.00	
14,000.00	88.99	150.179	6,239.68	-7,445.85	1,152.42	7,401.26	0.00	0.00	0.00	
14,100.00	88.99	150.179	6,241.43	-7,532.60	1,202.14	7,499.66	0.00	0.00	0.00	
14,200.00	88.99	150.179	6,243.18	-7,619.34	1,251.87	7,598.05	0.00	0.00	0.00	
14,300.00	88.99	150.179	6,244.94	-7,706.09	1,301.59	7,696.44	0.00	0.00	0.00	
14,400.00	88.99	150.179	6,246.69	-7,792.83	1,351.31	7,794.84	0.00	0.00	0.00	
14,500.00	88.99	150.179	6,248.45	-7,879.58	1,401.03	7,893.23	0.00	0.00	0.00	
14,600.00	88.99	150.179	6,250.20	-7,966.32	1,450.75	7,991.63	0.00	0.00	0.00	
14,700.00	88.99	150.179	6,251.95	-8,053.07	1,500.48	8,090.02	0.00	0.00	0.00	
14,800.00	88.99	150.179	6,253.71	-8,139.81	1,550.20	8,188.42	0.00	0.00	0.00	
14,900.00	88.99	150.179	6,255.46	-8,226.56	1,599.92	8,286.81	0.00	0.00	0.00	

03/12/2021



4705102358

Planning Report



Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Van Winkle S-09 HM (slot J)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 754.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 754.00ft
Site:	Van Winkle	North Reference:	Grid
Well:	Van Winkle S-09 HM (slot J)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
15,000.00	88.99	150.179	6,257.22	-8,313.30	1,649.64	8,385.21	0.00	0.00	0.00
15,100.00	88.99	150.179	6,258.97	-8,400.05	1,699.36	8,483.60	0.00	0.00	0.00
15,200.00	88.99	150.179	6,260.72	-8,486.79	1,749.09	8,582.00	0.00	0.00	0.00
15,300.00	88.99	150.179	6,262.48	-8,573.54	1,798.81	8,680.39	0.00	0.00	0.00
15,400.00	88.99	150.179	6,264.23	-8,660.28	1,848.53	8,778.78	0.00	0.00	0.00
15,500.00	88.99	150.179	6,265.99	-8,747.02	1,898.25	8,877.18	0.00	0.00	0.00
15,600.00	88.99	150.179	6,267.74	-8,833.77	1,947.97	8,975.57	0.00	0.00	0.00
15,700.00	88.99	150.179	6,269.49	-8,920.51	1,997.70	9,073.97	0.00	0.00	0.00
15,800.00	88.99	150.179	6,271.25	-9,007.26	2,047.42	9,172.36	0.00	0.00	0.00
15,900.00	88.99	150.179	6,273.00	-9,094.00	2,097.14	9,270.76	0.00	0.00	0.00
16,000.00	88.99	150.179	6,274.76	-9,180.75	2,146.86	9,369.15	0.00	0.00	0.00
16,100.00	88.99	150.179	6,276.51	-9,267.49	2,196.58	9,467.55	0.00	0.00	0.00
16,200.00	88.99	150.179	6,278.26	-9,354.24	2,246.31	9,565.94	0.00	0.00	0.00
16,300.00	88.99	150.179	6,280.02	-9,440.98	2,296.03	9,664.34	0.00	0.00	0.00
16,400.00	88.99	150.179	6,281.77	-9,527.73	2,345.75	9,762.73	0.00	0.00	0.00
16,500.00	88.99	150.179	6,283.53	-9,614.47	2,395.47	9,861.13	0.00	0.00	0.00
16,600.00	88.99	150.179	6,285.28	-9,701.22	2,445.20	9,959.52	0.00	0.00	0.00
16,700.00	88.99	150.179	6,287.03	-9,787.96	2,494.92	10,057.91	0.00	0.00	0.00
16,800.00	88.99	150.179	6,288.79	-9,874.71	2,544.64	10,156.31	0.00	0.00	0.00
16,900.00	88.99	150.179	6,290.54	-9,961.45	2,594.36	10,254.70	0.00	0.00	0.00
17,000.00	88.99	150.179	6,292.30	-10,048.19	2,644.08	10,353.10	0.00	0.00	0.00
17,100.00	88.99	150.179	6,294.05	-10,134.94	2,693.81	10,451.49	0.00	0.00	0.00
17,200.00	88.99	150.179	6,295.80	-10,221.68	2,743.53	10,549.89	0.00	0.00	0.00
17,300.00	88.99	150.179	6,297.56	-10,308.43	2,793.25	10,648.28	0.00	0.00	0.00
17,400.00	88.99	150.179	6,299.31	-10,395.17	2,842.97	10,746.68	0.00	0.00	0.00
17,500.00	88.99	150.179	6,301.07	-10,481.92	2,892.69	10,845.07	0.00	0.00	0.00
17,600.00	88.99	150.179	6,302.82	-10,568.66	2,942.42	10,943.47	0.00	0.00	0.00
17,700.00	88.99	150.179	6,304.57	-10,655.41	2,992.14	11,041.86	0.00	0.00	0.00
17,800.00	88.99	150.179	6,306.33	-10,742.15	3,041.86	11,140.25	0.00	0.00	0.00
17,900.00	88.99	150.179	6,308.08	-10,828.90	3,091.58	11,238.65	0.00	0.00	0.00
18,000.00	88.99	150.179	6,309.84	-10,915.64	3,141.30	11,337.04	0.00	0.00	0.00
18,100.00	88.99	150.179	6,311.59	-11,002.39	3,191.03	11,435.44	0.00	0.00	0.00
18,200.00	88.99	150.179	6,313.34	-11,089.13	3,240.75	11,533.83	0.00	0.00	0.00
18,300.00	88.99	150.179	6,315.10	-11,175.88	3,290.47	11,632.23	0.00	0.00	0.00
18,400.00	88.99	150.179	6,316.85	-11,262.62	3,340.19	11,730.62	0.00	0.00	0.00
18,500.00	88.99	150.179	6,318.61	-11,349.36	3,389.91	11,829.02	0.00	0.00	0.00
18,600.00	88.99	150.179	6,320.36	-11,436.11	3,439.64	11,927.41	0.00	0.00	0.00
18,700.00	88.99	150.179	6,322.11	-11,522.85	3,489.36	12,025.81	0.00	0.00	0.00
18,800.00	88.99	150.179	6,323.87	-11,609.60	3,539.08	12,124.20	0.00	0.00	0.00
18,900.00	88.99	150.179	6,325.62	-11,696.34	3,588.80	12,222.60	0.00	0.00	0.00
19,000.00	88.99	150.179	6,327.38	-11,783.09	3,638.52	12,320.99	0.00	0.00	0.00
19,100.00	88.99	150.179	6,329.13	-11,869.83	3,688.25	12,419.38	0.00	0.00	0.00
19,200.00	88.99	150.179	6,330.88	-11,956.58	3,737.97	12,517.78	0.00	0.00	0.00
19,300.00	88.99	150.179	6,332.64	-12,043.32	3,787.69	12,616.17	0.00	0.00	0.00
19,400.00	88.99	150.179	6,334.39	-12,130.07	3,837.41	12,714.57	0.00	0.00	0.00
19,500.00	88.99	150.179	6,336.15	-12,216.81	3,887.14	12,812.96	0.00	0.00	0.00
19,600.00	88.99	150.179	6,337.90	-12,303.56	3,936.86	12,911.36	0.00	0.00	0.00
19,700.00	88.99	150.179	6,339.65	-12,390.30	3,986.58	13,009.75	0.00	0.00	0.00
19,800.00	88.99	150.179	6,341.41	-12,477.05	4,036.30	13,108.15	0.00	0.00	0.00
19,900.00	88.99	150.179	6,343.16	-12,563.79	4,086.02	13,206.54	0.00	0.00	0.00
20,000.00	88.99	150.179	6,344.92	-12,650.53	4,135.75	13,304.94	0.00	0.00	0.00
20,100.00	88.99	150.179	6,346.67	-12,737.28	4,185.47	13,403.33	0.00	0.00	0.00
20,200.00	88.99	150.179	6,348.42	-12,824.02	4,235.19	13,501.73	0.00	0.00	0.00
20,300.00	88.99	150.179	6,350.18	-12,910.77	4,284.91	13,600.12	0.00	0.00	0.00

03/12/2021



Planning Report



Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Van Winkle S-09 HM (slot J)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 754.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 754.00ft
Site:	Van Winkle	North Reference:	Grid
Well:	Van Winkle S-09 HM (slot J)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
20,400.00	88.99	150.179	6,351.93	-12,997.51	4,334.63	13,698.51	0.00	0.00	0.00
20,500.00	88.99	150.179	6,353.69	-13,084.26	4,384.36	13,796.91	0.00	0.00	0.00
20,600.00	88.99	150.179	6,355.44	-13,171.00	4,434.08	13,895.30	0.00	0.00	0.00
20,700.00	88.99	150.179	6,357.19	-13,257.75	4,483.80	13,993.70	0.00	0.00	0.00
20,800.00	88.99	150.179	6,358.95	-13,344.49	4,533.52	14,092.09	0.00	0.00	0.00
20,900.00	88.99	150.179	6,360.70	-13,431.24	4,583.24	14,190.49	0.00	0.00	0.00
21,000.00	88.99	150.179	6,362.46	-13,517.98	4,632.97	14,288.88	0.00	0.00	0.00
21,100.00	88.99	150.179	6,364.21	-13,604.73	4,682.69	14,387.28	0.00	0.00	0.00
21,200.00	88.99	150.179	6,365.96	-13,691.47	4,732.41	14,485.67	0.00	0.00	0.00
21,300.00	88.99	150.179	6,367.72	-13,778.22	4,782.13	14,584.07	0.00	0.00	0.00
21,400.00	88.99	150.179	6,369.47	-13,864.96	4,831.85	14,682.46	0.00	0.00	0.00
21,500.00	88.99	150.179	6,371.23	-13,951.70	4,881.58	14,780.85	0.00	0.00	0.00
21,600.00	88.99	150.179	6,372.98	-14,038.45	4,931.30	14,879.25	0.00	0.00	0.00
21,700.00	88.99	150.179	6,374.73	-14,125.19	4,981.02	14,977.64	0.00	0.00	0.00
21,800.00	88.99	150.179	6,376.49	-14,211.94	5,030.74	15,076.04	0.00	0.00	0.00
21,900.00	88.99	150.179	6,378.24	-14,298.68	5,080.47	15,174.43	0.00	0.00	0.00
21,943.17	88.99	150.179	6,379.00	-14,336.13	5,101.93	15,216.91	0.00	0.00	0.00

PBHL/TD 21943.17 MD/6379.00 TVD

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Van Winkle S-09HM LP - hit/miss target - Shape - Point	0.00	0.000	6,121.00	-1,575.33	-2,212.26	14,445,792.95	1,714,974.57	39.77741400	-80.73463000
- plan misses target center by 0.26ft at 7232.56ft MD (6120.97 TVD, -1575.46 N, -2212.49 E)									
Van Winkle S-09HM PBI - plan hits target center - Point	0.00	0.000	6,379.00	-14,336.13	5,101.93	14,433,032.18	1,722,288.75	39.74230700	-80.70874500

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
1,200.00	1,200.00	0.00	0.00	KOP Begin 2°/100' build	
2,200.00	2,179.82	-30.00	-170.14	Begin 2°/100' build/turn	
2,973.31	2,866.80	-140.35	-502.20	Begin 34.28° tangent	
6,197.62	5,530.88	-863.47	-2,168.33	Begin 8°/100' build/turn	
6,735.61	5,945.73	-1,142.57	-2,329.79	Begin 10°/100' build/turn	
7,232.67	6,120.97	-1,575.56	-2,212.44	Begin 88.99° lateral	
21,943.17	6,379.00	-14,336.13	5,101.93	PBHL/TD 21943.17 MD/6379.00 TVD	

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 Office of Oil and Gas
 JAN 22
 WV Department of Environmental Protection

WW-9
(4/16)

4705102358

API Number 47 - 051 -
Operator's Well No. Van Winkle S-9HM

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Tug Hill Operating, LLC OP Code 494510851

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

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

Will a pit be used? Yes No

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

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

Proposed Disposal Method For Treated Pit Wastes:

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

Will closed loop system be used? If so, describe: Yes - For vertical and horizontal drilling

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

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

Additives to be used in drilling medium? Barite for weight

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

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

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

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

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

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

Company Official Signature James A. Pancake

Company Official (Typed Name) James Pancake

Company Official Title Vice President - Geoscience

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Office of Oil and Gas

FEB 03 2021

WV Department of
Environmental Protection

Subscribed and sworn before me this 13 day of JANUARY, 20 21

[Signature]

Commonwealth of Pennsylvania - Notary Seal
David Gabriel Delaito, Notary Public
Washington County
My commission expires February 16, 2024
Commission number 1267492
Pennsylvania Association of Notaries

Notary Public

My commission expires _____

03/12/2021

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 16.63 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: Bruce Stiller

Comments: _____

Title: Oil and Gas Inspector

Date: 1-20-21

Field Reviewed? Yes No

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Office of Oil and Gas

FEB 03 2021

WV Department of
Environmental Protection

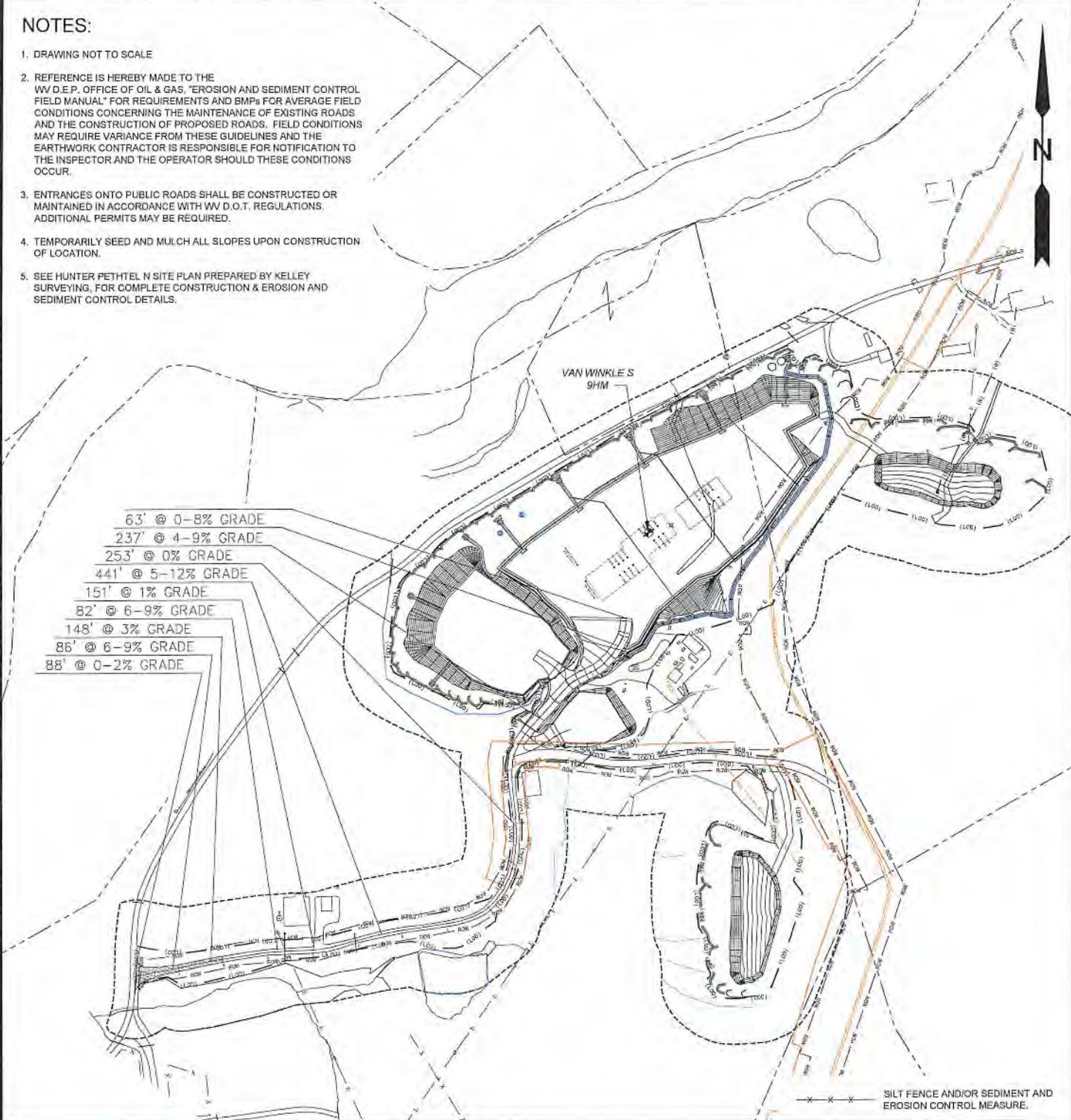
03/12/2021

PROPOSED VAN WINKLE S - 9HM

4705102358

NOTES:

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



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26331 | 304.462.5634
 1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
 254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296
 slswv.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5"		PREPARED FOR: TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317	
COUNTY	DISTRICT		
MARSHALL	MEADE		
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8952	12/24/2020	NONE

TUG HILL
OPERATING

03/12/2021

4705102358



Well Site Safety Plan

Tug Hill Operating, LLC

Bany Hilley 1-20-21

Well Name: Van Winkle S-9HM

Pad Name: Hunter Pethel

UTM (meters), NAD83, Zone 17:

Northing: 4,403,566.68

Easting: 523,399.63

January 2021

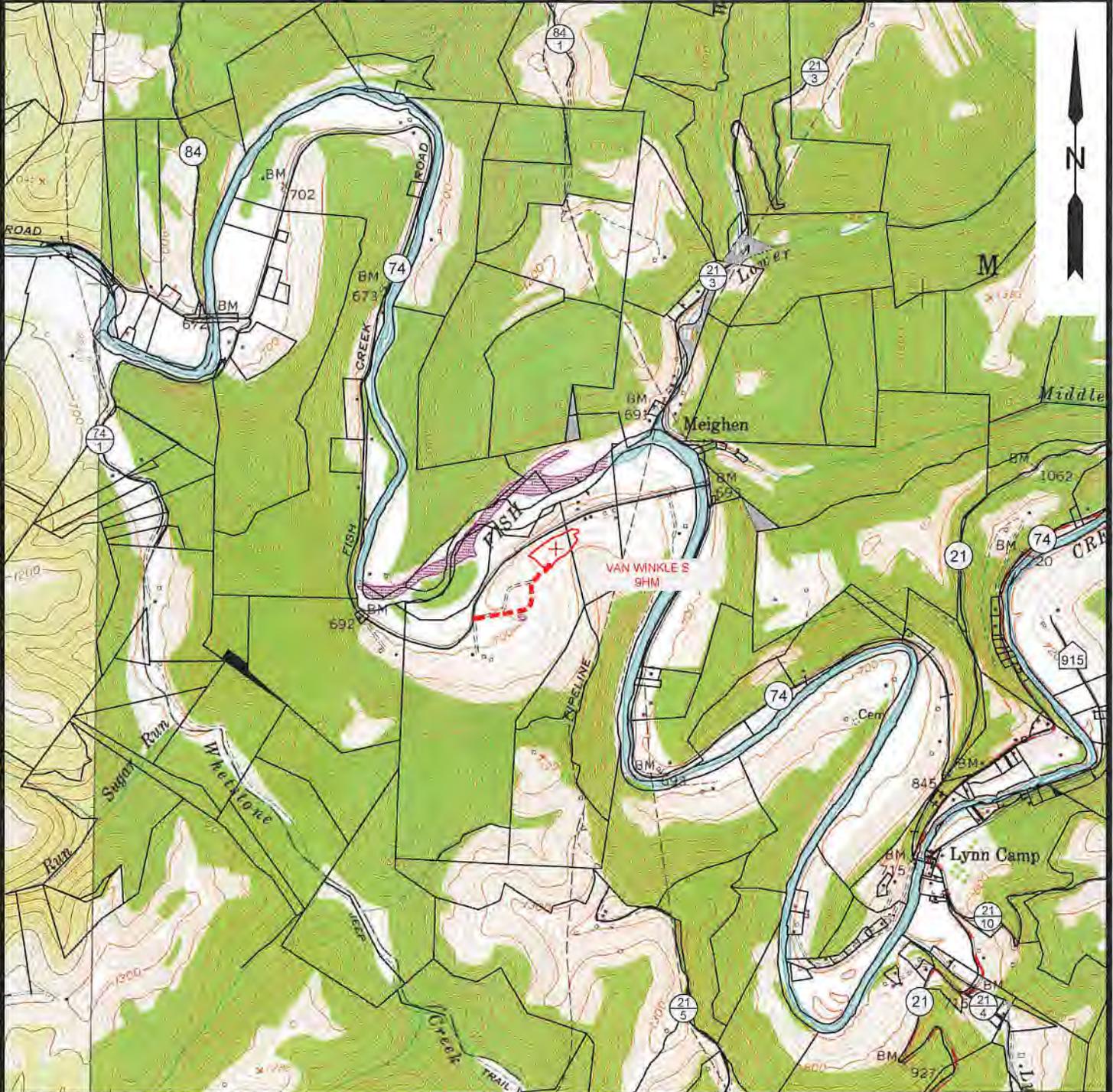
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Office of Oil and Gas

FEB 03 2021

WV Department of
Environmental Protection

03/12/2021

PROPOSED VAN WINKLE S - 9HM 4705102358



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

LAT: 39.7137712
LON: -80.8258327
LOCATED: S 49°13'48" W AT 37,316.19' FROM THE CENTER OF HUNTER PETHTEL N WELL PAD LOCATION.



12 Vanhook Drive | P.O. Box 150 | Gleeville, WV 25351 | 304.462.5634
1812 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5256
sllw.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.	8952	12/24/2020	1" = 2000'



TUG HILL
OPERATING

03/12/2021

**HUNTER PETHTEL LEASE
VAN WINKLE S 9HM WELL
TUG HILL OPERATING**

PARCEL	SURFACE ADJOINER	ACRES
9-10-2.1	SHERRY VAN SCYOC YOCUM & BLAINE VAN SCYOC	5.00
9-10-4	KENNETH W. MASON EST.	67.00
9-13-5.1	MICHAEL WALKER & JOSEPH BLAKE	3.26
9-13-7	MARY VIRGINIA PETHTEL (LIFE)	96.00
9-18-3	WILLIAM B. KLUG, ET UX	1.33
9-18-4	WILLIAM B. KLUG, ET UX	1.00
9-18-15.1	NICHOLAS FROHNAPFEL, ET UX	0.68
9-18-16.1	NICHOLAS FROHNAPFEL, ET UX	1.50
9-18-16.2	JOHN F. WAYMAN	2.17
9-18-16.3	BERNARD KLUG, ET UX ESTS.	1.818
9-18-18.1	JOHN F. WAYMAN	1.10

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

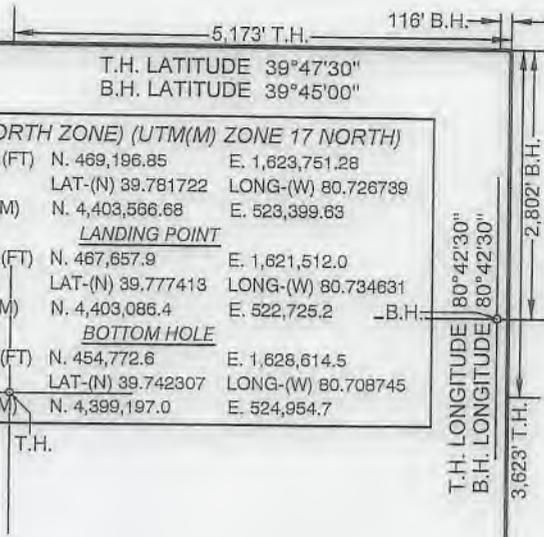
NAD'83 S.P.C.(FT)	N. 469,196.85	E. 1,623,751.28
NAD'83 GEO.	LAT-(N) 39.781722	LONG-(W) 80.726789
NAD'83 UTM (M)	N. 4,403,566.68	E. 523,399.63

LANDING POINT

NAD'83 S.P.C.(FT)	N. 467,657.9	E. 1,621,512.0
NAD'83 GEO.	LAT-(N) 39.777413	LONG-(W) 80.734631
NAD'83 UTM (M)	N. 4,403,086.4	E. 522,725.2

BOTTOM HOLE

NAD'83 S.P.C.(FT)	N. 454,772.6	E. 1,628,614.5
NAD'83 GEO.	LAT-(N) 39.742307	LONG-(W) 80.708745
NAD'83 UTM (M)	N. 4,399,197.0	E. 524,954.7



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'.
- BASED ON WV DOT COUNTY ROUTE 74 IS A 40' STRIP OF LAND ACQUIRED IN NUMEROUS DEEDS.

REFERENCES



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.5952
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296
slswv.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. 849 *C. Victor Moyers*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE JANUARY 13, 20 21
REVISED _____
OPERATORS WELL NO. VAN WINKLE S 9HM
API WELL NO. 47 - 051 - 02358 HGA
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8952P9HM.dwg
VAN WINKLE S 9HM-REV1
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: 756.00' PROPOSED: 753.50' WATERSHED FISH CREEK (HUC 10)
DISTRICT MEADE COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'

SURFACE OWNER XCL MIDSTREAM OPERATING, LLC ACREAGE 190.12 ±
ROYALTY OWNER DENNIS HUNTER, ET AL - SEE WW-6A1 ACREAGE 03/12/2021

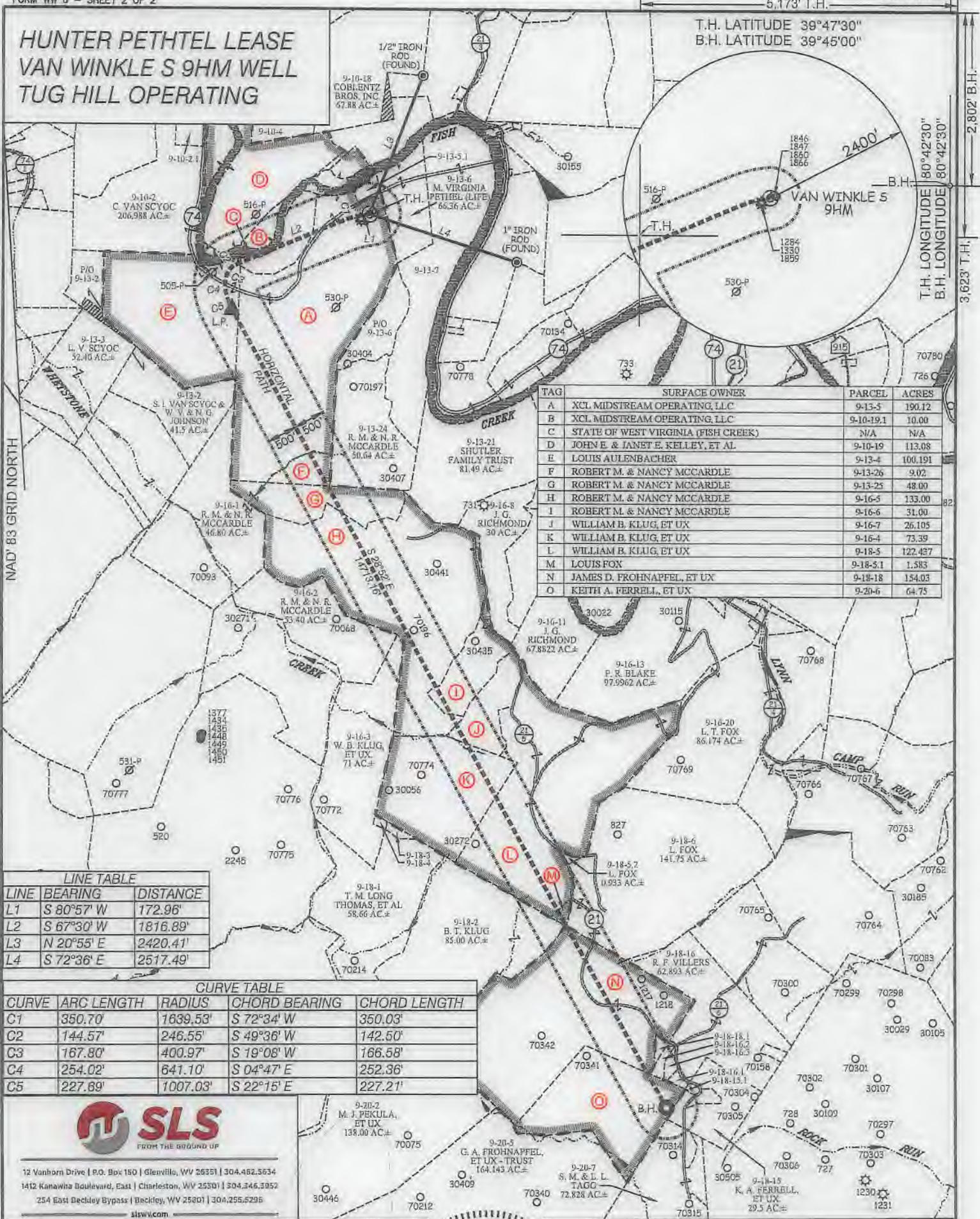
PROPOSED WORK: DRILL CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___
PHYSICAL CHANGE IN WELL (SPECIFY) TARGET FORMATION MARCELLUS ESTIMATED DEPTH TVD: 6,236' / TMD: 21,943'

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

COUNTY NAME
PERMIT

HUNTER PETHEL LEASE VAN WINKLE S 9HM WELL TUG HILL OPERATING

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



TAG	SURFACE OWNER	PARCEL	ACRES
A	XCL MIDSTREAM OPERATING, LLC	9-13-5	190.12
B	XCL MIDSTREAM OPERATING, LLC	9-10-19.1	10.00
C	STATE OF WEST VIRGINIA (FISH CREEK)	N/A	N/A
D	JOHN E & JANET E. KELLEY, ET AL	9-10-19	113.08
E	LOUIS AULENBACHER	9-13-4	100.191
F	ROBERT M. & NANCY MCCARDLE	9-13-26	9.02
G	ROBERT M. & NANCY MCCARDLE	9-13-25	48.00
H	ROBERT M. & NANCY MCCARDLE	9-16-5	133.00
I	ROBERT M. & NANCY MCCARDLE	9-16-6	31.00
J	WILLIAM B. KLUG, ET UX	9-16-7	26.105
K	WILLIAM B. KLUG, ET UX	9-16-4	73.39
L	WILLIAM B. KLUG, ET UX	9-16-5	122.437
M	LOUIS FOX	9-18-5.1	1.583
N	JAMES D. FROHNAPFEL, ET UX	9-18-18	154.03
O	KEITH A. FERRELL, ET UX	9-20-6	64.75

LINE	BEARING	DISTANCE
L1	S 80°57' W	172.96'
L2	S 67°30' W	1816.89'
L3	N 20°55' E	2420.41'
L4	S 72°36' E	2517.49'

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	350.70'	1839.53'	S 72°34' W	350.03'
C2	144.57'	246.55'	S 49°36' W	142.50'
C3	167.80'	400.97'	S 19°08' W	166.58'
C4	254.02'	641.10'	S 04°47' E	252.36'
C5	227.69'	1007.03'	S 22°15' E	227.21'

12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26031 | 304.462.5634
 1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
 254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5295
 slsvw.com

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

NAD'83 S.P.C.(FT)	N. 469,196.85	E. 1,623,751.28
NAD'83 GEO.	LAT-(N) 39.761722	LONG-(W) 80.726739
NAD'83 UTM (M)	N. 4,403,566.69	E. 523,999.63

LANDING POINT

NAD'83 S.P.C.(FT)	N. 467,657.9	E. 1,621,512.0
NAD'83 GEO.	LAT-(N) 39.777413	LONG-(W) 80.7346831
NAD'83 UTM (M)	N. 4,403,086.4	E. 522,725.2

BOTTOM HOLE

NAD'83 S.P.C.(FT)	N. 454,772.6	E. 1,628,814.5
NAD'83 GEO.	LAT-(N) 39.742307	LONG-(W) 80.708745
NAD'83 UTM (M)	N. 4,399,197.0	E. 524,954.7



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

P.S. 849 *C. Victor Moyers*

LEGEND

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

SCALE 1" = 2000' FILE NO. 8952P9HM.dwg
 VAN WINKLE S 9HM-REV1
 DATE JANUARY 13, 20 21
 OPERATORS WELL NO. VAN WINKLE S 9HM
 API WELL NO. 47-051-02358 #4A
 STATE COUNTY PERMIT

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

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

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

COUNTY NAME
 PERMIT

WW-6A1
(5/13)

Operator's Well No. Van Winkle S-9HM

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

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

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

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
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*See attached pages

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

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

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

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

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

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book	Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	
10*31312	9-13-5	A	DENNIS W HUNTER AND KATHY A HUNTER	CENTRAL MICHIGAN EXPLORATION LLC	1/8+	668	155	N/A	N/A	N/A	N/A	N/A	N/A	Central Michigan Exploration LLC to Stone Energy Corp.: DB 668/155 & AB 21/356	Stone Energy Corp. to EQT Production Company: AB 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31352	9-10-19.1	B	DENNIS W HUNTER AND KATHY A HUNTER	CENTRAL MICHIGAN EXPLORATION LLC	1/8+	690	60	N/A	N/A	N/A	N/A	N/A	N/A	Central Michigan Exploration LLC to Stone Energy Corp.: AB 21/497	Stone Energy Corp. to EQT Production Company: AB 38/75	EQT Production Company to TH Exploration LLC: 48/21
1+1.680*23458	FISH CREEK	C	WEST VIRGINIA DIVISION OF NATURAL RESOURCES	TH EXPLORATION LLC	1/8+	1019	373	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*31384	9-10-19	D	JOHN E KELLEY AND JANET E KELLEY	STONE ENERGY CORPORATION	1/8+	693	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Stone Energy Corp. to EQT Production Company: AB 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*19250	9-13-4	E	LOUIS AULENBACHER	CHEVRON USA INC	1/8+	902	444	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*22355	9-13-4	E	DEL T KELLEY AND DEBORAH A KELLEY	AMERICAN PETROLEUM PARTNERS LLC	1/8+	916	84	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Petroleum Partners LLC to TH Exploration LLC: 42/109
10*22362	9-13-4	E	TOD M KELLEY	AMERICAN PETROLEUM PARTNERS LLC	1/8+	916	81	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Petroleum Partners LLC to TH Exploration LLC: 42/109
10*22382	9-13-4	E	BETTY LOU KAMPE	AMERICAN PETROLEUM PARTNERS LLC	1/8+	919	399	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Petroleum Partners Operating LLC to TH Exploration LLC: 42/109
10*31380	9-13-26	F	OPAL M BLAKE	CHESAPEAKE APPALACHIA LLC	1/8+	683	1	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/26	Statoil USA Onshore Properties Inc to Chevron USA Inc: 30/427	Chesapeake Appalachia LLC to Chevron USA Inc: 30/461	Chevron USA Inc to Stone Energy Corp: 33/325 & 34/143	Stone Energy Corp to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
Pending	9-13-25	G	JOSEPH SHUTLER AND ELIZABETH SHUTLER	T G STILES	1/8+	63	203	TG Stiles to South Penn Oil Company: 60/366	South Penn Oil Company to Tri-State Gas Company: 80/150	Tri-State Gas Company to The Manufacturers Light & Heat Company: 148/388	The Manufacturers Light & Heat Company to AM Snider & Duane M Sniders, Partners dba Hundred Gas Company: 4/489	Hundred Gas Company to Carl D Perkins: 451/132	Carl D Perkins to Perkins Oil and Gas Inc: 583/72	Perkins Oil & Gas Inc to Stone Energy Corporation: 26/322	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
Pending	9-16-5	H	JOSEPH SHUTLER AND ELIZABETH SHUTLER	T G STILES	1/8+	63	203	TG Stiles to South Penn Oil Company: 60/366	South Penn Oil Company to Tri-State Gas Company: 80/150	Tri-State Gas Company to The Manufacturers Light & Heat Company: 148/388	The Manufacturers Light & Heat Company to AM Snider & Duane M Sniders, Partners dba Hundred Gas Company: 4/489	Hundred Gas Company to Carl D Perkins: 451/132	Carl D Perkins to Perkins Oil and Gas Inc: 583/72	Perkins Oil & Gas Inc to Stone Energy Corporation: 26/322	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
Pending	9-16-6	I	JOSEPH SHUTLER AND ELIZABETH SHUTLER	T G STILES	1/8+	63	203	TG Stiles to South Penn Oil Company: 60/366	South Penn Oil Company to Tri-State Gas Company: 80/150	Tri-State Gas Company to The Manufacturers Light & Heat Company: 148/388	The Manufacturers Light & Heat Company to AM Snider & Duane M Sniders, Partners dba Hundred Gas Company: 4/489	Hundred Gas Company to Carl D Perkins: 451/132	Carl D Perkins to Perkins Oil and Gas Inc: 583/72	Perkins Oil & Gas Inc to Stone Energy Corporation: 26/322	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21

Pending	9-16-7	J	JOSEPH SHUTLER AND ELIZABETH SHUTLER	T G STILES	1/8+	63	203	TG Stiles to South Penn Oil Company: 60/366	South Penn Oil Company to Tri-State Gas Company: 80/150	Tri-State Gas Company to The Manufacturers Light & Heat Company: 148/388	The Manufacturers Light & Heat Company to AM Snider & Duane M Sniders, Partners dba Hundred Gas Company: 4/489	Hundred Gas Company to Carl D Perkins: 451/132	Carl D Perkins to Perkins Oil and Gas Inc: 583/72	Perkins Oil & Gas Inc to Stone Energy Corporation: 26/322	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21	
10*18038	9-16-4	K	JEANETTE A SHUTLER DAVIS AND ROY J DAVIS	TH EXPLORATION LLC	1/8+	927	84	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18039	9-16-4	K	CLEMENT R SHUTLER AND NANCY L SHUTLER	TH EXPLORATION LLC	1/8+	927	82	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18337	9-16-4	K	VIRIGNIA LEA SHUTLER	TH EXPLORATION LLC	1/8+	929	552	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18338	9-16-4	K	MARY MARGARET SHUTLER	TH EXPLORATION LLC	1/8+	929	554	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18439	9-16-4	K	MARTIN E FAHEY AND PAMELA S FAHEY	TH EXPLORATION LLC	1/8+	933	85	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18440	9-16-4	K	JOHN M FAHEY AND SANDY Y FAHEY	TH EXPLORATION LLC	1/8+	933	87	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18538	9-16-4	K	KRIS & JULIE BECKER	TH EXPLORATION LLC	1/8+	933	644	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18667	9-16-4	K	DONNA K FAHEY	TH EXPLORATION LLC	1/8+	936	81	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18668	9-16-4	K	THOMAS M FAHEY AND PATRICIA FAHEY	TH EXPLORATION LLC	1/8+	936	85	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18669	9-16-4	K	ANDREW E POWELL AND MARIE C POWELL	TH EXPLORATION LLC	1/8+	936	139	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22384	9-16-4	K	VIVIAN SHUTLER	AMERICAN PETROLEUM PARTNERS LLC	1/8+	916	642	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Petroleum Partners Operating LLC to TH Exploration LLC: 42/109
10*22429	9-16-4	K	DENNIS E BOGER AND MARY BETH BOGER	AMERICAN PETROLEUM PARTNERS LLC	1/8+	921	19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Petroleum Partners Operating LLC to TH Exploration LLC: 42/109
10*22477	9-16-4	K	NANCY E MCFARLAND AND SHAWN B MCFARLAND	AMERICAN PETROLEUM PARTNERS LLC	1/8+	921	24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Petroleum Partners Operating LLC to TH Exploration LLC: 42/109
10*22478	9-16-4	K	URBAN SHUTLER AIF KEVIN C SHUTLER	AMERICAN PETROLEUM PARTNERS LLC	1/8+	921	29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Petroleum Partners Operating LLC to TH Exploration LLC: 42/109
10*22479	9-16-4	K	KEVIN SHUTLER	AMERICAN PETROLEUM PARTNERS LLC	1/8+	920	115	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Petroleum Partners Operating LLC to TH Exploration LLC: 42/109
10*22482	9-16-4	K	MICHAEL J SHUTLER & PATRICIA SHUTLER	AMERICAN PETROLEUM PARTNERS LLC	1/8+	930	193	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Petroleum Partners Operating LLC to TH Exploration LLC: 42/109
10*22484	9-16-4	K	TERRENCE A SHUTLER AND DAWN I SHUTLER	AMERICAN PETROLEUM PARTNERS LLC	1/8+	928	28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Petroleum Partners Operating LLC to TH Exploration LLC: 42/109
10*22945	9-16-4	K	MARTHA J SHUTLER	AMERICAN PETROLEUM PARTNERS LLC	1/8+	917	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	American Petroleum Partners Operating LLC to TH Exploration LLC: 42/109
10*29412	9-16-4	K	JANA K PARRY	TH EXPLORATION LLC	1/8+	1096	321	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*29645	9-16-4	K	RED STONE RESOURCES LLC	TH EXPLORATION LLC	1/8+	1100	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*28268	9-18-5	L	JOSEPH SHUTLER AND ELIZABETH SHUTLER	T G STILES	1/8+	63	203	TG Stiles to South Penn Oil Company: 60/366	South Penn Oil Company to Tri-State Gas Company: 80/150	Tri-State Gas Company to The Manufacturers Light & Heat Company: 148/388	The Manufacturers Light & Heat Company to AM Snider & Duane M Sniders, Partners dba Hundred Gas Company: 4/489	Hundred Gas Company to Carl D Perkins: 451/132	Carl D Perkins to Perkins Oil and Gas Inc: 583/72	Perkins Oil & Gas Inc to Stone Energy Corporation: 26/322	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21	

10*28268	9-18-5.1	M	JOSEPH SHUTLER AND ELIZABETH SHUTLER	T G STILES	1/8+	63	203	TG Stiles to South Penn Oil Company: 60/366	South Penn Oil Company to Tri-State Gas Company: 80/150	Tri-State Gas Company to The Manufacturers Light & Heat Company: 148/388	The Manufacturers Light & Heat Company to AM Snider & Duane M Sniders, Partners dba Hundred Gas Company: 4/489	Hundred Gas Company to Carl D Perkins: 451/132	Carl D Perkins to Perkins Oil and Gas Inc: 583/72	Perkins Oil & Gas Inc to Stone Energy Corporation: 26/322	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*47051.047.1	9-18-18	N	JAMES E BLATT	TH EXPLORATION LLC	1/8+	869	587	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.047.2	9-18-18	N	JOHN WILLIAM BLATT	TH EXPLORATION LLC	1/8+	869	590	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.047.3	9-18-18	N	CAROL LEE BURNSIDE	TH EXPLORATION LLC	1/8+	869	593	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.047.4	9-18-18	N	LOIS JEAN CECIL	TH EXPLORATION LLC	1/8+	869	596	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17899	9-20-6	O	JOHN CALVERT	TH EXPLORATION LLC	1/8+	924	608	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17900	9-20-6	O	DELORES J MYERS	TH EXPLORATION LLC	1/8+	924	606	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17989	9-20-6	O	JANET F HIGGINS	TH EXPLORATION LLC	1/8+	925	445	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17990	9-20-6	O	EDWARD TYLA AND MARY TYLA	TH EXPLORATION LLC	1/8+	925	385	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17994	9-20-6	O	ELAINE BEAL	TH EXPLORATION LLC	1/8+	943	528	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17995	9-20-6	O	THOMAS E BEAL AND LOIS BEAL	TH EXPLORATION LLC	1/8+	925	383	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18116	9-20-6	O	SUSANNE KRENTZ	TH EXPLORATION LLC	1/8+	927	80	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18277	9-20-6	O	JOHN J ZAGORSKI AND PAMELA L WOODHULL	TH EXPLORATION LLC	1/8+	929	110	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18279	9-20-6	O	ELAINE BOBINCHECK	TH EXPLORATION LLC	1/8+	929	56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18282	9-20-6	O	ROBERT G TAYLOR AND JUDITH B TAYLOR	TH EXPLORATION LLC	1/8+	929	112	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18328	9-20-6	O	ROBERT E BEIFUSS AND PATRICIA J BEIFUSS	TH EXPLORATION LLC	1/8+	929	558	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18365	9-20-6	O	JEAN M JONES	TH EXPLORATION LLC	1/8+	931	309	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18372	9-20-6	O	JAMES RIDER	TH EXPLORATION LLC	1/8+	931	455	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18380	9-20-6	O	LEROY SUMMERHILL AND JUNE E SUMMERHILL	TH EXPLORATION LLC	1/8+	932	443	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18382	9-20-6	O	GAIL V RYBA	TH EXPLORATION LLC	1/8+	932	445	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18383	9-20-6	O	WILLIAM MATUSINEC AND CAROL A MATUSINEC	TH EXPLORATION LLC	1/8+	932	488	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18384	9-20-6	O	GEORGE S AUGUSTIN	TH EXPLORATION LLC	1/8+	932	490	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18431	9-20-6	O	DARYL W ERRICHELLO AND CATHERINE L ERRICHELLO	TH EXPLORATION LLC	1/8+	941	631	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18435	9-20-6	O	JOSEPH E BORK AND SUSAN A BORK	TH EXPLORATION LLC	1/8+	933	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18441	9-20-6	O	HAROLD SHELDON JR AND ANNETTE M SHELDON	TH EXPLORATION LLC	1/8+	933	89	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18442	9-20-6	O	ARTHUR J OCHSNER JR AND SANDRA J OCHSNER	TH EXPLORATION LLC	1/8+	933	91	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18489	9-20-6	O	MARJORIE E KRAUSE	TH EXPLORATION LLC	1/8+	933	73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18814	9-20-6	O	BEATRICE WAYMAN	TH EXPLORATION LLC	1/8+	938	28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19556	9-20-6	O	KEITH A FERRELL AND KRISTY J FERRELL	TH EXPLORATION LLC	1/8+	936	544	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21827	9-20-6	O	JANET PUCCI AND JOHN PUCCI	TH EXPLORATION LLC	1/8+	960	218	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21829	9-20-6	O	RONALD ROSE & BARBARA ROSE	TH EXPLORATION LLC	1/8+	960	185	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22591	9-20-6	O	MICHAEL ZAMAGIAS AND ELIZABETH ZAMAGIAS	TH EXPLORATION LLC	1/8+	966	478	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22595	9-20-6	O	DUANE WOLLANT	TH EXPLORATION LLC	1/8+	984	511	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22596	9-20-6	O	DOUGLAS WOLLANT AND LISA M STOEFLER	TH EXPLORATION LLC	1/8+	966	480	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

ASSIGNMENT AND BILL OF SALE

This ASSIGNMENT AND BILL OF SALE (this "*Assignment*") dated as of December 1, 2020 (the "*Execution Date*"), is made by and between EQT PRODUCTION COMPANY, a Pennsylvania corporation, with an address at 625 Liberty Avenue, Suite 1700, Pittsburgh, Pennsylvania 15222 ("*EQT*"), and TH EXPLORATION, LLC, a Texas limited liability company, with an address at 1320 S. University Drive, Suite 500, Fort Worth, Texas 76107 ("*TH*") pursuant to the terms of that certain Acreage Trade Agreement by and among EQT, TH and TH Exploration II, LLC ("*TH II*"), dated July 8, 2020 (the "*Agreement*"). EQT and TH may be referred to herein together as the "*Parties*", and each individually as a "*Party*".

RECITALS

WHEREAS, EQT desires to transfer, convey and assign to TH certain of EQT's oil and gas leasehold interests located in Marshall County, West Virginia set forth on Exhibit A attached hereto and incorporated herein ("*EQT Leases*") in accordance with this Assignment and the Agreement; and

WHEREAS, TH desires to receive from EQT, all of EQT's right, title and interest in and to the EQT Leases in accordance with this Assignment and the Agreement.

NOW, THEREFORE, for and in consideration of the mutual promises contained herein and in the Agreement, the benefits to be derived by each Party hereunder and under the Agreement, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereby agree as follows:

ARTICLE I DEFINED TERMS

1.1 Definitions. Capitalized terms used herein and not otherwise defined throughout this Assignment shall have the meanings given such terms in the Agreement.

ARTICLE II ASSIGNMENT OF ASSETS

2.1 Assignment. Subject to the terms and conditions of this Assignment and the Agreement, EQT does hereby assign, convey and transfer to TH all of the right, title and interest of EQT in and to the following (collectively for purposes of this Assignment, the "*EQT Assets*"):

(a) Subject to the conveyance of the Wells Assets from EQT to TH II as described in the Agreement, the EQT Leases and appurtenances thereto (including rights of access and to install facilities), all Hydrocarbons within, produced from, derived from, or sold from the EQT Leases (and all proceeds related thereto), on and after the Valuation Date, and all Surface Contracts including but not limited to those set forth on Exhibit B attached hereto and incorporated herein (the "*EQT Surface Contracts*") related to the EQT Leases and such Hydrocarbons; and

(b) Copies of deeds, files and all other ownership information directly related to the acquisition, operations and maintenance of the EQT Leases, lease files for the EQT Leases

IN COUNTY OF MARSHALL
6000 TISH CENTER BUILDING, SUITE 145
CHARLESTON, WEST VIRGINIA 25317-5841

BOOK 6648 PAGE 882 I

ASSIGNMENT AND BILL OF SALE

This ASSIGNMENT AND BILL OF SALE (this "*Assignment*") dated as of December 1, 2020 (the "*Execution Date*"), is made by and between EQT PRODUCTION COMPANY, a Pennsylvania corporation, with an address at 625 Liberty Avenue, Suite 1700, Pittsburgh, Pennsylvania 15222 ("*EQT*"), and TH EXPLORATION, LLC, a Texas limited liability company, with an address at 1320 S. University Drive, Suite 500, Fort Worth, Texas 76107 ("*TH*") pursuant to the terms of that certain Acreage Trade Agreement by and among EQT, TH and TH Exploration II, LLC ("*TH II*"), dated July 8, 2020 (the "*Agreement*"). EQT and TH may be referred to herein together as the "*Parties*", and each individually as a "*Party*".

RECITALS

WHEREAS, EQT desires to transfer, convey and assign to TH certain of EQT's oil and gas leasehold interests located in Marshall County, West Virginia set forth on Exhibit A attached hereto and incorporated herein ("*EQT Leases*") in accordance with this Assignment and the Agreement; and

WHEREAS, TH desires to receive from EQT, all of EQT's right, title and interest in and to the EQT Leases in accordance with this Assignment and the Agreement.

NOW, THEREFORE, for and in consideration of the mutual promises contained herein and in the Agreement, the benefits to be derived by each Party hereunder and under the Agreement, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereby agree as follows:

ARTICLE I DEFINED TERMS

1.1 Definitions. Capitalized terms used herein and not otherwise defined throughout this Assignment shall have the meanings given such terms in the Agreement.

ARTICLE II ASSIGNMENT OF ASSETS

2.1 Assignment. Subject to the terms and conditions of this Assignment and the Agreement, EQT does hereby assign, convey and transfer to TH all of the right, title and interest of EQT in and to the following (collectively for purposes of this Assignment, the "*EQT Assets*"):

(a) Subject to the conveyance of the Wells Assets from EQT to TH II as described in the Agreement, the EQT Leases and appurtenances thereto (including rights of access and to install facilities), all Hydrocarbons within, produced from, derived from, or sold from the EQT Leases (and all proceeds related thereto), on and after the Valuation Date, and all Surface Contracts including but not limited to those set forth on Exhibit B attached hereto and incorporated herein (the "*EQT Surface Contracts*") related to the EQT Leases and such Hydrocarbons; and

(b) Copies of deeds, files and all other ownership information directly related to the acquisition, operations and maintenance of the EQT Leases, lease files for the EQT Leases

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

BOOK 0042 PAGE 0109

STATE OF WEST VIRGINIA §
§
COUNTY OF MARSHALL §

ASSIGNMENT AND CONVEYANCE

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

WITNESSETH:

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

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

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

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

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

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

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

WV-ACR-0009



January 15, 2021

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

RE: Van Winkle S-9HM

Subject: Marshall County Route 74 and Route 21 Road Crossing Letter

Dear Wade:

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 74 and Route 21 in the area reflected on the Van Winkle S-9HM well plat. THO has conducted a full title search in the relevant Court House to confirm its ownership under said County Routes and is not currently aware of any recorded document that would suggest an ownership other than THO.

If your office has any questions or concerns regarding the contents of this letter, please do not hesitate to contact me directly at 304-376-0111, or by email at amorris@tug-hilop.com.

Sincerely,

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

Amy Morris
Permit Specialist – Appalachia Region
Cell 304-376-0111
Email: amiller@tug-hilop.com

03/12/2021

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

Date of Notice Certification: 01/19/2021

API No. 47- 051 -

Operator's Well No. Van Winkle S-9HM

Well Pad Name: Hunter Pehitel

Notice has been given:

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

State: <u>West Virginia</u>	UTM NAD 83 Easting: <u>523,399.63</u>
County: <u>Marshall</u>	Northing: <u>4,403,566.68</u>
District: <u>Meade</u>	Public Road Access: <u>County Route 74</u>
Quadrangle: <u>Glen Easton 7.5'</u>	Generally used farm name: <u>XcL Midstream Operating, LLC</u>
Watershed: <u>Fish Creek (HUC 10)</u>	

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

<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 40px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p align="center">OOG OFFICE USE ONLY</p> <p><input checked="" type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p>
---	--

Required Attachments:

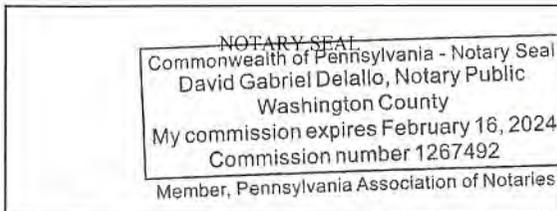
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication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

WW-6AC
(1/12)

Certification of Notice is hereby given:

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

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



Subscribed and sworn before me this 19 day of JANUARY, 2021

David Gabriel Delallo Notary Public

My Commission Expires 2/16/24

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-6A
(9-13)

API NO. 47- 051 -
OPERATOR WELL NO. Van Winkle S-9HM
Well Pad Name: Hunter Pethtel

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: 1/26/2021 Date Permit Application Filed: 1/19/2021

Notice of:

- [X] 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 [X] 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.

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

[X] SURFACE OWNER(s)
Name: Xcl Midstream Operating, LLC (Well Pad & Access Road)
Address: 380 Southpointe Boulevard, Plaza II, Suite 215
Canonsburg, PA 15317

Name: Frank E. & Mary Virginia Pethtel, Life Estate (Well Pad)
Address: 9845 Fish Creek Road
Glen Easton, WV 26039

[X] SURFACE OWNER(s) (Road and/or Other Disturbance)
Name: Regina M. & Aaron D. Murray, Remainderman
Address: 5 Mound Manor
St. Mary's, WV 26170

Name: _____
Address: _____

[] SURFACE OWNER(s) (Impoundments or Pits)
Name: _____
Address: _____

[X] COAL OWNER OR LESSEE
Name: CNX Land, LLC
Address: 1000 Consol Energy Drive
Canonsburg, PA 15317

RECEIVED
Office of Oil and Gas
FEB 03 2021

[] COAL OPERATOR
Name: _____
Address: _____
WV Department of Environmental Protection

[X] SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
Name: *See attached
Address: _____

[] OPERATOR OF ANY NATURAL GAS STORAGE FIELD
Name: _____
Address: _____

*Please attach additional forms if necessary

Notice is hereby given:

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

This Notice Shall Include:

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

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

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

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and 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

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API NO. 47-051 -
OPERATOR WELL NO. Van Winkle S-9HM
Well Pad Name: Hunter Pethel

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(8-13)

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

RECEIVED
Office of Oil and Gas

FEB 03 2021

WV Department of
Environmental Protection

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

03/12/2021

WW-6A
(8-13)

API NO. 47-051 -
OPERATOR WELL NO. Van Winkle S-9HM
Well Pad Name: Hunter Pethtel

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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4705102358

WW-6A
(8-13)

API NO. 47-051 -
OPERATOR WELL NO. Van Winkle S-9HM
Well Pad Name: Hunter Pethel

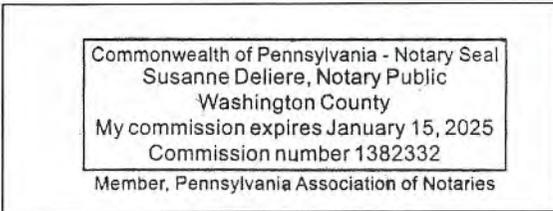
Notice is hereby given by:

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

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

Oil and Gas Privacy Notice:

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



Subscribed and sworn before me this 26th day of January 2021.
Susanne Deliere Notary Public
My Commission Expires 1/15/2025

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Exhibit WW-6A

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

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

Well: Van Winkle S – 9HM
 District: Meade
 State: WV

There are four (4) possible residences, one (1) possible commercial or business site, no churches, no schools and no emergency facilities within two-thousand feet (2,000') of the above referenced well location. Number 6 is a water well only and is not a residence.

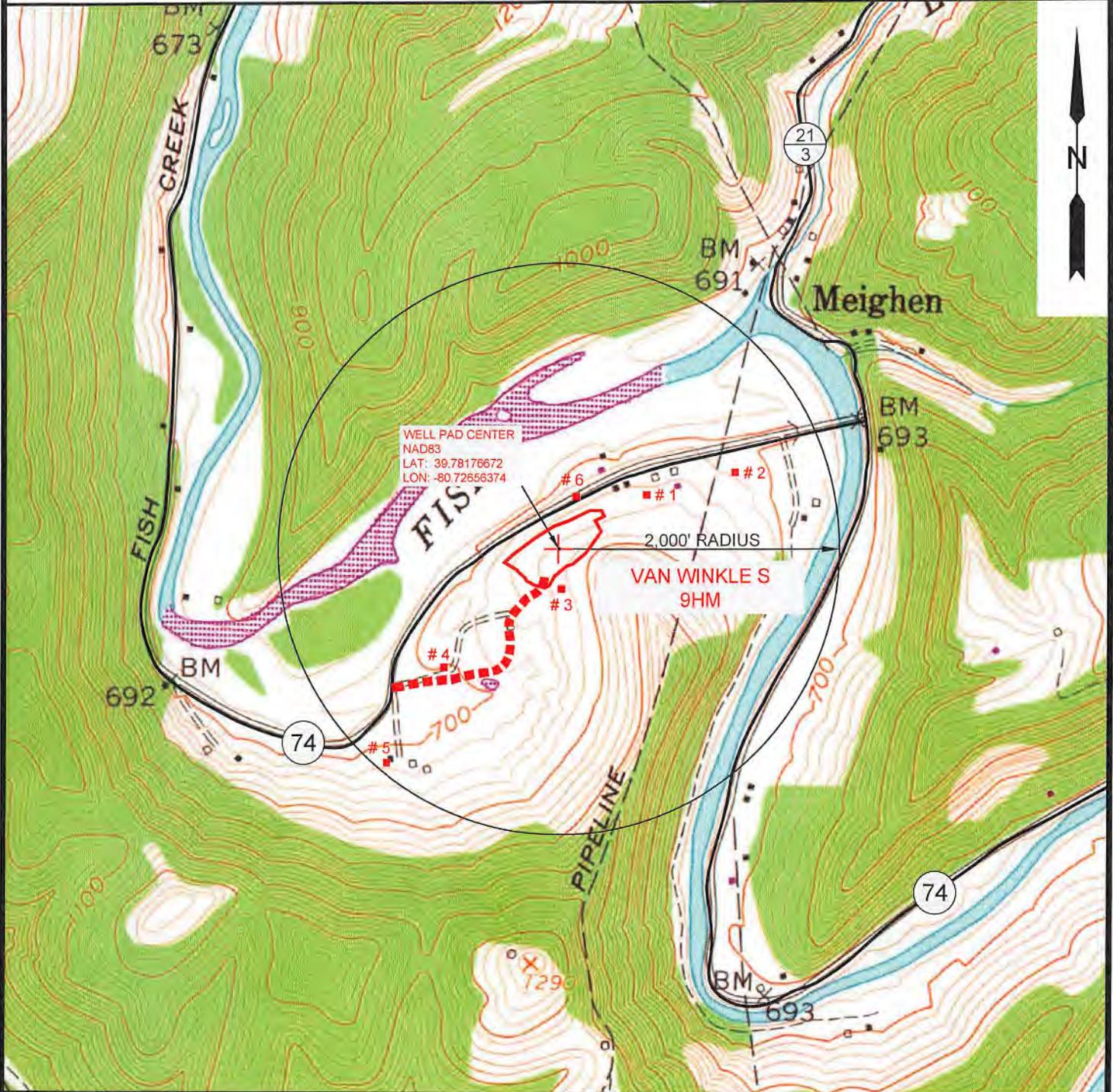
<p>Residence (#1) TM 13 Pcl. 6 Mary Virginia Pethtel Phone: 304-684-2646, 304-845-3423 Physical Address: None Found – Possible Mobile Home Tax Address: 9845 Fish Creek Rd Glen Easton, WV 26039</p>	<p>Residence (#2) TM 13 Pcl. 7 Mary Virginia Pethtel Phone: 304-684-2646, 304-845-3423 Physical Address: 9845 Fish Creek Rd Glen Easton, WV 26039 Tax Address: Same</p>	<p>Commercial/Business (#3)* TM 13 Pcl. 5 XcL Midstream Operating, LLC Phone: 1-888-751-0434 Physical Address: 9269 Fish Creek Rd. Glen Easton, WV 26039 Tax Address: 1320 S University DR STE 500 Fort Worth, TX 76107 *Physical address appears to be related to Oil & Gas Well Pad.</p>
<p>Residence (#4) TM 13 Pcl. 5 XcL Midstream Operating, LLC Phone: 1-888-751-0434 Physical Address: None Found – Appears to be newer home Tax Address: 1320 S University DR STE 500 Fort Worth, TX 76107</p>	<p>Residence (#5) TM 13 Pcl. 5 XcL Midstream Operating, LLC Phone: 1-888-751-0434 Physical Address: 9201 Fish Creek Rd. Glen Easton, WV 26039 Tax Address: 1320 S University DR STE 500 Fort Worth, TX 76107</p>	<p>(#6) Water Well Only (No Residence) Joseph L. Blake & Michael A. Walker 1207 Roberts Ridge Rd. Moundsville, WV 26041</p>

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 Environmental Protection

PROPOSED VAN WINKLE S - 9HM 4705102358



NOTE: THERE APPEARS TO BE SIX (6) POSSIBLE WATER SOURCES WITHIN 2,000'. NUMBER 6 IS A WATER WELL ONLY (NO RESIDENCE).

 <small>12 Vanhorn Drive P.O. Box 150 Glenville, WV 26351 304.462.5634 1412 Kanawha Boulevard, East Charleston, WV 25301 304.346.3952 254 East Beckley Bypass Beckley, WV 25801 304.255.5296 slsvv.com</small>	TOPO SECTION:		OPERATOR:	
	GLEN EASTON 7.5'		PREPARED FOR: TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317	
	COUNTY	DISTRICT	 TUG HILL OPERATING	
	MARSHALL	MEADE		
DRAWN BY	JOB NO.	DATE	SCALE	
K.G.M.	8952	12/24/2020	1" - 1000'	

03/12/2021

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

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

Date of Notice: 12/11/2020 **Date of Planned Entry:** 12/18/2020

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: XcL Midstream Operating, LLC (Well Pad & Access Road)
 Address: 380 Southpointe Boulevard, Plaza II, Suite 215
 Canonsburg, PA 15317

Name: Frank E. & Mary Virginia Pethtel, Life Estate (Well Pad)
 Address: 9845 Fish Creek Road
 Glen Easton, WV 26039

Name: Regina M. & Aaron D. Murray, Remainderman
 Address: 5 Mound Manor
 St. Marys, WV 26170

COAL OWNER OR LESSEE

Name: CNX Land, LLC
 Address: 1000 Consol Energy Drive
 Canonsburg, PA 15317

MINERAL OWNER(S)

Name: Frank E. & Mary Virginia Pethtel, Life Estate
 Address: 9845 Fish Creek Road
 Glen Easton, WV 26039 **See attached list

*please attach additional forms if necessary

Notice is hereby given:

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

State:	West Virginia	Approx. Latitude & Longitude:	39.78176850; -80.72661388
County:	Marshall	Public Road Access:	County Route 74
District:	Meade	Watershed:	Middle Fish Creek
Quadrangle:	Glen Easton 7.5'	Generally used farm name:	XcL Midstream Operating, LLC

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.

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Office of Oil and Gas

Notice is hereby given by:

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

Address: 380 Southpointe Boulevard, Plaza II, Suite 200
 Canonsburg, PA 15317
 Facsimile: 724-338-2020

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WV Department of Environmental Protection

Oil and Gas Privacy Notice:

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

03/12/2021

**WW-6A3 Notice of Entry for Plat Survey
Additional Parties to Notice
Van Winkle Wells**

Additional Mineral Owner:
Dennis W. Hunter
3322 Rainbow Lane
North Ft. Myers, FL 33903

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**Additional Surface Owner – Van Winkle Wells
WW-6A5**

Regina M. & Aaron D. Murray
5 Mound Manor
St. Marys, WV 26170



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03/12/2021



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways

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

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

January 20, 2021

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

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

Subject: DOH Permit for the Hunter-Pethtel Pad, Marshall County
 Van Winkle S-9HM Well Site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2009-0275 which has been transferred to Tug Hill Operating for access to the State Road for a well site located off Marshall County Route 74 SLS.

This operator is in compliance with §22-6A-20 of the WV Code. Operator has signed a DISTRICT WIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated October 1, 2018. This letter is valid for permitting purposes for one year from this letter's date.

Very Truly Yours,

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

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

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PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Van Winkle Wells

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

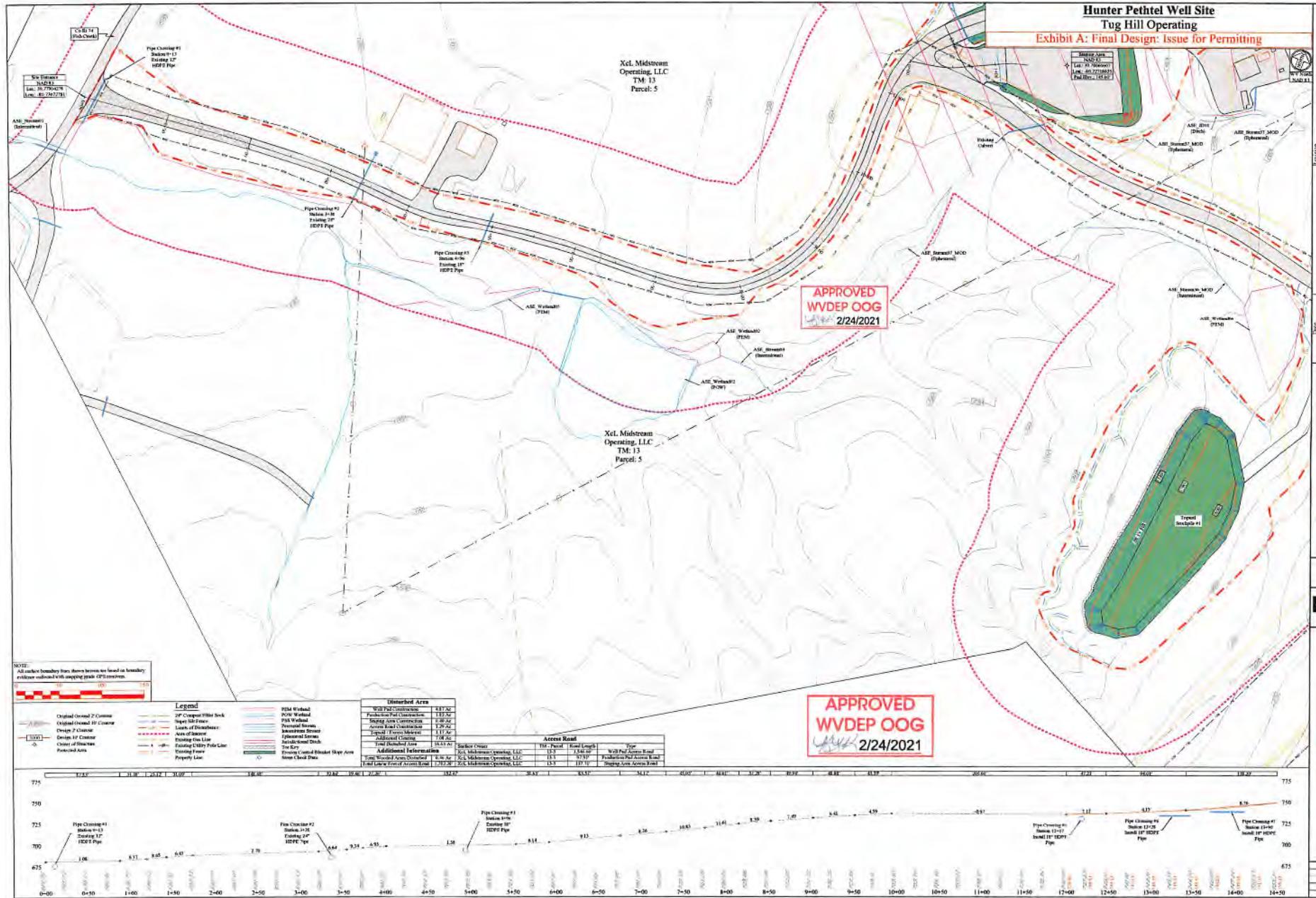
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Hunter Pethel Well Site
Tug Hill Operating

Exhibit A: Final Design: Issue for Permitting



NOTE: All surface boundary lines shown herein are based on boundary evidence reflected with adjoining parcel O&G owners.



Legend

Original Ground 2" Contour	2" Contour 10' Buffer	10' Wetland
Original Ground 10" Contour	10' Wetland	10' Wetland
Design 2" Contour	Line of Displacement	10' Wetland
Design 10" Contour	Area of Interest	10' Wetland
Center of Right-of-Way	Proposed One-Line	10' Wetland
Proposed Area	Existing Utility Pole Line	10' Wetland
	Existing Fence	10' Wetland
	Property Line	10' Wetland

Disturbed Area

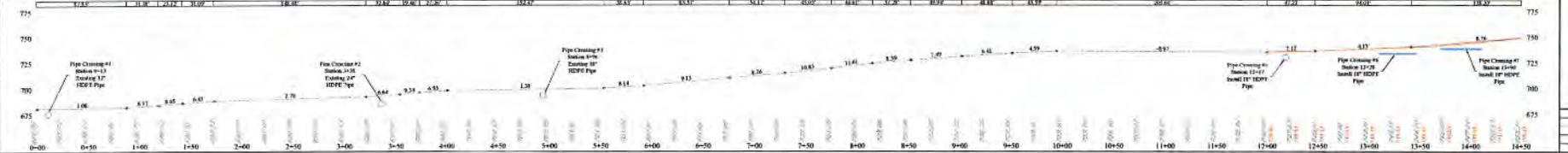
Well Pad Construction	131.52
Production Pad Construction	131.52
Drilling Area Construction	131.52
Access Road Construction	131.52
Access Road Construction	131.52
Access Road Construction	131.52
Additional Clearing	734.50
Final Disturbed Area	1433.00

Access Road

Well Pad	Parcel	Road Length	Type
Well Pad Access Road	13	134.50'	Well Pad Access Road
Production Pad Access Road	13	97.00'	Production Pad Access Road
Well Pad Access Road	13	131.52'	Well Pad Access Road

Additional Information

Well Pad Area Disturbed	131.52	Xel Midstream Operating, LLC
Production Pad Area Disturbed	131.52	Xel Midstream Operating, LLC
Well Pad Access Road	131.52	Xel Midstream Operating, LLC
Production Pad Access Road	131.52	Xel Midstream Operating, LLC



TUG HILL OPERATING

THIS DOCUMENT PREPARED FOR TUG HILL OPERATING

K&S Consulting

Hunter Pethel Well Site
Meade District
Mandall County, WV

Date: 12/04/2020
Scale: As Shown
Designed By: ZS
File No: _____
Sheet 9 of 13

