

02/23/2023



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

Wednesday, February 1, 2023
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 HENDRICKSON N-8HU
47-051-02480-00-00

This well work permit is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to any additional specific conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas Inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin
Chief

A blue ink signature of James A. Martin, written in a cursive style.

Operator's Well Number: HENDRICKSON N-8HU
Farm Name: LINDA L PICKERING HENDRICKSON
U.S. WELL NUMBER: 47-051-02480-00-00
Horizontal 6A New Drill
Date Issued: 2/1/2023

Promoting a healthy environment.

02/03/2023

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



 west virginia department of environmental protection

Oil and Gas Conservation Commission
 601 57th Street SE, Charleston, WV 25304
 304-414-1239

Randall M. Albert, Chairman
 dep.wv.gov

January 9, 2023

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

RE: Application for Deep Well Permit – API #47-051-02480

COMPANY: Tug Hill Operating, LLC

FARM: Linda L. Pickering Hendrickson Hendrickson N-8HU

COUNTY: Marshall DISTRICT: Franklin QUAD: Wileyville

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

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

1. Comments to Notice of Deviation filed? No.
2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners? Yes
3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells: **yes
4. Provided a plat showing that the productive interval of the well meets the requirements of the Rules of the Commission W. Va. C.S.R. § 39-1-4.2.

Sincerely,

Susan Rose
 Administrator

**Corley N-10HU 47-051-01998, Corley N-9HU 47-051-01983, Hillrock S-12HU 47-051-02170, Hillrock S-13HU 47-051-02173, Hillrock S-14HU 47-051-02162, Hillrock S-15HU 47-051-02163, Pendleton N-10HU 47-051-02455, Pendleton N-11HU 47-051-02456, Pendleton N-8HU 47-051-02454, Pendleton N-16HU 47-051-02441, Pendleton S-12HU 47-051-02457, Pendleton S-13HU 47-051-02458, Pendleton S-14HU 47-051-02459, Pendleton S-15HU 47-051-02460, Summs U-5H 47-051-01731, Hendrickson N-7HU 47-051-02479, Hendrickson S-10HU 47-051-02482, Hendrickson N-9HU 47-051-02481, Hendrickson S-12HU 47-051-02484, Hendrickson S-11HU 47-051-02483, Hendrickson S-13HU 47-051-02485, McMaisters N-15HU 47-051-02334, McMaisters S-20HU 47-051-02341, Bryan N-12HU 47-051-02029, Bryan N-13HU 47-051-02030, Bryan N-14HU 47-051-02031, Woodford 10HU 47-051-02152, Old Crow N-17HU 47-051-02122, Old Crow N-18HU 47-051-02123, Old Crow N-20HU 47-051-02191, Old Crow N-21HU 47-051-02335



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

Austin Caperton, 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: October 8, 2020
 ORDER NO.: 2020-W-4

INTRODUCTION

This Order (hereinafter "Order") is issued by the Office of Oil and Gas (hereinafter "OOG"), by and through its Chief, pursuant to the authority of W. Va. Code §§ 22-1-1, 22-6-1 and 22-6A-1 *et seq.* to Tug Hill Operating, 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 June 24, 2020 Tug Hill submitted fracture permit applications for wells identified as API#s 47-51-01467, 47-51-01479, 47-51-01480, 47-51-01491 and 47-51-01492. The wells are located on the Hendrickson Pad in the Franklin District of Marshall County, West Virginia.
4. On June 24, 2020 Tug Hill requested a waiver for Wetland W02 as outlined in Attachment 1, from well location restriction requirements in W. Va. Code §22-6A-12(b) for the fracture permit applications for wells identified as API#s 47- 51-01467, 47-51-01479, 47-51-01480, 47-51-01491 and 47-51-01492.

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 Wetland W02 from well location restriction requirements in W. Va. Code §22-6A-12(b) for the fracture permit applications for wells identified as API#s 47- 51-01467, 47-51-01479, 47-51-01480, 47-51-01491 and 47-51-01492. The Office of Oil and Gas hereby **ORDERS** that Tug Hill shall meet the following site construction and operational requirements for the Hendrickson 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. Wetland W02 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.

02/23/2023

Thus ORDERED, the 8th day of October, 2020.

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: 2020.10.08 08:41:00 -04'00'
JAMES A. MARTIN, CHIEF

02/03/2023

WW-6B
(04/15)

4705102480
02/23/2023
API NO. 47-051
OPERATOR WELL NO. Hendrickson N-8HU
Well Pad Name: Hendrickson

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 Franklin Wileyville 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Hendrickson N-8HU Well Pad Name: Hendrickson

3) Farm Name/Surface Owner: Linda L. Hendrickson Public Road Access: Co. Rte. 76

4) Elevation, current ground: 1,220.33' Elevation, proposed post-construction: 1,220.33'

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

(b) If Gas Shallow Deep
Horizontal

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Point Pleasant is the target formation at a depth of 11,426' - 11,543', thickness of 117' and anticipated pressure of approx. 7,500 psi.

8) Proposed Total Vertical Depth: 11,693'

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 24,390'

11) Proposed Horizontal Leg Length: 12,356.23'

12) Approximate Fresh Water Strata Depths: 70; 841'

13) Method to Determine Fresh Water Depths: Based on the depth of Pittsburgh Coal seam, per WVGES mapping contours

14) Approximate Saltwater Depths: 1,368'

15) Approximate Coal Seam Depths: Sewickley Coal - 739' and Pittsburgh Coal - 835'

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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Signature
SPADIS 6044
12-1-2022

WW-6B
(04/15)

4705192480
API NO. 47-051-5192480
OPERATOR WELL NO. Hendrickson N-8HU
Well Pad Name: Hendrickson

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/Coal	20"	NEW	J55	106.5#	975'	975'	1,576ft^3(CTS)
Intermediate 1	13 3/8"	NEW	J55	54.5#	2,700'	2,700'	1,905ft^3(CTS)
Intermediate 2	9 5/8"	NEW	HPP110	47#	10,432'	10,432'	3,401ft^3(CTS)
Production	5 1/2"	NEW	P110	23#	24,390'	24,390'	5,765ft^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		11,103'	
Liners							

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/Coal	20"	26"	.5	2,410	1,928	SEE #24	1.2
Intermediate 1	13 3/8"	17 1/2"	.38	2,740	2,192	SEE #24	1.2
Intermediate 2	9 5/8"	12 1/4"	.472	10,730	6,968	SEE #24	1.33
Production	5 1/2"	8 1/2"	.415	16,510	13,208	SEE #24	1.17/1.19
Tubing	2 7/8"			14,530	11,624		
Liners							

PACKERS

Kind:	N/A			RECEIVED Office of Oil and Gas
Sizes:	N/A			DEC 12 2022
Depths Set:	N/A			WV Department of Environmental Protection

*John G...
STRADLER
12-1-2022*

WW-6B
(10/14)

API NO. 47-051 -
OPERATOR WELL NO. Hendrickson N-8HU
Well Pad Name: Hendrickson

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

Drill through the Point Pleasant and TD Pilot Hole 150' into the Trenton. Log vertical section and run a solid cement plug back to proposed KOP (10,603'). 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 30,900,000 lb. proppant and 560,000 bbl of water. Max rate = 80bpm; max psi = 9,000#.

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21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 30.63 acres

22) Area to be disturbed for well pad only, less access road (acres): 4.21 acres

23) Describe centralizer placement for each casing string:

Will run 3 centralizers on surface casing at equal distance. Intermediate strings 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 + 1.1% 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

*Note: Attach additional sheets as needed.

Signature
STRAVINSKY
12-1-2022



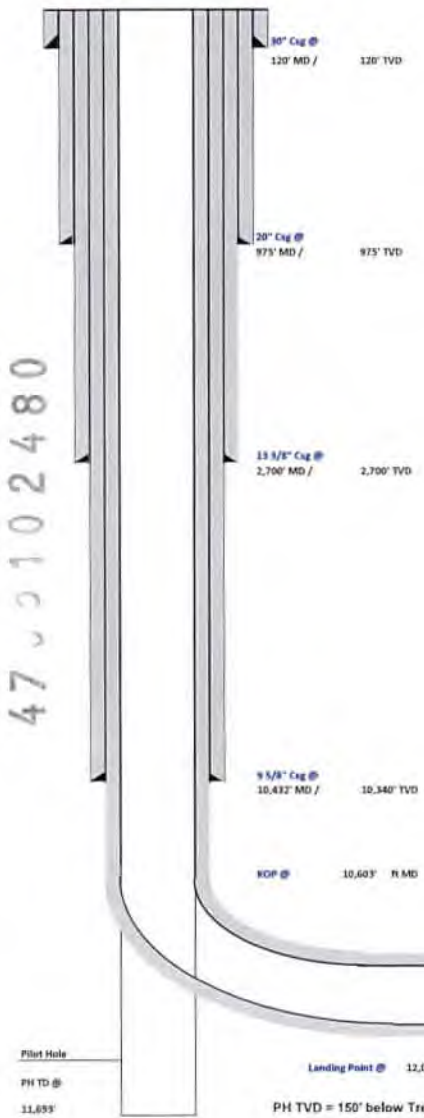
WELL NAME: Hendrickson N-BHU
STATE: WV **COUNTY:** Marshall
DISTRICT: Franklin
DF Elev: 1,220' **GI Elev:** 1,220'
TD: 24,390'
TH Latitude: 89.74480933
TH Longitude: -80.74796636
BH Latitude: 85.77662029
BH Longitude: -80.76722235

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FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	843'
Sewickley Coal	738'
Pittsburgh Coal	835'
Big Lime	2,070'
Berea	2,555'
Tully	6,452'
Marcellus	6,552'
Onondaga	6,602'
Salina	7,312'
Lockport	8,392'
Utica	11,162'
Point Pleasant	11,420'
Landing Depth	11,476'
Trenton	11,543'
Pilot Hole TD	11,693'

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	120'	120'	BW	BW	Surface
Surface	26	20	975'	975'	106.5	J55	Surface
Intermediate 1	17 1/2	13 3/8	2,700'	2,700'	54.5	J55	Surface
Intermediate 2	12 1/4	9 5/8	10,432'	10,340'	47	HPP110	Surface
Production	8 1/2	5 1/2	24,390'	11,260'	23	HCP110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
Type	Sacks	Class	Density (ppg)	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,699	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	2,064	A	15.6	Air	1 Centralizer every other joint
Intermediate 2	3,105	A	14.5	Air	1 Centralizer every other joint
Production	5,912	A	16.5	Air / SOBEM	1 every other joint in lateral; 1 per joint in curve; 1 every other joint to surface



4700102480

Pilot Hole
 PH TD @ 11,693'
 PH TVD = 150' below Trenton Top
 Landing Point @ 12,036' MD / 11,476' TVD

Lateral TD @ 24,390' ft MD
 11,260' ft TVD

John Cowan
 STK & DBC Consulting
 12-1-2022

02/23/2023

4705102480



Tug Hill Operating, LLC Casing and Cement Program

Hendrickson N-8HU

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	20"	J55	26"	975'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	2,700'	CTS
Intermediate 2	9 5/8"	HPP110	12 1/4"	10,432'	CTS
Production	5 1/2"	HCP110	8 1/2"	24,390'	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 1: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.2
- Intermediate 2: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 14.5 ppg, Y=1.35
- 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 16.5 ppg, Y = 1.03

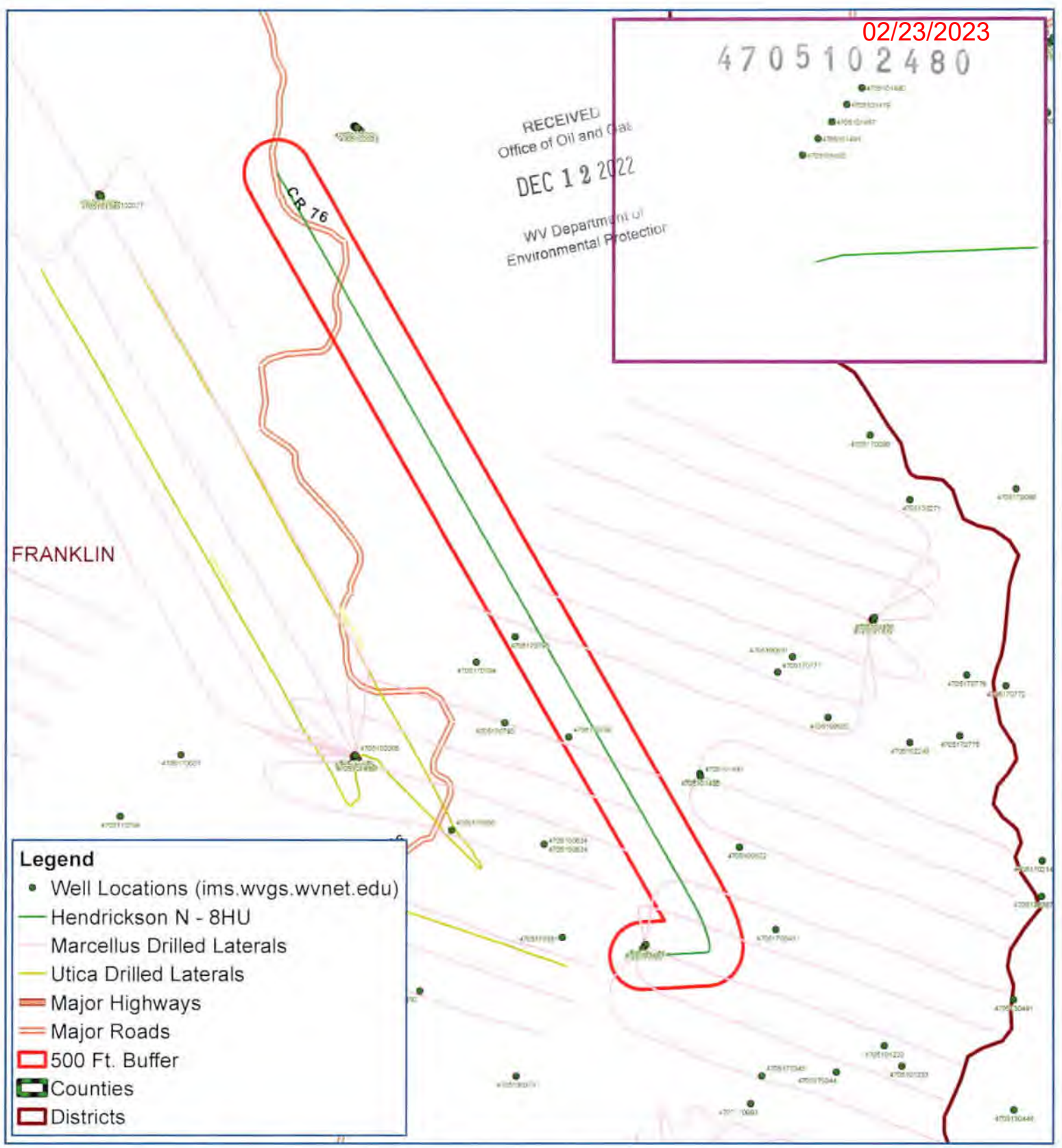
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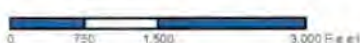
FRANKLIN

Legend

- Well Locations (ims.wvgs.wvnet.edu)
- Hendrickson N - 8HU
- Marcellus Drilled Laterals
- Utica Drilled Laterals
- Major Highways
- Major Roads
- ▭ 500 Ft. Buffer
- ▭ Counties
- ▭ Districts



Hendrickson N - 8HU
Franklin District
Marshall County, WV



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

Map Prepared by

 02/03/2023

Map Created: October 11, 2022
Map Current As Of: October 11, 2022

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. Enverus and RS Energy Group 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 (10/11/2022) to have him make maps of the wellbores with his information. DPS utilizes WVGES maps for their mapping seems it is the best publicly available. See attached map he provided.

Request maps for:

1. Wellbore with Enverus 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

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
4705101467	Tug Hill Operating, LLC.	6670' TVD, 11434' MD	Marcellus	none	No, this is a producing well in the Marcellus. This well is not deep enough to be within the expected fracture propagation from the proposed Point Pleasant stimulation.	Producing Marcellus well, operated by Tug Hill Operating, LLC., located on same well pad as proposed well.
4705101479	Tug Hill Operating, LLC.	6676' TVD, 11924' MD	Marcellus	none	No, this is a producing well in the Marcellus. This well is not deep enough to be within the expected fracture propagation from the proposed Point Pleasant stimulation.	Producing Marcellus well, operated by Tug Hill Operating, LLC., located on same well pad as proposed well.
4705101480	Tug Hill Operating, LLC.	6692' TVD, 12395' MD	Marcellus	none	No, this is a producing well in the Marcellus. This well is not deep enough to be within the expected fracture propagation from the proposed Point Pleasant stimulation.	Producing Marcellus well, operated by Tug Hill Operating, LLC., located on same well pad as proposed well.
4705101491	Tug Hill Operating, LLC.	6675' TVD, 11518' MD	Marcellus	none	No, this is a producing well in the Marcellus. This well is not deep enough to be within the expected fracture propagation from the proposed Point Pleasant stimulation.	Producing Marcellus well, operated by Tug Hill Operating, LLC., located on same well pad as proposed well.

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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
4705101492	Tug Hill Operating, LLC.	6672' TVD, 12410' MD	Marcellus	none	No, this is a producing well in the Marcellus. This well is not deep enough to be within the expected fracture propagation from the proposed Point Pleasant stimulation.	Producing Marcellus well, operated by Tug Hill Operating, LLC., located on same well pad as proposed well.
4705170792	unknown	unknown	unknown	unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be affected by fracturing of the proposed Point Pleasant well.	State records are incomplete.
4705170795	unknown	unknown	unknown	unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be affected by fracturing of the proposed Point Pleasant well.	State records are incomplete.

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Well: County = 51 Permit = 01467 [Link to all digital records for well](#)

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705101467	Marshall	1467	Franklin	Wileyville	Littleton	39.745186	-80.747924	521596.9	4399506.4

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101467	1 As Proposed	522994.4	4398994	-80.731631	39.740533

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OI
4705101467	3/31/2012	Dvld Orgnl Loc	Completed	Linda L Pickering & Donald R Hendrickson	1H		Hendrickson	WV16-0065-000/WV16-0007-001/WV16-0007-004	Donald R Hendrickson et al	G
4705101467	-/-	Dvld Wrkd Ovr	Permitted	Linda L Hendrickson	1H		Hendrickson		L L Hendrickson	Tt

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
4705101467	3/31/2012	6/27/2011	1228	Ground Level	Cameron-Garner	Marcellus Fm	Marcellus Fm	Development Well	Development Well	Oil and Gas	Rotary	Fractured	6670	11434	11434	
4705101467	-/-	-/-	1220	Ground Level												

Comment: 3/31/2012 Lease Number: WV16-0007-002/WV16-0007-005/WV16-0007-003/WV16-0007-006

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
4705101467	3/31/2012	Water	Fresh Water	Vertical			60	Pennsylvanian System					
4705101467	3/31/2012	Water	Salt Water	Vertical			1600						
4705101467	3/31/2012	Pay	Oil & Gas	Deviated	6762	Marcellus Fm	6932	Marcellus Fm					
4705101467	3/31/2012	Pay	Oil & Gas	Deviated	6972	Marcellus Fm	7182	Marcellus Fm					
4705101467	3/31/2012	Pay	Oil & Gas	Deviated	7272	Marcellus Fm	7482	Marcellus Fm					
4705101467	3/31/2012	Pay	Oil & Gas	Deviated	7572	Marcellus Fm	7782	Marcellus Fm					
4705101467	3/31/2012	Pay	Oil & Gas	Deviated	7872	Marcellus Fm	8082	Marcellus Fm					
4705101467	3/31/2012	Pay	Oil & Gas	Deviated	8172	Marcellus Fm	8382	Marcellus Fm					
4705101467	3/31/2012	Pay	Oil & Gas	Deviated	8472	Marcellus Fm	8682	Marcellus Fm					
4705101467	3/31/2012	Pay	Oil & Gas	Deviated	8772	Marcellus Fm	8982	Marcellus Fm					
4705101467	3/31/2012	Pay	Oil & Gas	Deviated	9072	Marcellus Fm	9282	Marcellus Fm					
4705101467	3/31/2012	Pay	Oil & Gas	Deviated	9372	Marcellus Fm	9582	Marcellus Fm					
4705101467	3/31/2012	Pay	Oil & Gas	Deviated	9672	Marcellus Fm	9882	Marcellus Fm					
4705101467	3/31/2012	Pay	Oil & Gas	Deviated	9972	Marcellus Fm	10182	Marcellus Fm					
4705101467	3/31/2012	Pay	Oil & Gas	Deviated	10272	Marcellus Fm	10482	Marcellus Fm					
4705101467	3/31/2012	Pay	Oil & Gas	Deviated	10572	Marcellus Fm	10782	Marcellus Fm					
4705101467	3/31/2012	Pay	Oil & Gas	Deviated	10872	Marcellus Fm	11082	Marcellus Fm					
4705101467	3/31/2012	Pay	Oil & Gas	Deviated	11172	Marcellus Fm	11382	Marcellus Fm					

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Well: County = 51 Permit = 01479 [Link to all digital records for well](#)

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705101479	Marshall	1479	Franklin	Wileyville	Littleton	39.745232	-80.747884	521600.3	4399511.5

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101479	1 As Proposed	523164.4	4399128.2	-80.729642	39.741738

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT
4705101479	3/31/2012	Dvtd Orgnl Loc	Completed	Hendrickson North	2H		Hendrickson	WV16-0065-0001-288032-001/WV16-0007-001	Linda Louise & D R Hendrickson et al	Gastar Explorati
4705101479	-/-	Dvtd Wrkd Ovr	Permitted	Linda L Hendrickson	2H		Hendrickson		L L Hendrickson	Tug Hill Operatr

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
4705101479	3/31/2012	7/3/2011	1228	Ground Level	Cameron-Gamer	Marcellus Fm	Marcellus Fm	Development Well	Development Well	Oil and Gas	Rotary	Fractured	6576	11924	11924	
4705101479	-/-	-/-	1220	Ground Level												

Comment: 3/31/2012 Additional Lease Numbers: WV16-0007-002 thru 006

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
4705101479	Gastar Exploration USA, Inc.	2012	430,620	0	0	0	45,973	59,174	67,759	49,372	50,131	33,221	49,459	46,631	28,900
4705101479	Gastar Exploration USA, Inc.	2013	389,949	7,887	12,179	44,293	44,372	45,821	37,393	36,995	31,298	36,141	33,293	30,540	29,737
4705101479	Gastar Exploration USA, Inc.	2014	324,454	28,349	27,379	31,963	25,702	32,616	30,315	30,878	26,653	24,809	20,436	21,580	23,774
4705101479	Gastar Exploration Inc.	2015	254,399	25,266	20,225	23,138	23,014	22,657	18,509	16,353	20,719	23,981	21,341	22,666	16,510
4705101479	Tug Hill Operating, LLC	2016	260,643	25,532	18,662	26,440	23,907	23,974	20,056	20,868	21,075	19,196	19,918	20,619	20,392
4705101479	Tug Hill Operating, LLC	2017	197,191	18,439	16,082	18,435	17,545	17,573	17,112	17,065	16,372	15,267	13,798	14,977	14,522
4705101479	Tug Hill Operating, LLC	2018	174,729	14,389	16,458	16,914	15,022	17,206	16,143	11,690	14,360	12,183	13,907	13,194	13,263
4705101479	Tug Hill Operating, LLC	2019	184,337	16,492	15,112	16,024	15,546	14,929	14,337	15,891	16,244	15,495	15,292	14,440	14,535
4705101479	Tug Hill Operating, LLC	2020	77,637	0	0	0	0	0	0	13,101	13,434	13,256	12,371	12,893	12,582
4705101479	Tug Hill Operating, LLC	2021	146,700	13,841	12,398	11,932	12,280	11,956	11,836	11,227	12,032	12,303	12,600	12,027	12,268

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Well: County = 51 Permit = 01480 [Link to all digital records for well](#)

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_16	LAT_DD	LON_DD	UTME	UTMN
4705101480	Marshall	1480	Franklin	Wileyville	Littleton	39.745277	-80.747843	521603.8	4399516.5

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101480	1 As Proposed	523217.6	4399303.5	-80.729015	39.743316

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_A
4705101480	3/31/2012	Dvld Orgnl Loc	Completed	Hendrickson North	4H		Hendrickson	WV16-0065-000/1-288082-001/WV16-0007-001	Linda Louise & D R Hendrickson et al	Gastar Explorat
4705101480	-/-	Dvld Wrkld Ovr	Permitted	Linda L Hendrickson	4H		Hendrickson		L L Hendrickson	Tug Hill Operat

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
4705101480	3/31/2012	7/22/2011	1228	Ground Level	Cameron-Gamer	Marcellus Fm	Marcellus Fm	Development Well	Development Well	Oil and Gas	Rotary	Fractured	6692	12395	12395	
4705101480	-/-	-/-		1220 Ground Level												

Comment: 3/31/2012 Additional Lease Numbers: WV16-0007-002 thru 006

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
4705101480	Gastar Exploration USA, Inc.	2012	508,242	0	0	0	72,596	67,959	80,861	58,445	58,500	37,293	48,389	50,296	33,903
4705101480	Gastar Exploration USA, Inc.	2013	421,951	3,657	15,042	47,289	47,821	48,390	39,225	43,415	39,361	33,977	35,730	34,038	34,006
4705101480	Gastar Exploration USA, Inc.	2014	326,535	31,916	28,202	32,257	25,522	31,800	31,623	28,746	25,901	23,702	20,843	21,897	24,126
4705101480	Gastar Exploration Inc.	2015	255,597	25,425	21,264	23,138	23,014	22,657	18,509	16,353	20,719	23,981	21,341	22,686	16,510
4705101480	Tug Hill Operating, LLC	2016	260,643	25,532	18,662	26,440	23,907	23,974	20,056	20,868	21,075	19,196	19,918	20,619	20,392
4705101480	Tug Hill Operating, LLC	2017	197,194	18,439	16,082	18,435	17,545	17,573	17,112	17,065	16,372	15,250	13,768	14,977	14,542
4705101480	Tug Hill Operating, LLC	2018	174,705	14,363	16,458	16,914	15,022	17,206	16,143	11,679	14,360	12,196	13,907	13,194	13,263
4705101480	Tug Hill Operating, LLC	2019	184,391	16,492	15,112	16,024	15,546	14,929	14,391	15,891	16,244	15,495	15,292	14,440	14,535
4705101480	Tug Hill Operating, LLC	2020	78,580	0	0	0	0	0	0	13,101	13,434	13,256	13,314	12,893	12,582
4705101480	Tug Hill Operating, LLC	2021	146,984	13,841	12,398	11,932	12,280	11,956	11,836	11,227	12,032	12,303	12,600	12,311	12,268

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Well: County = 51 Permit = 01491 [Link to all digital records for well](#)

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705101491	Marshall	1491	Franklin	Wileyville	Littleton	39.745141	-80.747963	521593.6	4399501.3

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101491	1 As Proposed	521753.5	4399254.4	-80.746105	39.742912

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN
4705101491	3/31/2012	Dvtd Orgnl Loc	Completed	Hendrickson South	3H		Hendrickson South	WV16-0065-000/1-306235-001/WV16-0007-001	Linda Louise & Donald Ray Hendrickson et al
4705101491	-/-	Dvtd Wrkrd Ovr	Permitted	Linda L Hendrickson	3H		Hendrickson		L L Hendrickson

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	KOC
4705101491	3/31/2012	8/3/2011	1220	Ground Level	Cameron-Garner	Marcellus Fm	Marcellus Fm	Development Well	Development Well	Oil and Gas	Rotary	Fractured	6675	11518	11518	
4705101491	-/-	-/-	1220	Ground Level												

Comment: 3/31/2012 Additional Lease Numbers: WV16-0007-004/WV16-0017-001/WV16-0007-002/WV16-0007-005/WV16-0007-003/WV16-0007-006/1288528

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
4705101491	Gastar Exploration USA, Inc	2012	358,323	0	0	0	44,497	51,759	54,013	40,957	43,126	27,187	39,379	34,644	22,761
4705101491	Gastar Exploration USA, Inc	2013	337,131	6,878	18,294	33,227	33,928	36,108	31,243	32,691	25,609	34,805	31,909	26,408	26,031
4705101491	Gastar Exploration USA, Inc	2014	269,427	25,905	22,353	25,857	21,055	26,810	24,074	24,069	21,139	20,259	17,021	19,869	21,016
4705101491	Gastar Exploration Inc.	2015	219,107	23,305	17,933	20,301	20,474	19,239	16,038	14,129	16,285	20,540	15,213	20,171	15,479
4705101491	Tug Hill Operating, LLC	2016	242,082	22,368	17,307	22,457	20,502	21,524	20,118	19,943	20,427	19,468	20,240	18,962	18,762
4705101491	Tug Hill Operating, LLC	2017	190,919	18,801	16,744	17,784	16,291	16,476	15,856	16,243	15,855	15,218	11,976	14,790	14,882
4705101491	Tug Hill Operating, LLC	2018	161,328	14,185	14,062	15,813	13,449	14,878	15,003	11,260	11,754	12,307	13,287	12,567	12,763
4705101491	Tug Hill Operating, LLC	2019	157,881	11,995	13,200	13,560	13,223	13,026	12,189	13,868	13,364	13,803	13,622	13,022	13,009
4705101491	Tug Hill Operating, LLC	2020	81,696	0	0	0	0	0	0	12,553	12,811	12,358	12,515	11,528	19,931
4705101491	Tug Hill Operating, LLC	2021	138,517	15,786	14,529	11,018	11,797	11,128	9,821	9,678	10,798	10,803	11,614	10,706	10,839

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Well: County = 51 Permit = 01492 [Link to all digital records for well](#)Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705101492	Marshall	1492	Franklin	Wileyville	Littleton	39.745096	-80.746004	521590.1	4399496.3

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101492	1 As Proposed	521670.8	4399094.2	-80.747075	39.741471

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN
4705101492	3/31/2012	Dvtd Orgnl Loc	Completed	Hendrickson South	5H		Hendrickson South	WV16-0065-000/1-306235-001/WV16-0007-001	Linda Louise & Donald Ray Hendrickson et al
4705101492	-/-	Dvtd Wrkld Ovr	Permitted	Linda L Hendrickson	5H		Hendrickson		L L Hendrickson

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	KOC
4705101492	3/31/2012	10/5/2011	1228	Ground Level	Cameron-Gamer	Marcellus Fm	Marcellus Fm	Development Well	Development Well	Oil and Gas	Rotary	Fractured	6672	12410	12410	
4705101492	-/-	-/-	1220	Ground Level												

Comment: 3/31/2012 Additional Lease Numbers WV16-0007-004/WV16-0017-001/WV16-0007-002/WV16-0007-005/WV16-0007-003/WV16-0007-006/1288528

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
4705101492	Gastar Exploration USA, Inc.	2012	465,670	0	0	0	55,296	61,762	70,460	53,242	55,546	35,019	55,543	47,263	31,539
4705101492	Gastar Exploration USA, Inc.	2013	417,529	9,870	12,514	39,126	45,647	50,959	41,781	44,464	36,129	32,128	29,451	38,001	37,459
4705101492	Gastar Exploration USA, Inc.	2014	387,127	37,280	32,163	37,206	30,299	38,580	34,641	34,633	30,421	29,151	24,325	28,396	30,032
4705101492	Gastar Exploration Inc.	2015	314,899	33,306	25,625	29,218	29,465	27,681	23,079	20,325	23,440	29,558	21,894	29,029	22,279
4705101492	Tug Hill Operating, LLC	2016	348,364	32,189	24,906	32,316	29,503	30,974	28,950	28,698	29,395	28,015	29,126	27,287	26,999
4705101492	Tug Hill Operating, LLC	2017	274,758	27,055	24,095	25,591	23,443	23,709	22,817	23,374	22,616	21,899	17,235	21,304	21,415
4705101492	Tug Hill Operating, LLC	2018	232,154	20,392	20,236	22,755	19,353	21,410	21,589	16,223	16,914	17,710	19,121	18,084	18,367
4705101492	Tug Hill Operating, LLC	2019	227,021	17,214	18,995	19,513	19,029	18,745	17,413	19,957	19,231	19,863	19,602	18,739	18,720
4705101492	Tug Hill Operating, LLC	2020	118,083	0	0	0	0	0	0	18,064	18,435	17,783	18,010	16,590	29,201
4705101492	Tug Hill Operating, LLC	2021	199,314	22,717	20,907	15,855	16,961	16,013	14,133	13,926	15,539	15,546	16,713	15,407	15,597

4705102480

WV Geological & Economic Survey

Well: County = 51 Permit = 70792 [Link to all digital records for well](#)

Report Time: Wednesday, October 12, 2022 2:14:50 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705170792	Marshall	70792	Franklin	Powhatan Point	Clarington	39.753718	-80.75188	521255.4	4400452.3

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
4705170792	---		unknown	Prpty Map Catherine Smith						----- unknown -----			

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
4705170792	---	---						unclassified	unclassified	not available	unknown	unknown								

WV Geological & Economic Survey

Well: County = 51 Permit = 70795 [Link to all digital records for well](#)

Report Time: Wednesday, October 12, 2022 2:18:40 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705170795	Marshall	70795	Franklin	Powhatan Point	Clarington	39.757782	-80.7547	521012.6	4400902.7

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
4705170795	---		unknown	Prpty Map Catherine Smith						----- unknown -----			

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
4705170795	---	---						unclassified	unclassified	not available	unknown	unknown								

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Well: Hendrickson N-08 HU (slot K)
 Site: Hendrickson
 Project: Marshall County, West Virginia
 Design: rev0

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 @ 1220.00ft

Northing: 14433909.91 Easting: 1711261.01 Latitude: 39.74480933 Longitude: -80.74756636

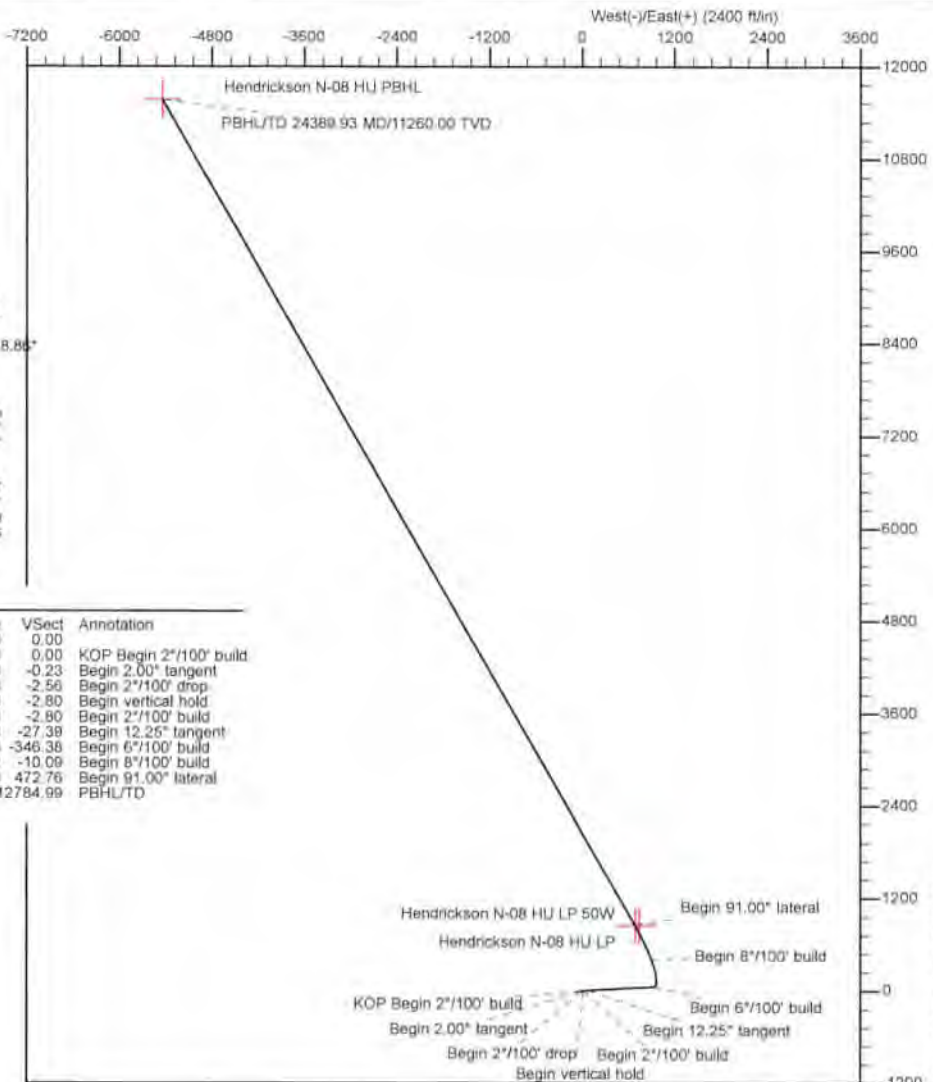
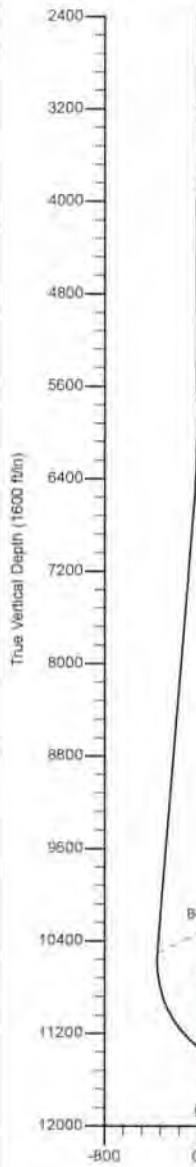
Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.86°



Azimuths to Grid North
 True North: -0.18°
 Magnetic North: -8.86°
 Magnetic Field
 Strength: 51973.3anT
 Dip Angle: 66.80°
 Date: 1/20/2019
 Model: IGRF2015

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	3200.00	0.00	0.00	3200.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2"/100' build
3	3300.00	2.00	72.48	3299.98	0.53	1.66	2.00	72.48	-0.23	Begin 2.00° tangent
4	3800.00	2.00	72.48	3799.68	5.78	18.30	0.00	0.00	-2.56	Begin 2"/100' drop
5	3900.00	0.00	72.48	3899.65	6.30	19.97	2.00	180.00	-2.80	Begin vertical hold
6	6000.35	0.00	72.48	6000.00	6.30	19.97	0.00	72.48	-2.80	Begin 2"/100' build
7	6613.08	12.25	86.93	6608.08	9.80	85.15	2.00	86.93	-27.39	Begin 12.25° tangent
8	10602.95	12.25	86.93	10507.03	55.13	930.83	0.00	0.00	-346.38	Begin 6"/100' build
9	11511.92	50.00	339.77	11304.43	-414.53	904.77	6.00	-116.02	-10.09	Begin 8"/100' build
10	12035.97	91.00	330.20	11476.00	849.81	695.75	8.00	-14.40	472.76	Begin 91.00° lateral
11	24389.93	91.00	330.20	11260.00	11568.58	-5442.80	0.00	0.00	2784.99	PBHL/TD



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Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Hendrickson N-08 HU (slot K)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1220.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1220.00ft
Site:	Hendrickson	North Reference:	Grid
Well:	Hendrickson N-08 HU (slot K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

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	Hendrickson				
Site Position:		Northing:	14,433,967.93 usft	Latitude:	39.74496853
From:	Lat/Long	Easting:	1,711,276.26 usft	Longitude:	-80.74791154
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.16 "

Well	Hendrickson N-08 HU (slot K)					
Well Position	+N/-S	0.00 ft	Northing:	14,433,909.92 usft	Latitude:	39.74480933
	+E/-W	0.00 ft	Easting:	1,711,261.01 usft	Longitude:	-80.74796636
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	1,220.00 ft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (")	Dip Angle (")	Field Strength (nT)
	IGRF2015	1/20/2019	-8.70	66.80	51,973.27747429

Design	rev0			
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	334.80

Plan Survey Tool Program	Date	1/27/2019		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	24,389.93 rev0 (Original Hole)	MWD	MWD - Standard

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Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Hendrickson N-08 HU (slot K)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1220.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1220.00ft
Site:	Hendrickson	North Reference:	Grid
Well:	Hendrickson N-08 HU (slot K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,300.00	2.00	72.48	3,299.98	0.53	1.66	2.00	2.00	0.00	72.48	
3,800.00	2.00	72.48	3,799.68	5.78	18.30	0.00	0.00	0.00	0.00	
3,900.00	0.00	72.48	3,899.65	6.30	19.97	2.00	-2.00	0.00	180.00	
6,000.35	0.00	72.48	6,000.00	6.30	19.97	0.00	0.00	0.00	72.48	
6,613.08	12.25	86.93	6,608.08	9.80	85.15	2.00	2.00	2.36	86.93	
10,602.95	12.25	86.93	10,507.03	55.13	930.83	0.00	0.00	0.00	0.00	
11,511.92	50.00	339.77	11,304.43	414.53	904.77	6.00	4.15	-11.79	-116.02	
12,035.97	91.00	330.20	11,476.00	849.81	895.75	8.00	7.82	-1.83	-14.40	
24,389.93	91.00	330.20	11,260.00	11,568.58	-5,442.80	0.00	0.00	0.00	0.00	Hendrickson N-08 HU

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Planning Report - Geographic

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WV Department of
Environmental Protection

Database: DB_Jul2216d_v14
Company: Tug Hill Operating LLC
Project: Marshall County, West Virginia
Site: Hendrickson
Well: Hendrickson N-08 HU (slot K)
Wellbore: Original Hole
Design: rev0

Local Co-ordinate Reference: Well Hendrickson N-08 HU (slot K)
TVD Reference: GL @ 1220.00ft
MD Reference: GL @ 1220.00ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
100.00	0.00	0.00	100.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
200.00	0.00	0.00	200.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
300.00	0.00	0.00	300.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
400.00	0.00	0.00	400.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
500.00	0.00	0.00	500.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
600.00	0.00	0.00	600.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
700.00	0.00	0.00	700.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
800.00	0.00	0.00	800.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
900.00	0.00	0.00	900.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
1,600.00	0.00	0.00	1,600.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
1,700.00	0.00	0.00	1,700.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
1,800.00	0.00	0.00	1,800.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
1,900.00	0.00	0.00	1,900.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
2,000.00	0.00	0.00	2,000.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
2,100.00	0.00	0.00	2,100.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
2,200.00	0.00	0.00	2,200.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
2,300.00	0.00	0.00	2,300.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
2,400.00	0.00	0.00	2,400.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
2,500.00	0.00	0.00	2,500.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
2,600.00	0.00	0.00	2,600.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
2,700.00	0.00	0.00	2,700.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
2,800.00	0.00	0.00	2,800.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
2,900.00	0.00	0.00	2,900.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
3,000.00	0.00	0.00	3,000.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
3,100.00	0.00	0.00	3,100.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
3,200.00	0.00	0.00	3,200.00	0.00	0.00	14,433,909.92	1,711,261.01	39.74480933	-80.74796636
KOP Begin 2°/100' build									
3,300.00	2.00	72.48	3,299.98	0.53	1.66	14,433,910.44	1,711,262.67	39.74481076	-80.74796044
Begin 2.00° tangent									
3,400.00	2.00	72.48	3,399.92	1.58	4.99	14,433,911.49	1,711,266.00	39.74481362	-80.74794858
3,500.00	2.00	72.48	3,499.86	2.63	8.32	14,433,912.54	1,711,269.33	39.74481648	-80.74793673
3,600.00	2.00	72.48	3,599.80	3.68	11.65	14,433,913.59	1,711,272.66	39.74481934	-80.74792488
3,700.00	2.00	72.48	3,699.74	4.73	14.98	14,433,914.65	1,711,275.99	39.74482220	-80.74791303
3,800.00	2.00	72.48	3,799.68	5.78	18.30	14,433,915.70	1,711,279.31	39.74482506	-80.74790118
Begin 2°/100' drop									
3,900.00	0.00	72.48	3,899.65	6.30	19.97	14,433,916.22	1,711,280.98	39.74482649	-80.74789526
Begin vertical hold									
4,000.00	0.00	72.48	3,999.65	6.30	19.97	14,433,916.22	1,711,280.98	39.74482649	-80.74789526
4,100.00	0.00	72.48	4,099.65	6.30	19.97	14,433,916.22	1,711,280.98	39.74482649	-80.74789526
4,200.00	0.00	72.48	4,199.65	6.30	19.97	14,433,916.22	1,711,280.98	39.74482649	-80.74789526
4,300.00	0.00	72.48	4,299.65	6.30	19.97	14,433,916.22	1,711,280.98	39.74482649	-80.74789526
4,400.00	0.00	72.48	4,399.65	6.30	19.97	14,433,916.22	1,711,280.98	39.74482649	-80.74789526
4,500.00	0.00	72.48	4,499.65	6.30	19.97	14,433,916.22	1,711,280.98	39.74482649	-80.74789526
4,600.00	0.00	72.48	4,599.65	6.30	19.97	14,433,916.22	1,711,280.98	39.74482649	-80.74789526
4,700.00	0.00	72.48	4,699.65	6.30	19.97	14,433,916.22	1,711,280.98	39.74482649	-80.74789526
4,800.00	0.00	72.48	4,799.65	6.30	19.97	14,433,916.22	1,711,280.98	39.74482649	-80.74789526
4,900.00	0.00	72.48	4,899.65	6.30	19.97	14,433,916.22	1,711,280.98	39.74482649	-80.74789526

02/03/2023



Planning Report - Geographic

Database:	DB_Jul2216dt_V14	Local Co-ordinate Reference:	Well Hendrickson N-08 HU (slot K)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1220.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1220.00ft
Site:	Hendrickson	North Reference:	Grid
Well:	Hendrickson N-08 HU (slot K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
5,000.00	0.00	72.48	4,999.65	6.30	19.97	14,433,916.22	1,711,280.98	39.74482649	-80.74789526	
5,100.00	0.00	72.48	5,099.65	6.30	19.97	14,433,916.22	1,711,280.98	39.74482649	-80.74789526	
5,200.00	0.00	72.48	5,199.65	6.30	19.97	14,433,916.22	1,711,280.98	39.74482649	-80.74789526	
5,300.00	0.00	72.48	5,299.65	6.30	19.97	14,433,916.22	1,711,280.98	39.74482649	-80.74789526	
5,400.00	0.00	72.48	5,399.65	6.30	19.97	14,433,916.22	1,711,280.98	39.74482649	-80.74789526	
5,500.00	0.00	72.48	5,499.65	6.30	19.97	14,433,916.22	1,711,280.98	39.74482649	-80.74789526	
5,600.00	0.00	72.48	5,599.65	6.30	19.97	14,433,916.22	1,711,280.98	39.74482649	-80.74789526	
5,700.00	0.00	72.48	5,699.65	6.30	19.97	14,433,916.22	1,711,280.98	39.74482649	-80.74789526	
5,800.00	0.00	72.48	5,799.65	6.30	19.97	14,433,916.22	1,711,280.98	39.74482649	-80.74789526	
5,900.00	0.00	72.48	5,899.65	6.30	19.97	14,433,916.22	1,711,280.98	39.74482649	-80.74789526	
6,000.00	0.00	72.48	5,999.65	6.30	19.97	14,433,916.22	1,711,280.98	39.74482649	-80.74789526	
6,000.35	0.00	72.48	6,000.00	6.30	19.97	14,433,916.22	1,711,280.98	39.74482649	-80.74789526	
Begin 2°/100' build										
6,100.00	1.99	86.93	6,099.63	6.40	21.70	14,433,916.31	1,711,282.71	39.74482673	-80.74788910	
6,200.00	3.99	86.93	6,199.49	6.68	26.91	14,433,916.59	1,711,287.92	39.74482746	-80.74787055	
6,300.00	5.99	86.93	6,299.11	7.14	35.60	14,433,917.08	1,711,296.61	39.74482867	-80.74783963	
6,400.00	7.99	86.93	6,398.36	7.79	47.76	14,433,917.71	1,711,308.77	39.74483037	-80.74779637	
6,500.00	9.99	86.93	6,497.13	8.63	63.37	14,433,918.55	1,711,324.38	39.74483254	-80.74774084	
6,600.00	11.99	86.93	6,595.29	9.65	82.41	14,433,919.57	1,711,343.42	39.74483520	-80.74767309	
6,613.08	12.25	86.93	6,608.08	9.80	85.15	14,433,919.72	1,711,346.16	39.74483558	-80.74766333	
Begin 12.25° tangent										
6,700.00	12.25	86.93	6,693.01	10.79	103.58	14,433,920.70	1,711,364.59	39.74483815	-80.74759778	
6,800.00	12.25	86.93	6,790.73	11.92	124.77	14,433,921.84	1,711,385.78	39.74484111	-80.74752236	
6,900.00	12.25	86.93	6,888.46	13.06	145.97	14,433,922.96	1,711,406.98	39.74484406	-80.74744695	
7,000.00	12.25	86.93	6,986.18	14.19	167.16	14,433,924.11	1,711,428.17	39.74484702	-80.74737153	
7,100.00	12.25	86.93	7,083.90	15.33	188.36	14,433,925.25	1,711,449.37	39.74484998	-80.74729612	
7,200.00	12.25	86.93	7,181.62	16.47	209.55	14,433,926.38	1,711,470.56	39.74485293	-80.74722070	
7,300.00	12.25	86.93	7,279.34	17.60	230.75	14,433,927.52	1,711,491.76	39.74485589	-80.74714529	
7,400.00	12.25	86.93	7,377.06	18.74	251.94	14,433,928.66	1,711,512.95	39.74485885	-80.74706987	
7,500.00	12.25	86.93	7,474.78	19.88	273.14	14,433,929.79	1,711,534.15	39.74486180	-80.74699446	
7,600.00	12.25	86.93	7,572.51	21.01	294.34	14,433,930.83	1,711,555.34	39.74486476	-80.74691904	
7,700.00	12.25	86.93	7,670.23	22.15	315.53	14,433,932.07	1,711,576.54	39.74486772	-80.74684363	
7,800.00	12.25	86.93	7,767.95	23.28	336.73	14,433,933.20	1,711,597.74	39.74487067	-80.74676821	
7,900.00	12.25	86.93	7,865.67	24.42	357.92	14,433,934.34	1,711,618.93	39.74487363	-80.74669280	
8,000.00	12.25	86.93	7,963.39	25.56	379.12	14,433,935.47	1,711,640.13	39.74487658	-80.74661738	
8,100.00	12.25	86.93	8,061.11	26.69	400.31	14,433,936.61	1,711,661.32	39.74487954	-80.74654197	
8,200.00	12.25	86.93	8,158.83	27.83	421.51	14,433,937.75	1,711,682.52	39.74488249	-80.74646655	
8,300.00	12.25	86.93	8,256.55	28.97	442.70	14,433,938.88	1,711,703.71	39.74488545	-80.74639114	
8,400.00	12.25	86.93	8,354.28	30.10	463.90	14,433,940.02	1,711,724.91	39.74488841	-80.74631572	
8,500.00	12.25	86.93	8,452.00	31.24	485.09	14,433,941.16	1,711,746.10	39.74489136	-80.74624031	
8,600.00	12.25	86.93	8,549.72	32.37	506.29	14,433,942.29	1,711,767.30	39.74489432	-80.74616489	
8,700.00	12.25	86.93	8,647.44	33.51	527.49	14,433,943.43	1,711,788.49	39.74489727	-80.74608948	
8,800.00	12.25	86.93	8,745.16	34.65	548.68	14,433,944.56	1,711,809.69	39.74490023	-80.74601406	
8,900.00	12.25	86.93	8,842.88	35.78	569.88	14,433,945.70	1,711,830.88	39.74490318	-80.74593865	
9,000.00	12.25	86.93	8,940.60	36.92	591.07	14,433,946.84	1,711,852.08	39.74490614	-80.74586323	
9,100.00	12.25	86.93	9,038.33	38.06	612.27	14,433,947.97	1,711,873.28	39.74490910	-80.74578782	
9,200.00	12.25	86.93	9,136.05	39.19	633.46	14,433,949.11	1,711,894.47	39.74491205	-80.74571240	
9,300.00	12.25	86.93	9,233.77	40.33	654.66	14,433,950.25	1,711,915.67	39.74491501	-80.74563699	
9,400.00	12.25	86.93	9,331.49	41.47	675.85	14,433,951.38	1,711,936.86	39.74491796	-80.74556157	
9,500.00	12.25	86.93	9,429.21	42.60	697.05	14,433,952.52	1,711,958.06	39.74492092	-80.74548616	
9,600.00	12.25	86.93	9,526.93	43.74	718.25	14,433,953.65	1,711,979.25	39.74492387	-80.74541074	
9,700.00	12.25	86.93	9,624.65	44.87	739.44	14,433,954.79	1,712,000.45	39.74492683	-80.74533533	
9,800.00	12.25	86.93	9,722.37	46.01	760.64	14,433,955.93	1,712,021.64	39.74492978	-80.74525991	
9,900.00	12.25	86.93	9,820.10	47.15	781.83	14,433,957.06	1,712,042.84	39.74493274	-80.74518449	

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REVIEWED 02/23/2023
Office of Oil and Gas

DEC 1 2 2022



Planning Report - Geographic

Database: DB_Jul2218dt_v14
Company: Tug Hill Operating LLC
Project: Marshall County, West Virginia
Site: Hendrickson
Well: Hendrickson N-08 HU (slot K)
Wellbore: Original Hole
Design: rev0

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Well Hendrickson N-08 HU (slot K)
GL @ 1220.00ft
GL @ 1220.00ft
Grid
Minimum Curvature

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,000.00	12.25	86.93	9,917.82	48.28	803.03	14,433,958.20	1,712,054.03	39.74493569	-80.74510908
10,100.00	12.25	86.93	10,015.54	49.42	824.22	14,433,959.34	1,712,085.23	39.74493865	-80.74503366
10,200.00	12.25	86.93	10,113.26	50.56	845.42	14,433,960.47	1,712,106.43	39.74494160	-80.74495825
10,300.00	12.25	86.93	10,210.98	51.89	866.61	14,433,961.61	1,712,127.62	39.74494456	-80.74486283
10,400.00	12.25	86.93	10,308.70	52.83	887.81	14,433,962.75	1,712,148.82	39.74494751	-80.74480742
10,500.00	12.25	86.93	10,406.42	53.96	909.00	14,433,963.88	1,712,170.01	39.74495047	-80.74473200
10,600.00	12.25	86.93	10,504.15	55.10	930.20	14,433,965.02	1,712,191.21	39.74495342	-80.74465659
10,602.95	12.25	86.93	10,507.09	55.13	930.83	14,433,965.05	1,712,191.83	39.74495351	-80.74465436
Begin 6°/100' build									
10,700.00	11.00	58.40	10,602.16	60.54	949.01	14,433,970.46	1,712,210.02	39.74496822	-80.74458960
10,800.00	12.69	30.01	10,700.11	75.07	962.65	14,433,984.99	1,712,223.66	39.74500801	-80.74454095
10,900.00	16.50	11.38	10,796.92	98.53	970.95	14,434,008.45	1,712,231.86	39.74507237	-80.74451117
11,000.00	21.32	0.25	10,891.52	130.66	973.83	14,434,040.58	1,712,234.84	39.74516058	-80.74450059
11,100.00	26.61	353.21	10,982.89	171.11	971.26	14,434,081.03	1,712,232.27	39.74527169	-80.74450933
11,200.00	32.13	348.41	11,070.02	219.44	983.27	14,434,129.36	1,712,224.27	39.74540448	-80.74453729
11,300.00	37.78	344.90	11,151.95	275.12	949.93	14,434,185.03	1,712,210.94	39.74555749	-80.74458416
11,400.00	43.52	342.19	11,227.79	337.53	931.41	14,434,247.45	1,712,192.41	39.74572904	-80.74464943
11,500.00	49.31	340.00	11,296.71	406.00	907.89	14,434,315.92	1,712,168.90	39.74591726	-80.74473239
11,511.92	50.00	338.77	11,304.43	414.53	904.77	14,434,324.45	1,712,165.78	39.74594071	-80.74474341
Begin 8°/100' build									
11,600.00	56.84	337.68	11,356.89	480.38	879.07	14,434,390.29	1,712,140.08	39.74612175	-80.74483418
11,700.00	64.65	335.67	11,405.72	560.40	844.50	14,434,470.32	1,712,105.51	39.74634180	-80.74485635
11,800.00	72.48	333.91	11,442.24	644.54	804.85	14,434,554.45	1,712,065.86	39.74657316	-80.74509655
11,900.00	80.33	332.29	11,465.73	731.14	760.89	14,434,641.05	1,712,021.90	39.74681133	-80.74525207
12,000.00	88.18	330.75	11,475.74	818.52	713.48	14,434,728.43	1,711,974.49	39.74705187	-80.74541987
12,035.97	91.00	330.20	11,476.00	849.81	685.75	14,434,759.73	1,711,956.76	39.74713775	-80.74548261
Begin 91.00° lateral									
12,100.00	91.00	330.20	11,474.88	905.37	663.94	14,434,815.28	1,711,924.95	39.74729057	-80.74559524
12,200.00	91.00	330.20	11,473.13	992.13	614.25	14,434,902.04	1,711,875.28	39.74752823	-80.74577114
12,300.00	91.00	330.20	11,471.38	1,078.89	564.56	14,434,988.81	1,711,825.57	39.74776790	-80.74594704
12,400.00	91.00	330.20	11,469.64	1,165.66	514.67	14,435,075.57	1,711,775.88	39.74800658	-80.74612284
12,500.00	91.00	330.20	11,467.89	1,252.42	465.18	14,435,162.34	1,711,726.19	39.74824523	-80.74629884
12,600.00	91.00	330.20	11,466.14	1,339.18	415.49	14,435,249.10	1,711,676.50	39.74848389	-80.74647475
12,700.00	91.00	330.20	11,464.39	1,425.95	365.80	14,435,335.85	1,711,626.81	39.74872255	-80.74665068
12,800.00	91.00	330.20	11,462.64	1,512.71	316.12	14,435,422.63	1,711,577.12	39.74896122	-80.74682656
12,900.00	91.00	330.20	11,460.89	1,599.48	266.43	14,435,509.39	1,711,527.44	39.74919988	-80.74700247
13,000.00	91.00	330.20	11,459.14	1,686.24	216.74	14,435,596.15	1,711,477.75	39.74943854	-80.74717838
13,100.00	91.00	330.20	11,457.40	1,773.00	167.05	14,435,682.92	1,711,428.06	39.74967721	-80.74735429
13,200.00	91.00	330.20	11,455.65	1,859.77	117.36	14,435,769.68	1,711,378.37	39.74991587	-80.74753021
13,300.00	91.00	330.20	11,453.90	1,946.53	67.67	14,435,856.44	1,711,328.68	39.75015453	-80.74770612
13,400.00	91.00	330.20	11,452.15	2,033.29	17.98	14,435,943.21	1,711,278.99	39.75039319	-80.74788204
13,500.00	91.00	330.20	11,450.40	2,120.06	-31.71	14,436,029.97	1,711,229.30	39.75063185	-80.74805795
13,600.00	91.00	330.20	11,448.65	2,206.82	-81.40	14,436,116.74	1,711,179.61	39.75087051	-80.74823387
13,700.00	91.00	330.20	11,446.91	2,293.59	-131.08	14,436,203.50	1,711,129.93	39.75110918	-80.74840979
13,800.00	91.00	330.20	11,445.16	2,380.35	-180.77	14,436,290.26	1,711,080.24	39.75134784	-80.74858571
13,900.00	91.00	330.20	11,443.41	2,467.11	-230.46	14,436,377.03	1,711,030.55	39.75158650	-80.74876163
14,000.00	91.00	330.20	11,441.66	2,553.88	-280.15	14,436,463.79	1,710,980.86	39.75182518	-80.74893755
14,100.00	91.00	330.20	11,439.91	2,640.64	-329.84	14,436,550.55	1,710,931.17	39.75206382	-80.74911347
14,200.00	91.00	330.20	11,438.16	2,727.41	-379.53	14,436,637.32	1,710,881.48	39.75230248	-80.74928940
14,300.00	91.00	330.20	11,436.41	2,814.17	-429.22	14,436,724.08	1,710,831.79	39.75254114	-80.74946532
14,400.00	91.00	330.20	11,434.67	2,900.93	-478.91	14,436,810.84	1,710,782.10	39.75277979	-80.74964125
14,500.00	91.00	330.20	11,432.92	2,987.70	-528.60	14,436,897.61	1,710,732.41	39.75301845	-80.74981718
14,600.00	91.00	330.20	11,431.17	3,074.46	-578.28	14,436,984.37	1,710,682.73	39.75325711	-80.74999311
14,700.00	91.00	330.20	11,429.42	3,161.22	-627.97	14,437,071.14	1,710,633.04	39.75349577	-80.75016904

02/03/2023

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Planning Report - Geographic

Database: DE_Jul2216d_V14
Company: Tug Hill Operating LLC
Project: Marshall County, West Virginia
Site: Hendrickson
Well: Hendrickson N-08 HU (slot K)
Wellbore: Original Hole
Design: rev0

Local Co-ordinate Reference: Well Hendrickson N-08 HU (slot K)
TVD Reference: GL @ 1220.00ft
MD Reference: GL @ 1220.00ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

WV Department of
Environmental Protection

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
14,800.00	91.00	330.20	11,427.67	3,247.99	-677.66	14,437,157.90	1,710,583.35	39.75373443	-80.75034497
14,900.00	91.00	330.20	11,425.92	3,334.75	-727.35	14,437,244.86	1,710,533.66	39.75397309	-80.75052090
15,000.00	91.00	330.20	11,424.18	3,421.52	-777.04	14,437,331.43	1,710,483.97	39.75421174	-80.75089684
15,100.00	91.00	330.20	11,422.43	3,508.28	-826.73	14,437,418.19	1,710,434.28	39.75445040	-80.75087277
15,200.00	91.00	330.20	11,420.68	3,595.04	-876.42	14,437,504.95	1,710,384.59	39.75468906	-80.75104871
15,300.00	91.00	330.20	11,418.93	3,681.81	-926.11	14,437,591.72	1,710,334.90	39.75492771	-80.75122465
15,400.00	91.00	330.20	11,417.18	3,768.57	-975.80	14,437,678.48	1,710,285.22	39.75516637	-80.75140059
15,500.00	91.00	330.20	11,415.43	3,855.33	-1,025.49	14,437,765.24	1,710,235.53	39.75540503	-80.75157853
15,600.00	91.00	330.20	11,413.69	3,942.10	-1,075.17	14,437,852.01	1,710,185.84	39.75564368	-80.75175247
15,700.00	91.00	330.20	11,411.94	4,028.86	-1,124.86	14,437,938.77	1,710,136.15	39.75588234	-80.75192841
15,800.00	91.00	330.20	11,410.19	4,115.63	-1,174.55	14,438,025.53	1,710,086.46	39.75612099	-80.75210436
15,900.00	91.00	330.20	11,408.44	4,202.39	-1,224.24	14,438,112.30	1,710,036.77	39.75635965	-80.75228030
16,000.00	91.00	330.20	11,406.69	4,289.15	-1,273.93	14,438,199.06	1,709,987.08	39.75659830	-80.75245625
16,100.00	91.00	330.20	11,404.94	4,375.92	-1,323.62	14,438,285.83	1,709,937.39	39.75683696	-80.75263220
16,200.00	91.00	330.20	11,403.19	4,462.68	-1,373.31	14,438,372.59	1,709,887.70	39.75707561	-80.75280814
16,300.00	91.00	330.20	11,401.45	4,549.44	-1,423.00	14,438,459.35	1,709,838.02	39.75731426	-80.75298409
16,400.00	91.00	330.20	11,399.70	4,636.21	-1,472.69	14,438,546.12	1,709,788.33	39.75755292	-80.75316005
16,500.00	91.00	330.20	11,397.95	4,722.97	-1,522.37	14,438,632.88	1,709,738.64	39.75779157	-80.75333600
16,600.00	91.00	330.20	11,396.20	4,809.74	-1,572.06	14,438,719.64	1,709,688.95	39.75803022	-80.75351195
16,700.00	91.00	330.20	11,394.45	4,896.50	-1,621.75	14,438,806.41	1,709,639.26	39.75826888	-80.75368791
16,800.00	91.00	330.20	11,392.70	4,983.26	-1,671.44	14,438,893.17	1,709,589.57	39.75850753	-80.75386386
16,900.00	91.00	330.20	11,390.96	5,070.03	-1,721.13	14,438,979.93	1,709,539.88	39.75874618	-80.75403982
17,000.00	91.00	330.20	11,389.21	5,156.79	-1,770.82	14,439,066.70	1,709,490.19	39.75898483	-80.75421578
17,100.00	91.00	330.20	11,387.46	5,243.55	-1,820.51	14,439,153.46	1,709,440.50	39.75922348	-80.75439174
17,200.00	91.00	330.20	11,385.71	5,330.32	-1,870.20	14,439,240.23	1,709,390.82	39.75946214	-80.75456770
17,300.00	91.00	330.20	11,383.96	5,417.08	-1,919.89	14,439,326.99	1,709,341.13	39.75970079	-80.75474366
17,400.00	91.00	330.20	11,382.21	5,503.85	-1,969.57	14,439,413.75	1,709,291.44	39.75993944	-80.75491963
17,500.00	91.00	330.20	11,380.47	5,590.61	-2,019.26	14,439,500.52	1,709,241.75	39.76017809	-80.75509559
17,600.00	91.00	330.20	11,378.72	5,677.37	-2,068.95	14,439,587.28	1,709,192.06	39.76041674	-80.75527156
17,700.00	91.00	330.20	11,376.97	5,764.14	-2,118.64	14,439,674.04	1,709,142.37	39.76065539	-80.75544752
17,800.00	91.00	330.20	11,375.22	5,850.90	-2,168.33	14,439,760.81	1,709,092.68	39.76089404	-80.75562349
17,900.00	91.00	330.20	11,373.47	5,937.67	-2,218.02	14,439,847.57	1,709,042.99	39.76113269	-80.75579946
18,000.00	91.00	330.20	11,371.72	6,024.43	-2,267.71	14,439,934.33	1,708,993.31	39.76137134	-80.75597543
18,100.00	91.00	330.20	11,369.97	6,111.19	-2,317.40	14,440,021.10	1,708,943.62	39.76160999	-80.75615140
18,200.00	91.00	330.20	11,368.23	6,197.96	-2,367.09	14,440,107.86	1,708,893.93	39.76184863	-80.75632738
18,300.00	91.00	330.20	11,366.48	6,284.72	-2,416.78	14,440,194.63	1,708,844.24	39.76208728	-80.75650335
18,400.00	91.00	330.20	11,364.73	6,371.48	-2,466.46	14,440,281.39	1,708,794.55	39.76232593	-80.75667933
18,500.00	91.00	330.20	11,362.98	6,458.25	-2,516.15	14,440,368.15	1,708,744.86	39.76256458	-80.75685530
18,600.00	91.00	330.20	11,361.23	6,545.01	-2,565.84	14,440,454.92	1,708,695.17	39.76280323	-80.75703128
18,700.00	91.00	330.20	11,359.48	6,631.78	-2,615.53	14,440,541.68	1,708,645.48	39.76304187	-80.75720726
18,800.00	91.00	330.20	11,357.74	6,718.54	-2,665.22	14,440,628.44	1,708,595.79	39.76328052	-80.75738324
18,900.00	91.00	330.20	11,355.99	6,805.30	-2,714.91	14,440,715.21	1,708,546.11	39.76351917	-80.75755922
19,000.00	91.00	330.20	11,354.24	6,892.07	-2,764.60	14,440,801.97	1,708,496.42	39.76375781	-80.75773520
19,100.00	91.00	330.20	11,352.49	6,978.83	-2,814.29	14,440,888.73	1,708,446.73	39.76399646	-80.75791119
19,200.00	91.00	330.20	11,350.74	7,065.59	-2,863.98	14,440,975.50	1,708,397.04	39.76423511	-80.75808717
19,300.00	91.00	330.20	11,348.99	7,152.36	-2,913.66	14,441,062.26	1,708,347.35	39.76447375	-80.75826316
19,400.00	91.00	330.20	11,347.25	7,239.12	-2,963.35	14,441,149.02	1,708,297.66	39.76471240	-80.75843915
19,500.00	91.00	330.20	11,345.50	7,325.89	-3,013.04	14,441,235.79	1,708,247.97	39.76495104	-80.75861514
19,600.00	91.00	330.20	11,343.75	7,412.65	-3,062.73	14,441,322.55	1,708,198.28	39.76518969	-80.75879113
19,700.00	91.00	330.20	11,342.00	7,499.41	-3,112.42	14,441,409.32	1,708,148.60	39.76542833	-80.75896712
19,800.00	91.00	330.20	11,340.25	7,586.18	-3,162.11	14,441,496.08	1,708,098.91	39.76566697	-80.75914311
19,900.00	91.00	330.20	11,338.50	7,672.94	-3,211.80	14,441,582.84	1,708,049.22	39.76590562	-80.75931910
20,000.00	91.00	330.20	11,336.75	7,759.70	-3,261.49	14,441,669.61	1,707,999.53	39.76614426	-80.75949510
20,100.00	91.00	330.20	11,335.01	7,846.47	-3,311.18	14,441,756.37	1,707,949.84	39.76638291	-80.75967109
20,200.00	91.00	330.20	11,333.26	7,933.23	-3,360.86	14,441,843.13	1,707,900.15	39.76662155	-80.75984709



Planning Report - Geographic

4705102480

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Hendrickson N-08 HU (slot K)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1220.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1220.00ft
Site:	Hendrickson	North Reference:	Grid
Well:	Hendrickson N-08 HU (slot K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ustt)	Map Easting (usft)	Latitude	Longitude
20,300.00	91.00	330.20	11,331.51	8,020.00	-3,410.55	14,441,929.90	1,707,850.46	39.76686019	-80.76002309
20,400.00	91.00	330.20	11,329.76	8,106.76	-3,460.24	14,442,016.66	1,707,800.77	39.76709883	-80.76019809
20,500.00	91.00	330.20	11,328.01	8,193.52	-3,509.93	14,442,103.42	1,707,751.08	39.76733748	-80.76037509
20,600.00	91.00	330.20	11,326.26	8,280.29	-3,559.62	14,442,190.19	1,707,701.40	39.76757612	-80.76055109
20,700.00	91.00	330.20	11,324.52	8,367.05	-3,609.31	14,442,276.95	1,707,651.71	39.76781476	-80.76072710
20,800.00	91.00	330.20	11,322.77	8,453.81	-3,659.00	14,442,363.72	1,707,602.02	39.76805340	-80.76090310
20,900.00	91.00	330.20	11,321.02	8,540.58	-3,708.69	14,442,450.48	1,707,552.33	39.76829204	-80.76107911
21,000.00	91.00	330.20	11,319.27	8,627.34	-3,758.38	14,442,537.24	1,707,502.64	39.76853068	-80.76125511
21,100.00	91.00	330.20	11,317.52	8,714.11	-3,808.07	14,442,624.01	1,707,452.95	39.76876933	-80.76143112
21,200.00	91.00	330.20	11,315.77	8,800.87	-3,857.75	14,442,710.77	1,707,403.26	39.76900797	-80.76160713
21,300.00	91.00	330.20	11,314.03	8,887.63	-3,907.44	14,442,797.53	1,707,353.57	39.76924661	-80.76178314
21,400.00	91.00	330.20	11,312.28	8,974.40	-3,957.13	14,442,884.30	1,707,303.89	39.76948525	-80.76195915
21,500.00	91.00	330.20	11,310.53	9,061.16	-4,006.82	14,442,971.06	1,707,254.20	39.76972389	-80.76213517
21,600.00	91.00	330.20	11,308.78	9,147.92	-4,056.51	14,443,057.82	1,707,204.51	39.76996252	-80.76231118
21,700.00	91.00	330.20	11,307.03	9,234.69	-4,106.20	14,443,144.59	1,707,154.82	39.77020116	-80.76248720
21,800.00	91.00	330.20	11,305.28	9,321.45	-4,155.89	14,443,231.35	1,707,105.13	39.77043980	-80.76266321
21,900.00	91.00	330.20	11,303.53	9,408.22	-4,205.58	14,443,318.11	1,707,055.44	39.77067844	-80.76283922
22,000.00	91.00	330.20	11,301.79	9,494.98	-4,255.27	14,443,404.88	1,707,005.75	39.77091708	-80.76301525
22,100.00	91.00	330.20	11,300.04	9,581.74	-4,304.95	14,443,491.64	1,706,956.06	39.77115572	-80.76319127
22,200.00	91.00	330.20	11,298.29	9,668.51	-4,354.64	14,443,578.41	1,706,906.37	39.77139436	-80.76336729
22,300.00	91.00	330.20	11,296.54	9,755.27	-4,404.33	14,443,665.17	1,706,856.69	39.77163299	-80.76354332
22,400.00	91.00	330.20	11,294.79	9,842.04	-4,454.02	14,443,751.93	1,706,807.00	39.77187163	-80.76371934
22,500.00	91.00	330.20	11,293.04	9,928.80	-4,503.71	14,443,838.70	1,706,757.31	39.77211027	-80.76389536
22,600.00	91.00	330.20	11,291.30	10,015.56	-4,553.40	14,443,925.46	1,706,707.62	39.77234890	-80.76407139
22,700.00	91.00	330.20	11,289.55	10,102.33	-4,603.09	14,444,012.22	1,706,657.93	39.77258754	-80.76424742
22,800.00	91.00	330.20	11,287.80	10,189.09	-4,652.78	14,444,098.99	1,706,608.24	39.77282618	-80.76442345
22,900.00	91.00	330.20	11,286.05	10,275.85	-4,702.47	14,444,185.75	1,706,558.55	39.77306481	-80.76459948
23,000.00	91.00	330.20	11,284.30	10,362.62	-4,752.15	14,444,272.51	1,706,508.86	39.77330345	-80.76477551
23,100.00	91.00	330.20	11,282.55	10,449.38	-4,801.84	14,444,359.28	1,706,459.18	39.77354208	-80.76495154
23,200.00	91.00	330.20	11,280.81	10,536.15	-4,851.53	14,444,446.04	1,706,409.49	39.77378072	-80.76512758
23,300.00	91.00	330.20	11,279.06	10,622.91	-4,901.22	14,444,532.81	1,706,359.80	39.77401935	-80.76530361
23,400.00	91.00	330.20	11,277.31	10,709.67	-4,950.91	14,444,619.57	1,706,310.11	39.77425799	-80.76547965
23,500.00	91.00	330.20	11,275.56	10,796.44	-5,000.60	14,444,706.33	1,706,260.42	39.77449662	-80.76565568
23,600.00	91.00	330.20	11,273.81	10,883.20	-5,050.29	14,444,793.10	1,706,210.73	39.77473525	-80.76583172
23,700.00	91.00	330.20	11,272.06	10,969.96	-5,099.98	14,444,879.86	1,706,161.04	39.77497389	-80.76600776
23,800.00	91.00	330.20	11,270.31	11,056.73	-5,149.67	14,444,966.62	1,706,111.35	39.77521252	-80.76618380
23,900.00	91.00	330.20	11,268.57	11,143.49	-5,199.36	14,445,053.39	1,706,061.66	39.77545115	-80.76635985
24,000.00	91.00	330.20	11,266.82	11,230.26	-5,249.04	14,445,140.15	1,706,011.98	39.77568979	-80.76653589
24,100.00	91.00	330.20	11,265.07	11,317.02	-5,298.73	14,445,226.91	1,705,962.29	39.77592842	-80.76671193
24,200.00	91.00	330.20	11,263.32	11,403.78	-5,348.42	14,445,313.68	1,705,912.60	39.77616705	-80.76688798
24,300.00	91.00	330.20	11,261.57	11,490.55	-5,398.11	14,445,400.44	1,705,862.91	39.77640568	-80.76706403
24,389.93	91.00	330.20	11,260.00	11,568.58	-5,442.80	14,445,478.47	1,705,818.22	39.77662029	-80.76722235

PBHL/TD 24389.93 MD/11260.00 TVD

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Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Hendrickson N-08 HU (slot K)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1220.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1220.00ft
Site:	Hendrickson	North Reference:	Grid
Well:	Hendrickson N-08 HU (slot K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
- Shape									
Hendrickson N-08 HU P - plan hits target center - Point	0.00	0.00	11,260.00	11,568.58	-5,442.80	14,445,478.47	1,705,818.22	39.77662029	-80.76722235
Hendrickson N-08 HU LI - plan misses target center by 43.41ft at 12011.31ft MD (11476.01 TVD, 828.37 N, 707.94 E) - Point	0.00	0.00	11,476.00	849.77	745.71	14,434,759.68	1,712,006.72	39.74713724	-80.74530488
Hendrickson N-08 HU LI - plan misses target center by 0.06ft at 12035.95ft MD (11476.00 TVD, 849.80 N, 695.76 E) - Point	0.00	0.00	11,476.00	849.77	695.71	14,434,759.68	1,711,956.72	39.74713763	-80.74548277

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
3,200.00	3,200.00	0.00	0.00	KOP Begin 2°/100' build
3,300.00	3,299.98	0.53	1.66	Begin 2.00° tangent
3,800.00	3,799.68	5.78	18.30	Begin 2°/100' drop
3,900.00	3,899.65	6.30	19.97	Begin vertical hold
6,000.35	6,000.00	6.30	19.97	Begin 2°/100' build
6,613.08	6,608.08	9.80	85.15	Begin 12.25° tangent
10,602.95	10,507.03	55.13	930.83	Begin 6°/100' build
11,511.92	11,304.43	414.53	904.77	Begin 8°/100' build
12,035.97	11,476.00	849.81	695.75	Begin 91.00° lateral
24,389.93	11,260.00	11,568.58	-5,442.80	PBHL/TD 24389.93 MD/11260.00 TVD

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WW-9
(4/16)

4705102480

02/23/2023

API Number 47 - 051 -
Operator's Well No. Hendrickson N-8HU

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) Middle Fish Creek Quadrangle Wileyville 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 and produced water for frac

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

Proposed Disposal Method For Treated Pit Wastes:

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

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

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

-If oil based, what type? Synthetic, petroleum, etc. n/a

Additives to be used in drilling medium? _____

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

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

-Landfill or offsite name/permit number? Wetzel County Sanitary Landfill (89F-10217/WV0109185) and Westport Sanitary Landfill, LLC (3AN1409/PA DEP ECH156426), Cheat Valley Landfill (106419)

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

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

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

Company Official Signature James A. Pancake
Company Official (Typed Name) Jim Pancake
Company Official Title Vice President - Geosciences

Subscribed and sworn before me this 5th day of December, 20 22

Susanne Deliere

Notary Public

My commission expires 1/5/2025

Commonwealth of Pennsylvania - Notary Seal
Susanne Deliere, Notary Public
Washington County
My commission expires January 15, 2025
Commission # 382332
02/03/2023
Member, Pennsylvania Association of Notaries

Form WW-9

Operator's Well No. Hendrickson N-8HU

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 4.21 acres Prevegetation pH 6.0

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch 2.5 Tons/acre

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Environmental Protection

Seed Mixtures

Temporary

Permanent

Seed Type	lbs/acre
Annual Ryegrass	40
Spring Oats	96

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

Attach:

Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, include dimensions (L x W x D) of the pit, and dimensions (L x W), and area in acreage, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: Steve Gowen STRADGOWEN 12-1-2022

Comments: _____

Title: Oil and Gas Inspector Date: _____

Field Reviewed? () Yes () No

WW-9

Page 1 of 3

PROPOSED HENDRICKSON PAD

SUPPLEMENT PG 1

4705102480

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.

INSTALL CULVERTS AS SHOWN ON RECLAMATION PLAN OR AS FIELD CONDITIONS REQUIRE.

ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED.

TEMPORARILY SEED AND MULCH ALL SLOPES UPON CONSTRUCTION OF LOCATION.

ALL CUT AND FILL SLOPES ARE 2H : 1V SLOPE.

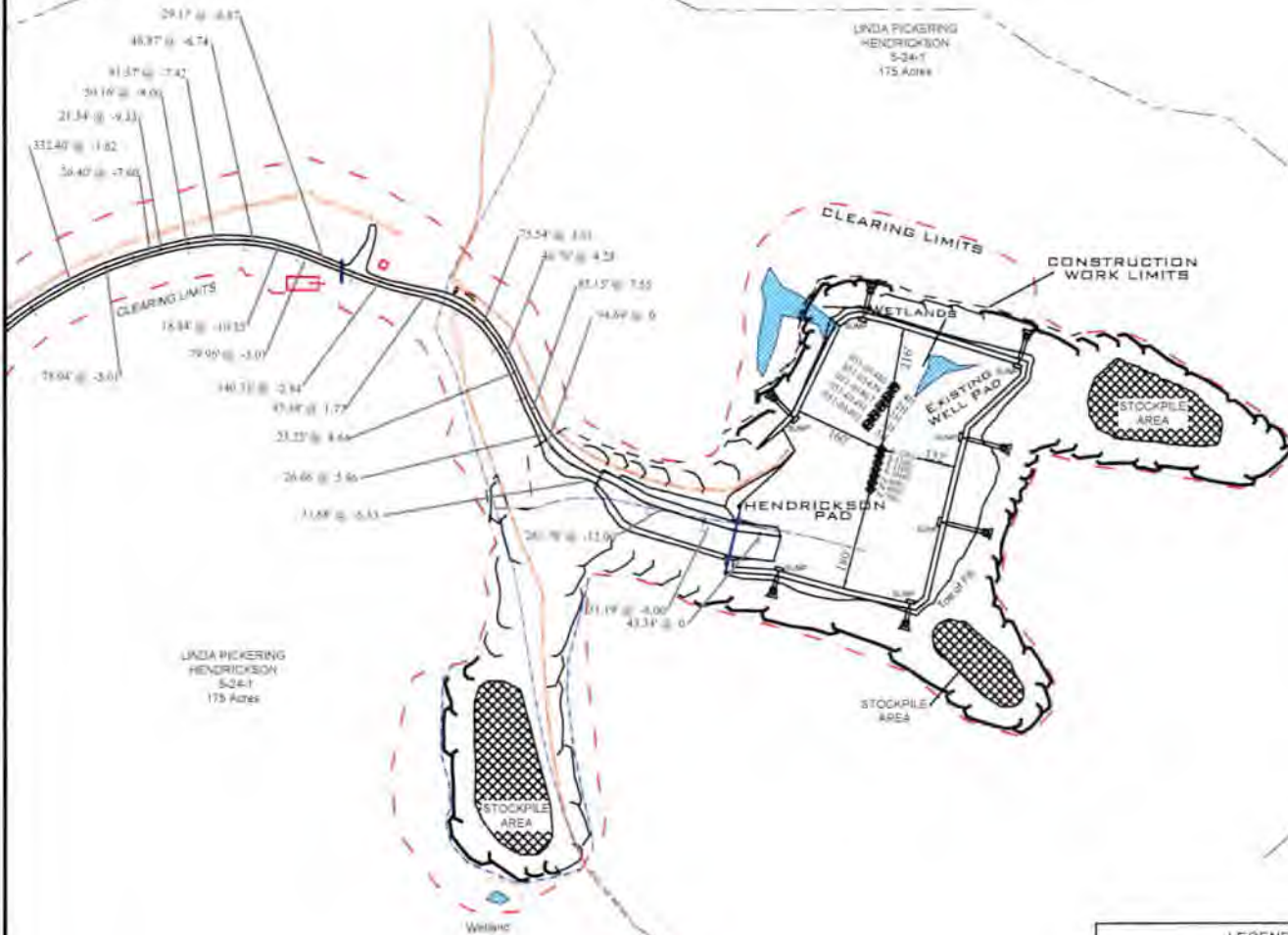
ALL TREES 6-INCHES AND ABOVE ARE TO BE CUT AND STACKED. BRUSH SLASHINGS ARE TO UTILIZED DOWN SLOPE OF SITE AND STRUCTURES TO ACT AS A CONTROL BARRIER IF AVAILABLE.

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WV Department of Environmental Protection



ROGER H HALL JR
S-17-A
297.50 Acres

LINDA PICKERING
HENDRICKSON
S-24-1
175 Acres



LEGEND	
	Silt Fence and or Sediment and Erosion Control Measure
	Surface Boundary
	Overhead Utility
	Gas Line
	Water Line



Jackson Surveying Inc.
2413 E. Pike St.
Ste. 112
Clarksburg, WV 26301
Phone: 304-622-6801

TOPO SECTION:	
WILLYVILLE 15	
COUNTY	DISTRICT
MARSHALL	FRANKLIN
DRAWN BY	JOB NO.
J.D.C.	49450851

OPERATOR:	
PREPARED FOR:	
TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 LANONSBURG, PA 15317	
DATE	SCALE
11-03-2022	NONE



WW-9

Page 2 of 3

PROPOSED HENDRICKSON PAD

SUPPLEMENT PG 1

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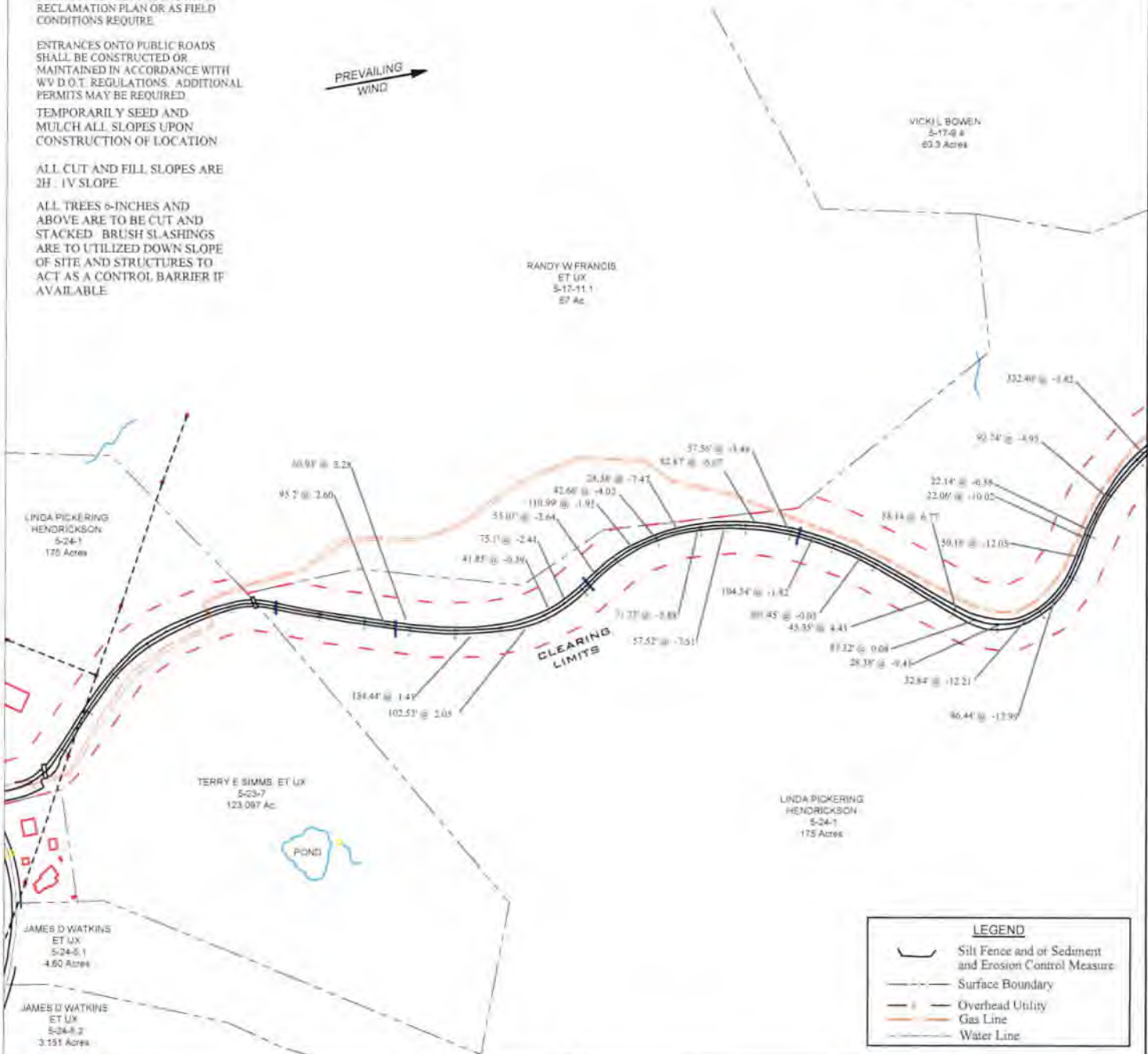
ALL CUT AND FILL SLOPES ARE 2H : 1V SLOPE.

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LEGEND	
	Silt Fence and/or Sediment and Erosion Control Measure
	Surface Boundary
	Overhead Utility
	Gas Line
	Water Line

Jackson Surveying Inc.
 8418 E. Pkwy St.
 Ste. 112
 Charleston, WV 25301
 Phone: 304-623-5001

TOPO SECTION:		OPERATOR:	
WILEYVILLE T5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	FRANKLIN	382 SOUTHPOINTE BLVD	
DRAWN BY	JOB NO.	SUITE 200	
J.D.C.	494510851	CANONSBURG, PA 15211	
		DATE	SCALE
		11-03-2022	NONE

TUG HILL OPERATING

WW-9
Page 3 of 3

PROPOSED HENDRICKSON PAD

SUPPLEMENT PG 1

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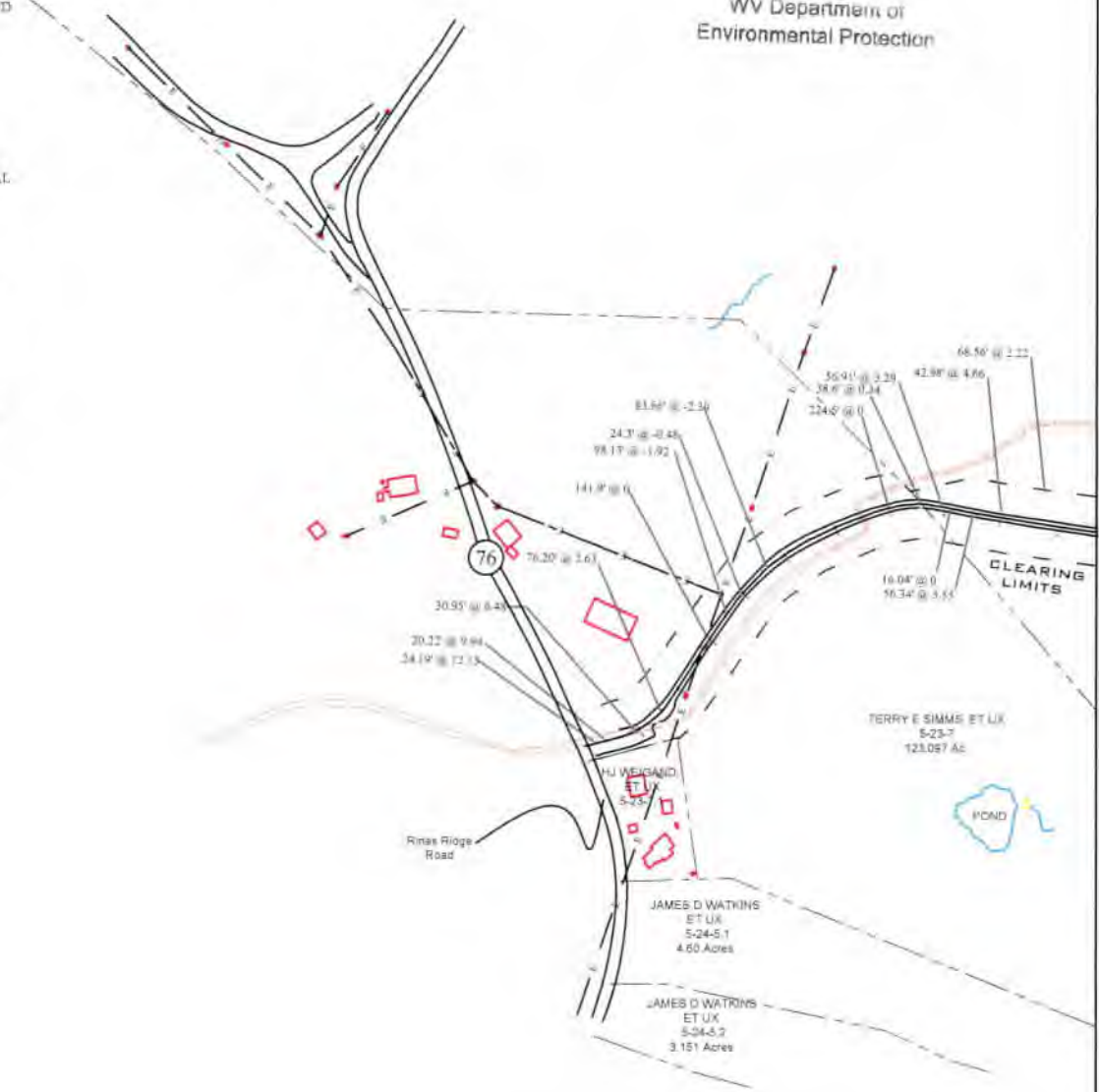
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LEGEND	
	Silt Fence and or Sediment and Erosion Control Measure
	Surface Boundary
	Overhead Utility
	Gas Line
	Water Line

Jackson Surveying Inc.
3418 E. Pike St.
Ste. 112
Charleston, WV 25301
Phone: 304-623-5561

TOPO SECTION:	
POWHATAN POINT 7.5'	
COUNTY	DISTRICT
MARSHALL	FRANKLIN
DRAWN BY	JOB NO.
J.D.C.	494510851

OPERATOR:	
PREPARED FOR:	
TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 300 LANONSBURG, PA 15317	
DATE	SCALE
11-03-2022	NONE

TUG HILL
OPERATING

02/23/2023

4705102480



TUG HILL
OPERATING

Well Site Safety Plan
Part A – Site Specific Data and Figures

Well Name: Hendrickson N-8HU

Pad Name: Hendrickson

County: Marshall

UTM (meters), NAD83, Zone 17

Northing: 4,399,464.54

Easting: 521593.40

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Environmental Protection

**KEY CONTACT FOR WELL SITE SAFETY PLAN
DEVELOPMENT AND MAINTENANCE**

Jerry V. DeRosa, Director EH&S Affairs

(724) 338-2029 (office)

(412) 736-5767 (cellular)

24-HOUR EMERGENCY PHONE NUMBER

(800) 921-9745

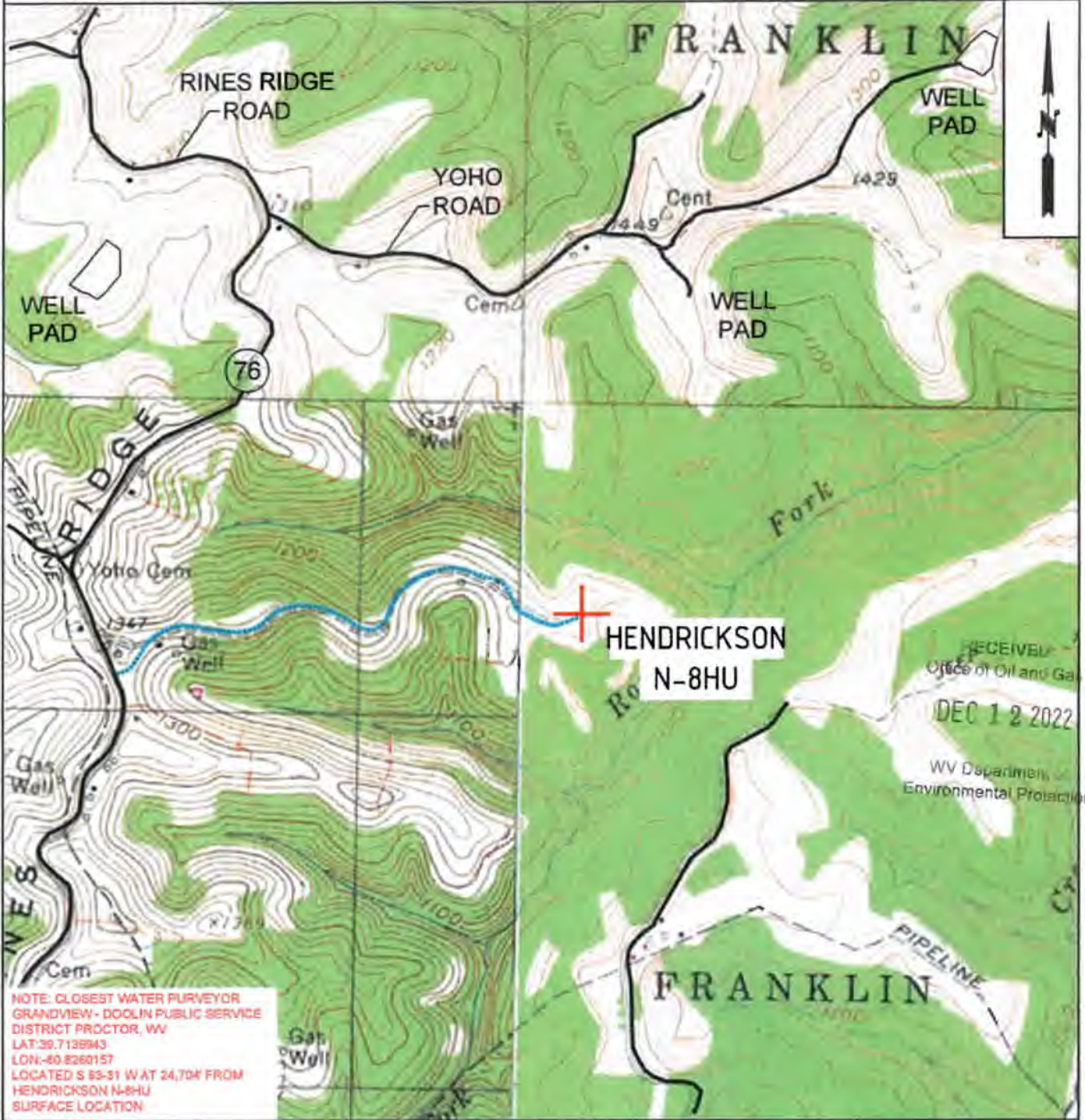
JV
12-1-2022

02/03/2023

WW-9

PROPOSED HENDRICKSON N-8HU

SUPPLEMENT PG 2



NOTE: CLOSEST WATER SURVEYOR
GRANDVIEW - DOOLIN PUBLIC SERVICE
DISTRICT PROCTOR, WV
LAT: 39.7139943
LON: -80.8260157
LOCATED S 93-31 W AT 24,754' FROM
HENDRICKSON N-8HU
SURFACE LOCATION



TUG HILL
OPERATING

OPERATOR 494510851
TUG HILL OPERATING, LLC
380 SOUTHPOINTE BLVD
SUITE 200
CANONSBURG, PA 15317

TOPO SECTION
WILEYVILLE 7.5'
SCALE:
1" = 2000'

LEASE NAME
HENDRICKSON
DATE:
DATE: 11-03-2022

form wwf
GRID NORTH

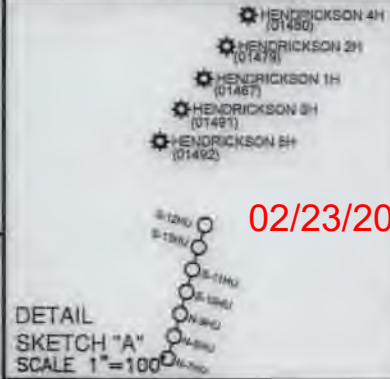
HENDRICKSON LEASE WELL N-8HU 362.2201 ± ACRES



REFERENCES
SCALE 1"=200'

(+) DENOTES LOCATION
ON UNITED STATES
TOPOGRAPHIC MAPS

TOP HOLE LATITUDE: 39°45'00"
BOTTOM HOLE LATITUDE: 39°47'30"



02/23/2023

(BH) BOTTOM HOLE LONGITUDE: 80°45'00"
(TH) TOP HOLE LONGITUDE: 80°42'30"

SURFACE HOLE UTM. NAD83, ZONE 17 IN METERS N) 4,399,464.54 E) 521,593.40
LANDING POINT 1 UTM. NAD83, ZONE 17 IN METERS N) 4,399,723.56 E) 521,806.46
BOTTOM HOLE UTM. NAD83, ZONE 17 IN METERS N) 4,402,990.64 E) 519,934.44



NOTES

- BORE PATH BASED ON GRID NORTH.
- NO WATER WELLS WITHIN 250' OF WELL WERE FOUND, NO DWELLINGS WITHIN 625' OF PAD CENTER WERE FOUND.
- OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN SEPTEMBER, 2022. COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
- WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.
- BOUNDARIES ALONG ROADWAYS ARE BASED UPON MEMORANDUM BY DIKIE, MCDAMEY & CHILCOTE, P.C. FILE 9058004.0401147
- ALL DEEP WELLS ARE SHOWN ON THIS PLAT, THERE ARE NO PERMITTED DEEP WELLS WITHIN 2400' OF PROPOSED WELL'S SURFACE LOCATION AND/OR 500' OF THE WELL LATERAL.

NOTE: LP.1 and LTP are same point.

LEGEND

- LEASE TRACTS
- SURFACE TRACTS
- WELL LATERAL
- POINT PLEASANT LUGS
- UNIT BOUNDARY
- LEASE # (SEE 6A1 FORM)
- 200' BORE PATH OFFSET
- 500' WELL BORE OFFSET
- (FTF) PROPOSED FIRST TAKE POINT
- (LTP) PROPOSED LAST TAKE POINT
- FORCED POOL TRACT

LINE	BEARING	DISTANCE	CURVE	CHORD BEARING	CHORD LENGTH	RADIIUS	ARC LENGTH
L1	N 86°00' W	2,294.01'	C1	N 58°53' E	37.57'	37.28'	39.37'
L2	S 51°29' W	1,902.62'	C2	N 16°08' E	39.85'	100.43'	40.12'
L3	N 73°26' E	20.95'	C3	N 02°41' W	80.99'	330.85'	81.19'
L4	N 87°53' E	912.47'	C4	N 16°18' W	299.64'	1,291.46'	300.31'
			C5	N 25°26' W	412.55'	3,158.31'	412.84'

FILE NUMBER _____

DRAWING NUMBER HENDRICKSON_N-8HU_REV0

SCALE 1" = 2000'

MINIMUM DEGREE OF ACCURACY 1/200

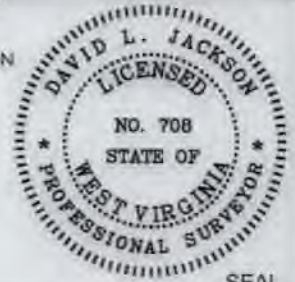
PROVEN SOURCE OF ELEVATION SUBMETER MAPPING
GRADE GPS

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 RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION

David L Jackson

P.S. 708

JACKSON SURVEYING INC.
2413 East Pike St. # 112
Clarksburg, WV 26302
304-823-5851



SEAL

WVDEP
OFFICE OF OIL & GAS
601 57TH STREET, SE
CHARLESTON, WV 25304

DATE: DECEMBER 08, 2022

OPERATORS WELL NO. HENDRICKSON N-8HU

API WELL NO.

47-051-02480 Deep

STATE COUNTY PERMIT

LOCATION ELEVATION 1220.33' WATERSHED (HUC 10) Rocky Fork of Fish Creek (HUC-10)

DISTRICT Franklin COUNTY Marshall

QUADRANGLE Wileyville 7.5' LEASE NUMBER _____ SEE WW-6A1 Form

SURFACE OWNER LINDA L. PICKERING HENDRICKSON ACREAGE 175.0

OIL & GAS ROYALTY OWNER LINDA L. PICKERING HENDRICKSON LEASE ACREAGE 175.0

PROPOSED WORK: DRILL CONVERT _____ DRILL DEEPER _____ REDRILL _____ FRACTURE OR STIMULATE PLUG OFF OLD FORMATION _____
PERFORATE NEW FORMATION _____ OTHER PHYSICAL CHANGE (SPECIFY) _____

TARGET FORMATION POINT PLEASANT ESTIMATED DEPTH TVD: 11,693' TMD: 24,390'

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

DESIGNATED AGENT DARREN BROWN, CT CORP
ADDRESS 5098 WASHINGTON STREET WEST, SUITE 407
CHARLESTON, WV 25313-1561

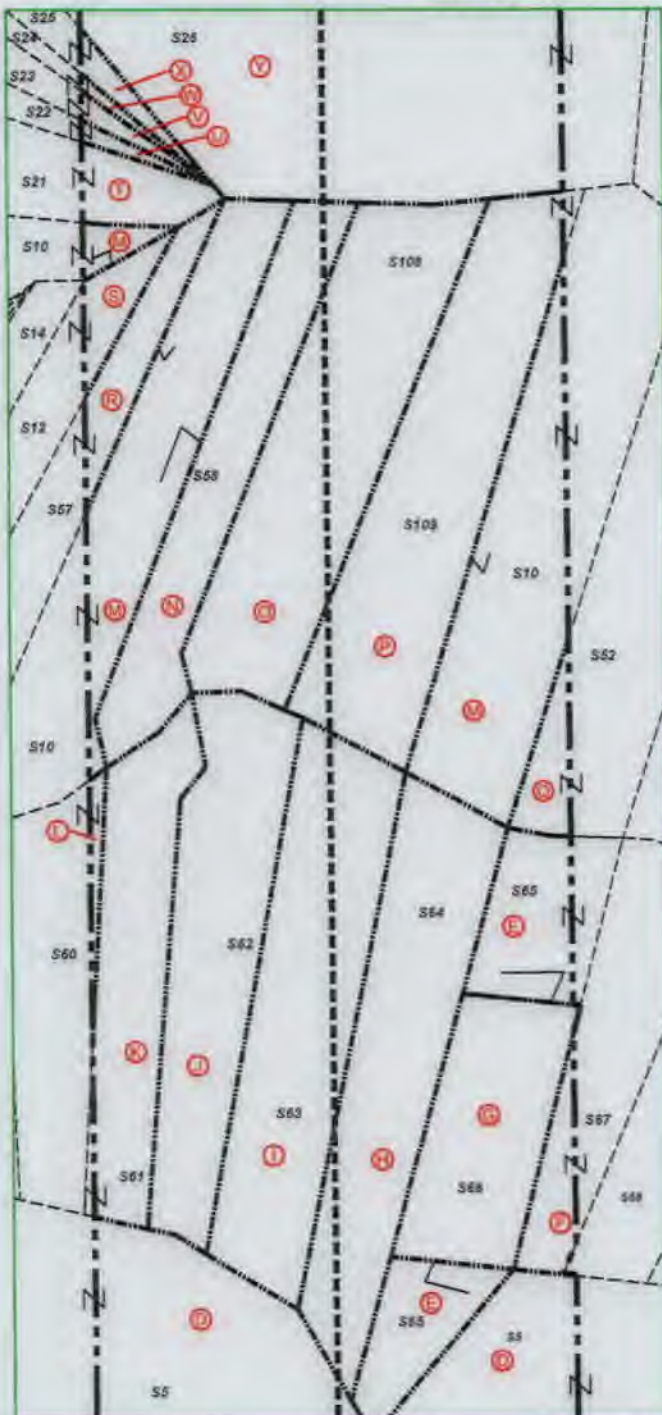
02/03/2023

COUNTY NAME
PERMIT

Form: wwb

**HENDRICKSON LEASE
WELL N-8HU
362.2201 ± ACRES**

DETAIL "A"



LEGEND

- LEASE TRACTS
- - - SURFACE TRACTS
- - - WELL LATERAL
- - - POINT PLEASANT LEGS
- - - UNIT BOUNDARY
- (A) LEASE # (SEE GA1 FORM)
- 400' BORE PATH OFFSET
- 300' WELL BORE OFFSET
- (FFP) PROPOSED FIRST TAKE POINT
- (LTP) PROPOSED LAST TAKE POINT
- ▨ FORCED POOL TRACT

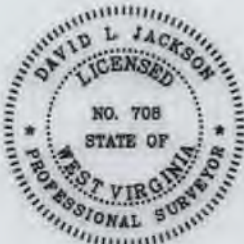
02/23/2023

NOTE: L.P.1 and LTP are same point.

DETAIL "B"



DETAIL "C"



P.S. 708 *David L Jackson*

Lease ID	TMP	Tag	Grantor, Lessor, Etc.	Deed Book/Page
10*14138	5-24-1	A	LINDA AND DONALD HENDRICKSON	666 528
10*14460	5-17-8	B	GERTRUD GODDARD, H.G. WELLS JR, ET AL	735 515
10*14139	5-17-8	C	LLOYD RICHARD OLIVER & DEANNA OLIVER	666 49
10*14425	5-17-2	D	SHARON E POTTS, ET AL	731 143
10*17643	5-17-3.2	E	DONALD R SLAUGHTER AND LOLA SLAUGHTER	940 445
10*14099	5-17-3.5	F	SOUTHERN COUNTRY FARMS INC	666 489
10*18217	5-17-3.3	G	JODY KANE ANDERSON AND MICHELE MARIE ANDERSON	929 101
10*14914	5-17-3.1	H	CHESTNUT HOLDINGS INC, ET AL	827 548
10*14914	5-17-3.4	I	CHESTNUT HOLDINGS INC, ET AL	827 548
10*14914	5-17-3.4	J	CHESTNUT HOLDINGS INC, ET AL	827 548
10*14914	5-17-3.3	K	CHESTNUT HOLDINGS INC, ET AL	827 548
10*14914	5-17-1.7	L	CHESTNUT HOLDINGS INC, ET AL	827 548
10*14099	5-18-13	M	SOUTHERN COUNTRY FARMS INC, ET AL	666 489
10*14099	5-18-13.12	N	SOUTHERN COUNTRY FARMS INC, ET AL	666 489
10*14099	5-18-13.4	O	SOUTHERN COUNTRY FARMS INC, ET AL	666 489
10*14099	5-18-13.5	P	SOUTHERN COUNTRY FARMS INC, ET AL	666 489
10*14099	5-17-15	Q	SOUTHERN COUNTRY FARMS INC, ET AL	666 489
10*14099	5-18-60	R	SOUTHERN COUNTRY FARMS INC	666 489
10*14099	5-18-53.1	S	SOUTHERN COUNTRY FARMS INC	666 489
10*14099	5-18-33.2	T	SOUTHERN COUNTRY FARMS INC	666 489
10*14099	5-18-38.1	U	SOUTHERN COUNTRY FARMS INC	666 489
10*17431	5-18-38.1	V	SOUTHERN COUNTRY FARMS INC	938 448
10*47051.104.0	5-18-28	W	DOTSON GALE HARRISON	873 46
10*14099	5-18-55	X	SOUTHERN COUNTRY FARMS INC	666 489
10*14099	5-18-56	Y	SOUTHERN COUNTRY FARMS INC	666 489
10*19338	5-16-21	Z	JAMES M. RUCKMAN, KIMBERLY L. RUCKMAN	741 72
10*19338	5-16-22	AA	JAMES M. RUCKMAN, KIMBERLY L. RUCKMAN	741 72
10*21488	5-16-25	AB	JOHN A SWIERKOS, ZACHARY SWIERKOS POA	953 317
10*18280	5-16-19	AC	DEBRA L RICHEY AND JAMES F RICHEY SR, ET AL	929 108
10*19294	5-16-23	AD	MICHAEL B. BRYAN, BRENDA K. BRYAN	741 78
10*19182	5-16-23.3	AE	ALAN M BEYSER AND LOHI A BEYSER	711 355
10*19182	5-16-24	AF	ALAN M BEYSER AND LOHI A BEYSER	711 355
10*19144	5-16-23.3	AG	GREG A RIDDLE AND CHRISTINA L RIDDLE	704 354
10*19146	5-18-23.1	AH	RAY E MINOR, CATHY L MINOR	706 293
10*19294	5-16-23.4	AI	MICHAEL B. BRYAN, BRENDA K. BRYAN	741 78
10*19340	5-18-4	AJ	DOMIN V YIHO	407

02/03/2023



OPERATOR'S
WELL #: Hendrickson N-8HU
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV
API #: 47-051-02480

WELL PLAT
PAGE 3 OF 4
DATE: 12/08/2022

**HENDRICKSON LEASE
WELL N-8HU
362.2201 ± ACRES**

Parcels within Unit Boundary				
Tags	Number	Tax Map - Parcel	Surface Owner	Acres
A	51	05-24-1	LINDA L PICKERING HENDRICKSON	1.75
B	52	05-17-8	ROGER H HALL JR	257.50
C	54	05-17-9	LLOYD RICHARD OLIVER, ET UX	61.6
D	55	05-17-2	HOMER COLBY & BELLE YOHO	104.08
E	565	05-17-1.2	DONNIE R & LOLA M SLAUGHTER	5.073
F	567	05-17-1.5	DONNIE R & LOLA M SLAUGHTER	5.607
G	566	05-17-1.3	JODY & MICHELLE ANDERSON	5
H	564	05-17-1.1	DONNIE R & LOLA M SLAUGHTER	8.076
I	563	05-17-1.4	DONNIE R & LOLA M SLAUGHTER	8.844
J	562	05-17-14	SOUTHERN COUNTRY FARMS, INC	7.314
K	561	05-17-13	ROY & RENEE BUTLER	5.433
L	560	05-17-1.7	ROY & RENEE BUTLER	5.22
M	510	05-18-13	SOUTHERN COUNTRY FARMS, INC	11.054
N	558	05-18-13.12	CHARLES S NICE	5.969
O	5108	05-18-13.4	RENEE D STREIGHT BUTLER (LIFE)	9.938
P	5109	05-18-13.8	ROY & RENEE BUTLER (LIFE)	9.603
Q	552	05-17-15	GLEN A GUNTO	10.220
R	557	05-18-60	MICHAEL & WHITNEY NEFF	6.297
S	512	05-18-53.1	MICHAEL & WHITNEY NEFF	6.283
T	521	05-18-13.2	STEVEN G BERISFORD	6.023
U	522	05-18-28.1	GARY LITTON	5.696
V	523	05-18-28	CIAD ELMER HARRISON, CRYSTAL GALE HARRISON, & GARY LEE LITTON	6.36
W	524	05-18-35	WILLIAM E O'HARA	3.202
X	525	05-18-56	WILLIAM E O'HARA	3.965
Y	526	05-16-21	JAMES M RUCKMAN, ET UX	60.75
Z	527	05-16-22	JAMES M RUCKMAN, ET UX	54.605
AA	547	05-16-25	JOHN SWIERKOS	79.04
BB	5105	05-16-19	BETHANY REDO & ROBERT RAHM	129.16
CC	528	05-16-23	THE MARSHALL COUNTY COAL RESOURCES	45.048
DD	550	05-16-23.2	ALAN M BEYSER, ET UX	1.083
EE	548	05-16-24	ALAN M BEYSER, ET UX	1.726
FF	548	05-16-23.3	GREG & CHRISTINA RIDDLE	1
GG	531	05-16-23.1	RAY E MINOR, ET UX	2
HH	530	05-16-23.4	MICHAEL R & BRENDA K BRYAN	3
II	532	05-15-8	XCL MIDSTREAM OPERATING, LLC	77.11

Adjoining Parcels Ownership Table				
Tags	Number	Tax Map - Parcel	Surface Owner	Acres
	53	05-17-9.4	VICKI L BOWEN HRS	60.3
	56	05-17-10.2	GARY L YOHO	2.6
	57	05-17-10.3	JAMES A & JILL C CORLEY	37.39
	58	05-18-35	MARY ANDERSON	2.635
	59	05-18-58	KEVIN W ROBERTS	2.435
	511	05-18-48	TANNER M BUTLER	2.023
	513	05-18-53	MICHAEL & WHITNEY NEFF	2.0
	514	05-18-13.11	LINDA L MOORE	2.155
	515	05-18-26	LINDA L MOORE	2.155
	516	05-18-27	LINDA L MOORE	2.447
	517	05-18-27.2	LINDA L MOORE	3.009
	518	05-18-27.1	MICHAEL D MOORE	2.003
	519	05-18-39	MICHAEL D MOORE	2.001
	520	05-18-38	MICHAEL D MOORE	2.231
	529	05-16-23.5	THE MARSHALL COUNTY COAL RESOURCES	15.09
	533	05-15-7	XCL MIDSTREAM OPERATING, LLC	4.5
	534	05-16-1	FREDONIA CHRISTIAN CHURCH	0.50
	535	05-16-2	FREDONIA CHRISTIAN CHURCH CEMETERY	0.19
	536	05-16-3.1	DENNIS JACKSON, ET UX	0.27
	539	05-16-3	BETHA L LUGG	71
	540	05-16-3.2	JIMMY SR & SHELLY OSTRANDER (LIFE)	1.435
	541	05-10-15	TERRY A & JODI L HARDING	120.805
	542	05-10-15.1	DONALD T MILLER	2.095
	543	05-10-14	JOHN SWIERKOS	1.00
	544	05-16-5	JOHN SWIERKOS	52.07
	545	05-16-4	JOHN SWIERKOS	0.96
	546	05-16-6	JOHN SWIERKOS	134.05
	551	05-18-15.2	BRANDON A RICKMAN	4.171
	553	05-16-15.1	GLEN A GUNTO	10.170
	554	05-17-16	GLEN A GUNTO	9.702
	555	05-16-16	SOUTHERN COUNTRY FARMS, INC	9.75
	556	05-17-3	SOUTHERN COUNTRY FARMS, INC	190.132
	559	05-17-1	SOUTHERN COUNTRY FARMS, INC	5.030
	568	05-17-1.6	LOLA M SLAUGHTER	6.347
	569	05-17-3.1	WILBUR I RIDDLE, ET UX	10.148
	570	05-18-36	RUTH MULLIGAN, EST	2.003
	571	05-17-4	ALPINE FARM, LLC	2.12
	572	05-17-7	ALPINE FARM, LLC	10.8
	573	05-17-8	ALPINE FARM, LLC	246.07
	574	05-24-2	ROY FRIEND YOHO	316.80
	575	05-24-3.2	TH EXPLORATION II, LLC	49
	576	05-24-4	TERRY E SIMMS, ET UX	84.05
	577	05-25-21	TERRY E SIMMS, ET UX	7
	578	05-24-5	ROBERT C FRANCIS, ET UX (LIFE)	145.78
	579	05-23-7	TERRY E SIMMS, ET UX	123.097
	580	05-17-11.1	RANDY W FRANCIS, ET UX	67
	581	05-17-11	KENNETH N CORLEY, ET UX	1.20
	582	05-17-9.3	JAMES A CORLEY, ET UX	12.478
	583	05-17-9.2	JERI J WHITE	7.136
	584	05-17-9.1	JERI J WHITE	1
	585	05-17-10	JAMES A CORLEY, ET UX	92.61
	586	05-17-10.4	DEXTON MCKINNEY	2.01
	587	05-18-19	ROGER D WHITE, JR	10
	588	05-18-42	ROGER HOWARD HALL, JR	2.383
	589	05-18-48	MARVIN DEAN ROBERTS ET UX (LAND CONTRACT- BRAD & BRIDGET WILLIAMS)	2.320
	590	05-18-13.7	VICTOR W JR & JESSICA L WOODS	5.255
	591	05-18-18	DARLENE T GOODALL	3
	592	05-18-57	MARVIN D ROBERTS	2.228
	593	05-18-61	ROGER D WHITE	2.984
	594	05-18-52	ROGER HALL	2.536
	595	05-18-25	FREDERICK L & DEBBIE L SIZEMORE	2.521
	596	05-18-40	CORDY A HOLT	2.237
	597	05-18-14	MICHAEL FINCHAM & KEZIA WINTERS	6.386
	598	05-18-37	BROOK SCHWING & BRADY DISMAN	2.064
	599	05-18-45	MICHAEL S FINCHAM & KEZIA M WINTERS	2.07
	5100	05-18-50	STEVEN G BERISFORD	2.170
	5101	05-18-11.3	EDWARD BURGE JR. & JULIE BURGE	3
	5102	05-15-10	MARK STANLEY RUCKMAN	153.75
	5103	05-16-22.1	HEATHER A BURG	1.465
	5104	05-15-8	CNX LAND RESOURCES, INC	81.98
	5106	5-16-17	RICHARD D & JULIA M REPASKY, & BRIAN L TESLOVICH & CARA C DAVIS	55.34
	5107	5-16-18	JOHN SWIERKOS	10
	5110	5-24-5.2	JAMES D WATKINS, ET UX	3.151
	5111	05-24-5.1	JAMES D WATKINS, ET UX	4.60
	5112	05-23-7.1	RANDY W & JESSICA L FRANCIS	0.549
	5113	05-24-5	ROBERT C FRANCIS, ET UX (LIFE)	145.78
	5114	05-17-10.1	JAMES A & JILL C CORLEY	4.51
	5115	05-18-51	ROGER HALL	2.505
	5116	05-18-43	ROY E & RENEE BUTLER	2.532
	5117	05-18-44	RENEE STREIGHT BUTLER	2.133
	5118	05-18-41	CORDY A HOLT	2.308
	5119	05-18-46	DALE W & PATRICIA GARDNER HRS	2.030
	5120	05-18-47	RYAN L & MICHELLE A ALTHEMENT	2.010
	5121	05-18-13.5	WESLEY BRYAN	1.023

02/23/2023

02/03/2023



P.S. 708

David L Jackson



**TUG HILL
OPERATING**

OPERATOR'S
WELL #: Hendrickson N-8HU
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV
API #: 47-051-02480

WELL PLAT
PAGE 4 OF 4
DATE: 12/08/2022

WW-6A1
(5/13)

Operator's Well No. Hendrickson N-8HU

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

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

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

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

*See attached pages

RECEIVED
Office of Oil and Gas

DEC 12 2022

WV Department of
Environmental Protection

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

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

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

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

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

Lease ID	TMP	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*14138	5-24-1	A	LINDA AND DONALD HENDRICKSON	TRIENERGY, INC.	1/8+	666 528	N/A	TriEnergy Inc to AB Resources LLC: 20/348	AB Resources LLC to Chief Exploration & Development LLC and Radler 2000 Limited Partnership: 21/491	Chief Expl & Development LLC and Radler 2000 Ltd Partnership to Enerplus Resources (USA) Corporation: 685/643	AB Resources, LLC, Chief Expl & Development, LLC and Radler 2000 to Gastar Exploration USA, Inc & Atinum Marcellus I LLC: 24/39	Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	TH Exploration II, LLC to TH Exploration, LLC: 40/552	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
10*14460	5-17-8	B	GERTRUD GODDARD, H G WELLS AIF	GASTAR EXPLORATION USA INC	1/8+	735 515	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/183	Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
1288082-001	5-17-8	B	RONALD GODDARD	CHESAPEAKE APPALACHIA LLC	1/8+	690 611	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/338	Memo of Operating Agrmt & Fin Stmt bet/ Gastar Exploration USA Inc, Atinum Marcellus I, LLC, Chesapeake Appalachia, LLC & Statoil USA Onshore Prop Inc: 740/394	Chesapeake Appalachia LLC to SWN Production Company LLC: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	SWN Exchange Titleholder LLC merged with/into SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc changed name to Equinor USA Onshore Properties Inc: 2/427	Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
1288082-002	5-17-8	B	FRANCIS R GODDARD	CHESAPEAKE APPALACHIA LLC	1/8+	689 175	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/338	Memo of Operating Agrmt & Fin Stmt bet/ Gastar Exploration USA Inc, Atinum Marcellus I, LLC, Chesapeake Appalachia, LLC & Statoil USA Onshore Prop Inc: 740/394	Chesapeake Appalachia LLC to SWN Production Company LLC: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	SWN Exchange Titleholder LLC merged with/into SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc changed name to Equinor USA Onshore Properties Inc: 2/427	Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
1288082-003	5-17-8	B	WAYNE GODDARD	CHESAPEAKE APPALACHIA LLC	1/8+	690 610	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/338	Memo of Operating Agrmt & Fin Stmt bet/ Gastar Exploration USA Inc, Atinum Marcellus I, LLC, Chesapeake Appalachia, LLC & Statoil USA Onshore Prop Inc: 740/394	Chesapeake Appalachia LLC to SWN Production Company LLC: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	SWN Exchange Titleholder LLC merged with/into SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc changed name to Equinor USA Onshore Properties Inc: 2/427	Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
1288082-004	5-17-8	B	MARTHA BAILEY	CHESAPEAKE APPALACHIA LLC	1/8+	695 366	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/338	Memo of Operating Agrmt & Fin Stmt bet/ Gastar Exploration USA Inc, Atinum Marcellus I, LLC, Chesapeake Appalachia, LLC & Statoil USA Onshore Prop Inc: 740/394	Chesapeake Appalachia LLC to SWN Production Company LLC: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	SWN Exchange Titleholder LLC merged with/into SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc changed name to Equinor USA Onshore Properties Inc: 2/427	Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
1288082-005	5-17-8	B	PAULETTE F PARKER	CHESAPEAKE APPALACHIA LLC	1/8+	695 368	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/338	Memo of Operating Agrmt & Fin Stmt bet/ Gastar Exploration USA Inc, Atinum Marcellus I, LLC, Chesapeake Appalachia, LLC & Statoil USA Onshore Prop Inc: 740/394	Chesapeake Appalachia LLC to SWN Production Company LLC: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	SWN Exchange Titleholder LLC merged with/into SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc changed name to Equinor USA Onshore Properties Inc: 2/427	Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
1288082-006	5-17-8	B	JUDY PROCK	CHESAPEAKE APPALACHIA LLC	1/8+	722 339	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/338	Memo of Operating Agrmt & Fin Stmt bet/ Gastar Exploration USA Inc, Atinum Marcellus I, LLC, Chesapeake Appalachia, LLC & Statoil USA Onshore Prop Inc: 740/394	Chesapeake Appalachia LLC to SWN Production Company LLC: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	SWN Exchange Titleholder LLC merged with/into SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc changed name to Equinor USA Onshore Properties Inc: 2/427	Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67

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1288082-007	5-17-8	B	BRUCE GODDARD, SR.	CHESAPEAKE APPALACHIA LLC	1/8+	732 489	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/338	Memo of Operating Agrmt & Fin Stmt bet/ Gasstar Exploration USA Inc, Atinum Marcellus I, LLC, Chesapeake Appalachia, LLC & Statoil USA Onshore Prop Inc: 740/394	Chesapeake Appalachia LLC to SWN Production Company LLC: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	SWN Exchange Titleholder LLC merged with/intro SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc changed name to Equinor USA Onshore Properties Inc: 2/427	Cert. of Merger Gasstar Exploration USA, Inc to Gasstar Exploration Inc: 21/41	Gasstar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
1288082-008	5-17-8	B	RONALD W. GODDARD	CHESAPEAKE APPALACHIA LLC	1/8+	695 223	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/338	Memo of Operating Agrmt & Fin Stmt bet/ Gasstar Exploration USA Inc, Atinum Marcellus I, LLC, Chesapeake Appalachia, LLC & Statoil USA Onshore Prop Inc: 740/394	Chesapeake Appalachia LLC to SWN Production Company LLC: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	SWN Exchange Titleholder LLC merged with/intro SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc changed name to Equinor USA Onshore Properties Inc: 2/427	Cert. of Merger Gasstar Exploration USA, Inc to Gasstar Exploration Inc: 21/41	Gasstar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
1288082-009	5-17-8	B	CLIFFORD GODDARD	CHESAPEAKE APPALACHIA LLC	1/8+	694 473	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/338	Memo of Operating Agrmt & Fin Stmt bet/ Gasstar Exploration USA Inc, Atinum Marcellus I, LLC, Chesapeake Appalachia, LLC & Statoil USA Onshore Prop Inc: 740/394	Chesapeake Appalachia LLC to SWN Production Company LLC: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	SWN Exchange Titleholder LLC merged with/intro SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc changed name to Equinor USA Onshore Properties Inc: 2/427	Cert. of Merger Gasstar Exploration USA, Inc to Gasstar Exploration Inc: 21/41	Gasstar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
1288082-010	5-17-8	B	WANDA SUE SAVERS	CHESAPEAKE APPALACHIA LLC	1/8+	695 531	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/338	Memo of Operating Agrmt & Fin Stmt bet/ Gasstar Exploration USA Inc, Atinum Marcellus I, LLC, Chesapeake Appalachia, LLC & Statoil USA Onshore Prop Inc: 740/394	Chesapeake Appalachia LLC to SWN Production Company LLC: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	SWN Exchange Titleholder LLC merged with/intro SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc changed name to Equinor USA Onshore Properties Inc: 2/427	Cert. of Merger Gasstar Exploration USA, Inc to Gasstar Exploration Inc: 21/41	Gasstar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
1288082-011	5-17-8	B	LINDA LEE COX	CHESAPEAKE APPALACHIA LLC	1/8+	696 613	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/338	Memo of Operating Agrmt & Fin Stmt bet/ Gasstar Exploration USA Inc, Atinum Marcellus I, LLC, Chesapeake Appalachia, LLC & Statoil USA Onshore Prop Inc: 740/394	Chesapeake Appalachia LLC to SWN Production Company LLC: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	SWN Exchange Titleholder LLC merged with/intro SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc changed name to Equinor USA Onshore Properties Inc: 2/427	Cert. of Merger Gasstar Exploration USA, Inc to Gasstar Exploration Inc: 21/41	Gasstar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
1288082-012	5-17-8	B	KENNETH ALAN GODDARD	CHESAPEAKE APPALACHIA LLC	1/8+	696 611	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/338	Memo of Operating Agrmt & Fin Stmt bet/ Gasstar Exploration USA Inc, Atinum Marcellus I, LLC, Chesapeake Appalachia, LLC & Statoil USA Onshore Prop Inc: 740/394	Chesapeake Appalachia LLC to SWN Production Company LLC: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	SWN Exchange Titleholder LLC merged with/intro SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc changed name to Equinor USA Onshore Properties Inc: 2/427	Cert. of Merger Gasstar Exploration USA, Inc to Gasstar Exploration Inc: 21/41	Gasstar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
1288082-013	5-17-8	B	HARRY C CRONE	CHESAPEAKE APPALACHIA LLC	1/8+	696 607	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/338	Memo of Operating Agrmt & Fin Stmt bet/ Gasstar Exploration USA Inc, Atinum Marcellus I, LLC, Chesapeake Appalachia, LLC & Statoil USA Onshore Prop Inc: 740/394	Chesapeake Appalachia LLC to SWN Production Company LLC: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	SWN Exchange Titleholder LLC merged with/intro SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc changed name to Equinor USA Onshore Properties Inc: 2/427	Cert. of Merger Gasstar Exploration USA, Inc to Gasstar Exploration Inc: 21/41	Gasstar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67

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1288082-014	5-17-8	B	JERRY J CRONE	CHESAPEAKE APPALACHIA LLC	1/8+	696 621	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/338	Memo of Operating Agrmt & Fin Stmt bet/ Gastar Exploration USA Inc, Atinum Marcellus I, LLC, Chesapeake Appalachia, LLC & Statoil USA Onshore Prop Inc: 740/394	Chesapeake Appalachia LLC to SWN Production Company LLC: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	SWN Exchange Titleholder LLC merged with/intro SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc changed name to Equinor USA Onshore Properties Inc: 2/427	Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
1288082-015	5-17-8	B	RECEIVED Office of Oil and Gas DEC 12 2022 WV Department of Environmental Protection	CHESAPEAKE APPALACHIA LLC	1/8+	698 216	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/338	Memo of Operating Agrmt & Fin Stmt bet/ Gastar Exploration USA Inc, Atinum Marcellus I, LLC, Chesapeake Appalachia, LLC & Statoil USA Onshore Prop Inc: 740/394	Chesapeake Appalachia LLC to SWN Production Company LLC: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	SWN Exchange Titleholder LLC merged with/intro SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc changed name to Equinor USA Onshore Properties Inc: 2/427	Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
1288082-016	5-17-8	B	DONALD P CRONE	CHESAPEAKE APPALACHIA LLC	1/8+	696 596	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/338	Memo of Operating Agrmt & Fin Stmt bet/ Gastar Exploration USA Inc, Atinum Marcellus I, LLC, Chesapeake Appalachia, LLC & Statoil USA Onshore Prop Inc: 740/394	Chesapeake Appalachia LLC to SWN Production Company LLC: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	SWN Exchange Titleholder LLC merged with/intro SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc changed name to Equinor USA Onshore Properties Inc: 2/427	Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
1288082-017	5-17-8	B	RICHARD P CRONE	CHESAPEAKE APPALACHIA LLC	1/8+	696 609	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/338	Memo of Operating Agrmt & Fin Stmt bet/ Gastar Exploration USA Inc, Atinum Marcellus I, LLC, Chesapeake Appalachia, LLC & Statoil USA Onshore Prop Inc: 740/394	Chesapeake Appalachia LLC to SWN Production Company LLC: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	SWN Exchange Titleholder LLC merged with/intro SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc changed name to Equinor USA Onshore Properties Inc: 2/427	Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
1288082-018	5-17-8	B	BRIAN D CRONE	CHESAPEAKE APPALACHIA LLC	1/8+	698 234	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/338	Memo of Operating Agrmt & Fin Stmt bet/ Gastar Exploration USA Inc, Atinum Marcellus I, LLC, Chesapeake Appalachia, LLC & Statoil USA Onshore Prop Inc: 740/394	Chesapeake Appalachia LLC to SWN Production Company LLC: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	SWN Exchange Titleholder LLC merged with/intro SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc changed name to Equinor USA Onshore Properties Inc: 2/427	Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
1288082-019	5-17-8	B	PAUL D CRONE	CHESAPEAKE APPALACHIA LLC	1/8+	698 232	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/338	Memo of Operating Agrmt & Fin Stmt bet/ Gastar Exploration USA Inc, Atinum Marcellus I, LLC, Chesapeake Appalachia, LLC & Statoil USA Onshore Prop Inc: 740/394	Chesapeake Appalachia LLC to SWN Production Company LLC: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	SWN Exchange Titleholder LLC merged with/intro SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc changed name to Equinor USA Onshore Properties Inc: 2/427	Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
1288082-020	5-17-8	B	BOBBY D CRONE	CHESAPEAKE APPALACHIA LLC	1/8+	698 609	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/338	Memo of Operating Agrmt & Fin Stmt bet/ Gastar Exploration USA Inc, Atinum Marcellus I, LLC, Chesapeake Appalachia, LLC & Statoil USA Onshore Prop Inc: 740/394	Chesapeake Appalachia LLC to SWN Production Company LLC: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	SWN Exchange Titleholder LLC merged with/intro SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc changed name to Equinor USA Onshore Properties Inc: 2/427	Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
			KAREN L CAMPBELL	CHESAPEAKE APPALACHIA LLC	1/8+	698 609	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/338	Memo of Operating Agrmt & Fin Stmt bet/ Gastar Exploration USA Inc, Atinum Marcellus I, LLC, Chesapeake Appalachia, LLC & Statoil USA Onshore Prop Inc: 740/394	Chesapeake Appalachia LLC to SWN Production Company LLC: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	SWN Exchange Titleholder LLC merged with/intro SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc changed name to Equinor USA Onshore Properties Inc: 2/427	Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67

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1288082-021	5-17-8	B	EDWARD F SOLTIS REVOCABLE TRUST	CHESAPEAKE APPALACHIA LLC	1/8+	700 325	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/338	Memo of Operating Agrmt & Fin Stmt bet/ Gatar Exploration USA Inc, Atinum Marcellus I, LLC, Chesapeake Appalachia, LLC & Statoil USA Onshore Prop Inc: 740/394	Chesapeake Appalachia LLC to SWN Production Company LLC: 33/110	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	SWN Exchange Titleholder LLC merged with/into SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc changed name to Equinor USA Onshore Properties Inc: 2/427	Cert. of Merger Gatar Exploration USA, Inc to Gatar Exploration Inc: 21/41	Gatar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67	
10*14139	5-17-9	C	LLOYD RICHARD OLIVER & DEANNA OLIVER	TRIENERGY, INC	1/8+	666 49	TriEnergy Inc to AB Resources LLC: 20/348	TriEnergy Inc to TriEnergy Holdings LLC: 23/148	AB Resources LLC to Chief Explor & Develop LLC & Radler 2000 Ltd Partnership: 21/497	Chief Explor. & Develop. LLC & Radler 2000 Ltd Partnership to Enerplus Resources USA Corp: 685/643	TriEnergy Holdings LLC to AB Resources LLC: 720/214	AB Resources LLC, Chief E&D LLC, Radler 2000 Ltd Partnership & Enerplus Resources USA Corp to Gatar Exploration USA Inc & Atinum Appalachia I LLC: 24/39	Gatar Exploration USA Inc merged with/into Gatar Exploration Inc: 21/41	Gatar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67	
10*39503	5-17-2	D	UNKNOWN HEIRS OF EVA LONTAAN PATTERSON	TH EXPLORATION LLC	1/8+	1124 568	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*14914	5-17-1.1	H	CHESTNUT HOLDINGS INC	GASTAR EXPLORATION INC	1/8+	827 548	N/A	N/A	N/A	N/A	N/A	N/A	Gatar Exploration Inc to Atinum Appalachia I LLC: 32/428	Gatar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67	
10*17643	5-17-1.1	H	DONALD R SLAUGHTER AND LOLA SLAUGHTER	TH EXPLORATION LLC	1/8+	940 445	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17812	5-17-1.1	H	POTOMAC MINERAL GROUP LLC	TH EXPLORATION LLC	1/8+	940 437	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17826	5-17-1.1	H	ALLDALE MINERALS II LP	TH EXPLORATION LLC	1/8+	940 439	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21460	5-17-1.1	H	MAGGY D ASTON AND ROBERT H RICHARDS	TH EXPLORATION LLC	1/8+	954 125	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21463	5-17-1.1	H	MOLLY D ASTON & HOWARD PRIOR	TH EXPLORATION LLC	1/8+	954 131	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*14914	5-17-1.4	I	CHESTNUT HOLDINGS INC	GASTAR EXPLORATION INC	1/8+	827 548	N/A	N/A	N/A	N/A	N/A	N/A	Gatar Exploration Inc to Atinum Appalachia I LLC: 32/428	Gatar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67	
10*17812	5-17-1.4	I	POTOMAC MINERAL GROUP LLC	TH EXPLORATION LLC	1/8+	940 437	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17826	5-17-1.4	I	ALLDALE MINERALS II LP	TH EXPLORATION LLC	1/8+	940 439	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21460	5-17-1.4	I	MAGGY D ASTON AND ROBERT H RICHARDS	TH EXPLORATION LLC	1/8+	954 125	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21463	5-17-1.4	I	MOLLY D ASTON & HOWARD PRIOR	TH EXPLORATION LLC	1/8+	954 131	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*14099	5-18-13.12	N	SOUTHERN COUNTRY FARMS INC	GASTAR EXPLORATION USA INC	1/8+	666 489	N/A	N/A	N/A	N/A	N/A	N/A	Gatar Exploration USA Inc to Atinum Appalachia I LLC: 23/353	Cert. of Merger Gatar Exploration USA, Inc to Gatar Exploration Inc: 21/41	Gatar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
10*14914	5-18-13.12	N	CHESTNUT HOLDINGS INC	GASTAR EXPLORATION INC	1/8+	827 548	N/A	N/A	N/A	N/A	N/A	N/A	Gatar Exploration Inc to Atinum Appalachia I LLC: 32/428	Gatar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67	
10*17812	5-18-13.12	N	POTOMAC MINERAL GROUP LLC	TH EXPLORATION LLC	1/8+	940 437	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17826	5-18-13.12	N	ALLDALE MINERALS II LP	TH EXPLORATION LLC	1/8+	940 439	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21460	5-18-13.12	N	MAGGY D ASTON AND ROBERT H RICHARDS	TH EXPLORATION LLC	1/8+	954 125	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21463	5-18-13.12	N	MOLLY D ASTON & HOWARD PRIOR	TH EXPLORATION LLC	1/8+	954 131	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*14099	5-18-13.4	O	SOUTHERN COUNTRY FARMS INC	GASTAR EXPLORATION USA INC	1/8+	666 489	N/A	N/A	N/A	N/A	N/A	N/A	Gatar Exploration USA Inc to Atinum Appalachia I LLC: 23/353	Cert. of Merger Gatar Exploration USA, Inc to Gatar Exploration Inc: 21/41	Gatar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
10*14914	5-18-13.4	O	CHESTNUT HOLDINGS INC	GASTAR EXPLORATION INC	1/8+	827 548	N/A	N/A	N/A	N/A	N/A	N/A	Gatar Exploration Inc to Atinum Appalachia I LLC: 32/428	Gatar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67	
10*17812	5-18-13.4	O	POTOMAC MINERAL GROUP LLC	TH EXPLORATION LLC	1/8+	940 437	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17826	5-18-13.4	O	ALLDALE MINERALS II LP	TH EXPLORATION LLC	1/8+	940 439	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21460	5-18-13.4	O	MAGGY D ASTON AND ROBERT H RICHARDS	TH EXPLORATION LLC	1/8+	954 125	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21463	5-18-13.4	O	MOLLY D ASTON & HOWARD PRIOR	TH EXPLORATION LLC	1/8+	954 131	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*14099	5-18-13.9	P	SOUTHERN COUNTRY FARMS INC	GASTAR EXPLORATION USA INC	1/8+	666 489	N/A	N/A	N/A	N/A	N/A	N/A	Gatar Exploration USA Inc to Atinum Appalachia I LLC: 23/353	Cert. of Merger Gatar Exploration USA, Inc to Gatar Exploration Inc: 21/41	Gatar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67

RECEIVED
 Office of Oil and Gas
 DECEMBER 2, 2017
 Environmental Protection
 Department

Lease ID	TMP	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	
10*14914	5-18-13.9	P	CHESTNUT HOLDINGS INC	GASTAR EXPLORATION INC	1/8+	827 548	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Appalachia I LLC: 32/428	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
10*17812	5-18-13.9	P	POTOMAC MINERAL GROUP LLC	TH EXPLORATION LLC	1/8+	940 437	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17826	5-18-13.9	P	ALDALE MINERALS II LP	TH EXPLORATION LLC	1/8+	940 439	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21460	5-18-13.9	P	MAGGY D ASTON AND ROBERT H RICHARDS	TH EXPLORATION LLC	1/8+	954 125	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21463	5-18-13.9	P	MOLLY D ASTON & HOWARD PRIOR	TH EXPLORATION LLC	1/8+	954 131	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19338	5-16-21	Y	JAMES M. RUCKMAN KIMBERLY L. RUCKMAN	TRIENERGY, INC.	1/8+	741 72	N/A	TriEnergy Inc to AB Resources LLC: 20/348	TriEnergy Inc to TriEnergy Holdings LLC: 21/148	AB Resources LLC to Chief Explor & Develop LLC & Radler 2000 Ltd Partnership: 21/497	Chief Explor. & Develop. LLC & Radler 2000 Ltd Partnership to Enerplus Resources USA Corp: 685/643	Chief E&D LLC, Chief O&G LLC, Radler 2000 Ltd Partnership & Enerplus Resources USA Corp to Chevron USA Inc: 25/1 & 25/105	AB Resources LLC to Chevron USA Inc: 756/397	TriEnergy Holdings LLC & TriEnergy Inc to Chevron USA Inc: 28/356	Chevron USA Inc to TH Exploration LLC: 40/57	
10*21468	5-16-25	AA	JOHN A SWIERKOS ZACHARY SWIERKOS POA	TH EXPLORATION LLC	1/8+	953 317	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19294	5-16-23	CC	MICHAEL R. BRYAN BRENDA K. BRYAN	TRIENERGY, INC.	1/8+	741 78	N/A	TriEnergy Inc to AB Resources LLC: 20/348	AB Resources LLC to Chief Explor & Develop LLC & Radler 2000 Ltd Partnership: 21/491	TriEnergy Inc to TriEnergy Holdings LLC: 21/148	Chief Explor. & Develop. LLC & Radler 2000 Ltd Partnership to Enerplus Resources USA Corp: 685/643	Chief E&D LLC, Chief O&G LLC, Radler 2000 Ltd Partnership & Enerplus Resources USA Corp to Chevron USA Inc: 25/1 & 25/105	AB Resources LLC to Chevron USA Inc: 756/397	TriEnergy Holdings LLC & TriEnergy Inc to Chevron USA Inc: 28/356	Chevron USA Inc to TH Exploration LLC: 40/57	
10*19162	5-16-23.2	DD	ALAN M BEYSER AND LORI A BEYSER	TRIENERGY HOLDINGS, LLC	1/8+	711 355	N/A	N/A	N/A	TriEnergy Holdings LLC to NPAR LLC: 24/180	AB Resources LLC & NPAR LLC to Chief Explor & Develop LLC & Radler 2000 Ltd Partnership: 24/466	Chief E&D LLC, Chief O&G LLC, Radler 2000 Ltd Partnership & Enerplus Resources USA Corp to Chevron USA Inc: 25/1 & 25/105	NPAR LLC to Chevron USA Inc: 756/332	TriEnergy Holdings LLC & TriEnergy Inc to Chevron USA Inc: 28/356	Chevron USA Inc to TH Exploration LLC: 40/127	
10*19162	5-16-24	EE	ALAN M BEYSER AND LORI A BEYSER	TRIENERGY HOLDINGS, LLC	1/8+	711 355	N/A	N/A	N/A	TriEnergy Holdings LLC to NPAR LLC: 24/180	AB Resources LLC & NPAR LLC to Chief Explor & Develop LLC & Radler 2000 Ltd Partnership: 24/466	Chief E&D LLC, Chief O&G LLC, Radler 2000 Ltd Partnership & Enerplus Resources USA Corp to Chevron USA Inc: 25/1 & 25/105	NPAR LLC to Chevron USA Inc: 756/332	TriEnergy Holdings LLC & TriEnergy Inc to Chevron USA Inc: 28/356	Chevron USA Inc to TH Exploration LLC: 40/127	

RECEIVED
 Office of Oil and Gas
 DEC 19 2012
 N. Deborah
 Director, Bureau of
 Environmental Protection

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02/23/2023



RECEIVED
Office of Oil and Gas

DEC 12 2022

WV Department of
Environmental Protection

December 8, 2022

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

RE: Hendrickson N-8HU

Subject: Proposed Voluntary Pooling and Unitization

Dear Susan:

Tug Hill Operating, LLC is authorized through, either lease or other agreement, to unitize and pool all lands falling within the boundaries of the proposed voluntary unit included with this submission.

If your office has any questions or concerns regarding the contents of this letter, please do not hesitate to contact me directly at 724-749-8388, or by email at amorris@tug-hillop.com.

Sincerely,

Amy L. Morris
Permitting Specialist – Appalachia Region
Tug Hill Operating

DEC 12 2022

**Offset Operators within 500'
Hendrickson N - 8HU**

WV Department of
Environmental Protection

COUNTY	DISTRICT	TMP	OWNER	ADDRESS
Marshall	Franklin	5-15-8	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107 02/23/2023
Marshall	Franklin	5-15-8	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-16-1	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-16-19	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-16-2	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-16-3	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-16-3	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-16-21	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-16-21	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-16-22	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-16-22	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-16-23	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-16-23	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-16-23.1	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-16-23.2	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-16-23.3	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-16-23.4	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107 02/03/2023
Marshall	Franklin	5-16-23.4	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-16-24	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107

COUNTY	DISTRICT	TMP	DECOMMISSION	ADDRESS
Marshall	Franklin	5-16-25	WV Department of Environmental Protection TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-17-1.1	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-17-1.1	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-17-1.2	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-17-1.2	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-17-1.3	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-17-1.4	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-17-1.5	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-17-2	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-17-2	SOUTHWESTERN ENERGY COMPANY	10000 Energy Drive Spring, TX 77389
Marshall	Franklin	5-17-2	EQUINOR USA ONSHORE PROPERTIES INC	2107 Citywest Blvd. Suite 100 Houston, TX 77042
Marshall	Franklin	5-17-8	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-17-8	SOUTHWESTERN ENERGY COMPANY	10000 Energy Drive Spring, TX 77389
Marshall	Franklin	5-17-8	EQUINOR USA ONSHORE PROPERTIES INC	2107 Citywest Blvd. Suite 100 Houston, TX 77042
Marshall	Franklin	5-17-9	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-17-13	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-17-13	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-17-14	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-17-14	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-17-15	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107

02/23/2023

02/08/2023

DEC 12 2022
OWNER

COUNTY	DISTRICT	TMP	OWNER	ADDRESS
Marshall	Franklin	5-17-15	WV Department of Environmental Protection TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-18-13	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-18-13	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-18-13.12	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-18-13.2	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-18-13.4	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-18-13.4	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-18-13.9	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-18-13.9	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-18-28	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-18-28.1	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-18-53.1	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-18-55	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-18-56	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-18-60	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-24-1	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-24-2	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107

02/03/2023

CERTIFICATE OF CONSENT AND EASEMENT

4705102480

I, the undersigned, for valuable consideration, the receipt and sufficiency of which is hereby acknowledged, being all the owners of the surface of that certain lot, tract or parcel of land located in Franklin District, Marshall County, State of West Virginia, shown on the attached plat or survey, or hereby consent and grant an easement, pursuant to West Virginia Code, Section 22C-9-7(b)(4) and Operating Rule 4.4 of the Rules and Regulations of the West Virginia Oil and Gas Conservation Commission, to TH Exploration, LLC, its successors or assigns, for the drilling and operation of a deep well for the production of oil or gas at the location shown on the attached plat or survey.

Executed this 28 day of Dec., 2018.

Linda L. Hendrickson
Linda L. Hendrickson

Donald R. Hendrickson
Donald R. Hendrickson

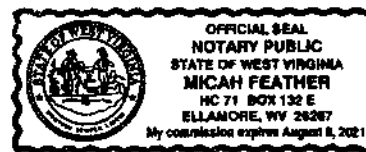
ACKNOWLEDGMENT

STATE OF WEST VIRGINIA §
§ SS:
COUNTY OF Brooke §

On this the 28 day of December 2018, before me, a notary public, the undersigned authority, personally appeared Linda L. Hendrickson, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that he/she executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission Expires: August 8, 2021
Signature/Notary Public: Micah Feather
Name/Notary Public (print): Micah Feather



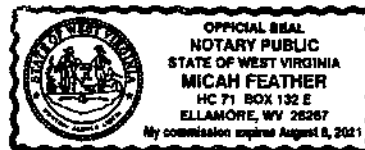
ACKNOWLEDGMENT

STATE OF WEST VIRGINIA §
§ SS:
COUNTY OF Brooke §

On this the 28 day of December 2018, before me, a notary public, the undersigned authority, personally appeared Donald R. Hendrickson, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that he/she executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission Expires: August 8, 2021
Signature/Notary Public: Micah Feather
Name/Notary Public (print): Micah Feather



This instrument prepared by:
WV Oil and Gas Conservation Commission
601 57th Street
Charleston, WV 25304



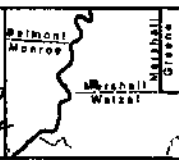
02/23/2023



0 90 180 300 Feet
N
Date: 1/23/2019
PCS: AHD 1983 UTM Zone 17N Feet US

"Plat"
Hendrickson
Marshall County, WV

Date: December 28, 2018
Name: Ronald R. Hendrickson
Name: Linda Hendrickson



— Pad Boundary
□ Surveyed Tract Boundaries

Marshall County
Jan Pest, Clerk
Instrument 1449438
01/04/2019 @ 03:31:23 PM
RIGHT OF WAY W/O CONSIDERATION
Book 1027 @ Page 236
Pages Recorded 2
Recording Cost \$ 11.00

STATE OF WEST VIRGINIA, MARSHALL COUNTY, SCT.:

I, JAN PEST, Clerk of the County Commission of said County, do hereby certify that the annexed writing, bearing date on the 28th day of December, 2018, was presented for and by me, admitted to record in my office upon the above certificate as to the parties therein named this 4th day of January, 2019 at 3:31 o'clock P. M.

TESTE: Jan Pest Clerk

02/03/2023



4705 02/23/2023

December 8, 2022

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

RE: Hendrickson N-8HU

Subject: Road Crossing Letter

Dear Taylor:

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 76 in the area reflected on the Hendrickson N-8HU well plat. THO has conducted a full title search in the relevant Court House to confirm its ownership under said County Route 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,

Amy L. Morris
Permitting Specialist – Appalachia Region

RECEIVED
Office of Oil and Gas
DEC 12 2022
WV Department of
Environmental Protection

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

Date of Notice Certification: 12/08/2022

API No. 47- 051 -

Operator's Well No. Hendrickson N-8HU

Well Pad Name: Hendrickson

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>521,593.40</u>
County:	<u>Marshall</u>		Northing:	<u>4,399,464.54</u>
District:	<u>Franklin</u>	Public Road Access:		<u>CR 76</u>
Quadrangle:	<u>Wileyville 7.5'</u>	Generally used farm name:		<u>Linda L. Hendrickson</u>
Watershed:	<u>HUC 10 - Middle Fish Creek</u>			

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

Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following: *PLEASE CHECK ALL THAT APPLY <input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED <input type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input checked="" type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED <input checked="" type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or <input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH) <input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION <input checked="" type="checkbox"/> 5. PUBLIC NOTICE <input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION		RECEIVED Office of Oil and Gas DEC 12 2022 WV Department of Environmental Protection	OOG OFFICE USE ONLY <input type="checkbox"/> RECEIVED/ NOT REQUIRED <input type="checkbox"/> RECEIVED <input checked="" type="checkbox"/> RECEIVED/ NOT REQUIRED <input checked="" type="checkbox"/> RECEIVED <input checked="" type="checkbox"/> RECEIVED <input checked="" type="checkbox"/> RECEIVED
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Required Attachments:

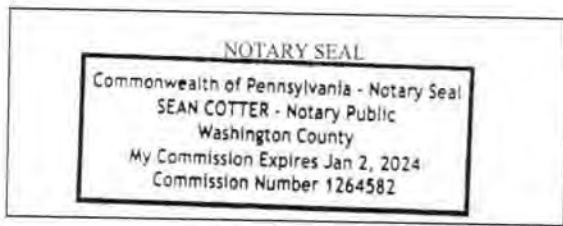
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication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

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: Tug Hill Operating, LLC
By: Amy L. Morris *Amy L. Morris*
Its: Permitting Specialist - Appalachia
Telephone: 304-376-0111

Address: 380 Southpointe Boulevard, Plaza II, Suite 200
Canonsburg, PA 15317
Facsimile: _____
Email: amorris@tug-hilltop.com



Subscribed and sworn before me this 8 day of December.
[Signature] Notary Public
My Commission Expires 1/2/2024

Oil and Gas Privacy Notice:

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

RECEIVED
Office of Oil and Gas
DEC 12 2023
WV Department of Environmental Protection

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

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

Date of Notice: 12/7/2022 Date Permit Application Filed: 12/8/2022

Notice of:

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

RECEIVED
Office of Oil and Gas
DEC 12 2022

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

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

WV Department of
Environmental Protection

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

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

SURFACE OWNER(s)

Name: Linda L. Pickering Hendrickson & Donald Ray Hendrickson
Address: 10 Susquehanna Road (Access Road and Well Pad)
Wellsburg, WV 26070

Name: _____
Address: _____

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

Name: Terry E. Simms & Deborah L. Simms
Address: 7175 Rines Ridge Road
Proctor, WV 26055

Name: _____
Address: _____

SURFACE OWNER(s) (Impoundments or Pits)

Name: _____
Address: _____

COAL OWNER OR LESSEE

Name: CONSOL Energy Attn: Casey Saunders
Address: 275 Technology Drive, Suite 101
Canonsburg, PA 15317-9565

COAL OPERATOR
Name: _____
Address: _____

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

Name: none within 2000'
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: _____
Address: _____

*Please attach additional forms if necessary

DEC 12 2022

Notice is hereby given:

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

This Notice Shall Include:

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

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

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

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

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

Well Location Restrictions

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

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(8-13)

API NO. 47051 02/23/2023
OPERATOR WELL NO. Hendrickson N-8HU
Well Pad Name: Hendrickson

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 the water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

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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

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.**

02/03/2023

Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

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Environmental Protection

02/03/2023

WW-6A
(8-13)

4705100
API NO. 47-051 - 02/23/2023
OPERATOR WELL NO. Hendrickson N-8HU
Well Pad Name: Hendrickson

Notice is hereby given by:

Well Operator: Tug Hill Operating, LLC

Telephone: 724-749-8388

Email: amorris@tug-hilltop.com *amy morris*

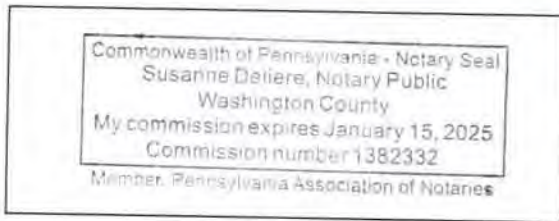
Address: 380 Southpointe Boulevard, Plaza II, Suite 200

Canonsburg, PA 15317

Facsimile:

Oil and Gas Privacy Notice:

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



Subscribed and sworn before me this 7th day of December 2022
Susanne Deliere Notary Public
My Commission Expires 1/15/2025

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DEC 12 2022
WV Department of
Environmental Protection

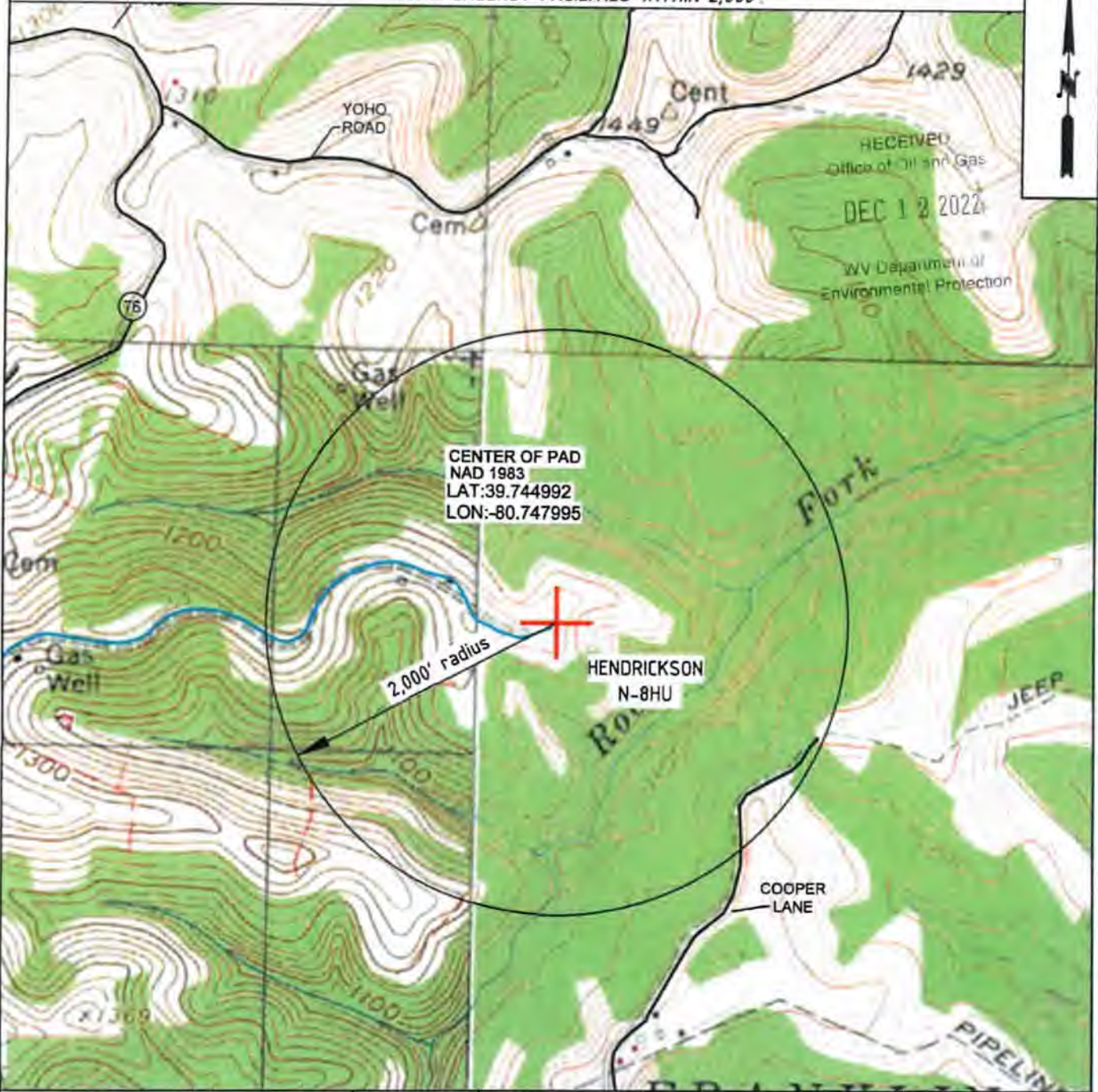
02/03/2023

WW-6A

PROPOSED HENDRICKSON N-8HU

SUPPLEMENT PG 1

THERE APPEAR TO BE NO (O) RESIDENCES, BUSINESSES, CHURCHES, SCHOOLS,
OR EMERGENCY FACILITIES WITHIN 2,000'



 TUG HILL OPERATING	OPERATOR	494510851	TOPO SECTION	LEASE NAME
	TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317		WILEYVILLE 7.5'	HENDRICKSON
			SCALE:	DATE:
			1" = 1000'	DATE: 11-30-2022

4705102400

**STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF INTENT TO DRILL**

Pursuant to W. Va. Code § 22-6A-16(b), the Notice of Intent to Drill is only required if the notice requirements of W. Va. Code § 22-6A-10(a) have NOT been met or if the Notice of Intent to Drill requirement has NOT been waived in writing by the surface owner.

Notice Time Requirement: Notice shall be provided at least **TEN (10)** days prior to filing a permit application.

Date of Notice: 10/12/2022 **Date Permit Application Filed:** 11/01/2022

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DEC 1 2 2022

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

- HAND DELIVERY
- CERTIFIED MAIL RETURN RECEIPT REQUESTED

WV Department of
Environmental Protection

Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: *Provided*, That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner: *Provided, however*, That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

Notice is hereby provided to the SURFACE OWNER(s):

Name: Linda L. Pickering Hendrickson & Donald Ray Hendrickson
Address: 10 Susquehanna Road, (Access Road and Well Pad)
Wellburg, WV 26070

Name: Terry E. Simms & Deborah L. Simms (Access Road)
Address: 7175 Rines Ridge Road
Proctor, WV 26055

Notice is hereby given:

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

State:	<u>West Virginia</u>	UTM NAD 83 Easting:	<u>621,593.40</u>
County:	<u>Marshall</u>	UTM NAD 83 Northing:	<u>4,399,464.54</u>
District:	<u>Franklin</u>	Public Road Access:	<u>Co. Rt. 76</u>
Quadrangle:	<u>Wileyville 7.5'</u>	Generally used farm name:	<u>Linda L. Hendrickson</u>
Watershed:	<u>Rocky Fork of Fish Creek</u>		

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(b), this notice shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative. 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.

Notice is hereby given by:

Well Operator: Tug Hill Operating, LLC
Address: 380 Southpointe Boulevard, Plaza II, Suite 200
Canonsburg, PA 15317
Telephone: 724-749-8388
Email: amorris@tug-hill-op.com
Facsimile: _____

Authorized Representative: Darren Brown
Address: 5098 Washington Street W, Suite 407
Charleston, WV 25313-1561
Telephone: 877-467-3525
Email: at-statecommunications@wolterskiuwer.com
Facsimile: _____

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.

4705102480

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

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

Date of Notice: 12/07/2022 **Date Permit Application Filed:** 12/08/2022

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

- CERTIFIED MAIL HAND DELIVERY
- RETURN RECEIPT REQUESTED

WV Department of
Environmental Protection

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

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

Name: Linda L. Pickering Hendrickson & Donald Ray Hendrickson
Address: 10 Susquehanna Road (Access Road and Well Pad)
Wellsburg, WV 26070

Name: Terry E. Simms & Deborah L. Simms (Access Road)
Address: 7175 Rines Ridge Road
Proctor, WV 26055

Notice is hereby given:

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

State:	<u>West Virginia</u>	UTM NAD 83 Easting:	<u>521,893.40</u>
County:	<u>Marshall</u>	UTM NAD 83 Northing:	<u>4,399,464.54</u>
District:	<u>Franklin</u>	Public Road Access:	<u>Co. Rte. 76</u>
Quadrangle:	<u>Wileyville 7.5</u>	Generally used farm name:	<u>Linda L. Hendrickson</u>
Watershed:	<u>HUC-10 Middle Fish Creek</u>		

This Notice Shall Include:

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

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

Address: 380 Southpointe Boulevard, Plaza II, Suite 200
Canonsburg, PA 15317
Facsimile: _____

Oil and Gas Privacy Notice:

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



4705102400 02/23/2023

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

D. Alan Reed, P.E.
State Highway Engineer

Jimmy Wriston, P. E.
Secretary of Transportation
Commissioner of Highways

December 8, 2022

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

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Office of Oil and Gas

DEC 12 2022

WV Department of
Environmental Protection

Subject: DOH Permit for the Hendrickson Pad, Marshall County
Hendrickson N-8HU Well Site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2011-0175 which has been issued to Tug Hill Operating for access to the State Road for a well site located off Marshall County Route 76 SLS MP 0.93.

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 the date of this letter.

Very Truly Yours,

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

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

02/03/2023

4705102400 02/23/2023



TUG HILL

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WV Department of
Environmental Protection

PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Hendrickson Pad

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

OPERATOR: Tug Hill Operating, LLC WELL NO: Hendrickson N-8HU

PAD NAME: Hendrickson

REVIEWED BY: Amy L. Morris SIGNATURE: *Amy L. Morris*

WELL RESTRICTIONS CHECKLIST
HORIZONTAL 6A WELL

RECEIVED
Office of Oil and Gas
DEC 12 2022
WV Department of
Environmental Protection

Well Restrictions

At Least 100 Feet from Pad and LOD (including any E&S Control Feature) to any Perennial Stream, Lake, Pond, Reservoir or Wetland; OR
 DEP Waiver and Permit Conditions

At Least 300 Feet from Pad and LOD (including any E&S Control Feature) to any Naturally Producing Trout Stream; OR
 DEP Waiver and Permit Conditions

At Least 1000 Feet from Pad and LOD (including any E&S Control Feature) to any Groundwater Intake or Public Water Supply; OR
 DEP Waiver and Permit Conditions

At Least 250 Feet from an Existing Water Well or Developed Spring to Well Being Drilled; OR
 Surface Owner Waiver and Recorded with County Clerk, OR
 DEP Variance and Permit Conditions

At Least 625 Feet from an Occupied Dwelling Structure to Center of the Pad; OR
 Surface Owner Waiver and Recorded with County Clerk, OR
 DEP Variance and Permit Conditions

At Least 625 Feet from Agricultural Buildings Larger than 2500 Square Feet to the Center of the Pad; OR
 Surface Owner Waiver and Recorded with County Clerk, OR
 DEP Variance and Permit Conditions