

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 S-10HU
47-051-02482-00-00

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

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

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


James A. Martin
Chief

Operator's Well Number: HENDRICKSON S-10HU
Farm Name: LINDA L PICKERING HENDRICKSON
U.S. WELL NUMBER: 47-051-02482-00-00
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 #47-051-02482

COMPANY: Tug Hill Operating, LLC

FARM: Linda L. Pickering Hendrickson Hendrickson S-10HU

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 47-051-02272; Hillrock S-13HU 47-051-02273; Hillrock S-14HU 47-051-02262; Hillrock S-15HU 47-051-02263; 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; Simms U-5H 47-051-01731; Hendrickson N-7HU 47-051-02479; Hendrickson N-8HU 47-051-02480; Hendrickson N-9HU 47-051-02481; Hendrickson S-12HU 47-051-02484; Hendrickson S-11HU 47-051-02483; Hendrickson S-13HU 47-051-02485; Elmer N-18HU 47-103-03467; Elmer N-16HU 47-103-03504; Elmer N-17HU 47-103-03505; McMasters S-19HU 47-051-02340; McMasters S-20HU 47-051-02341



west virginia department of environmental protection

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

Austin Caperton, Cabinet Secretary
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 -0400

JAMES A. MARTIN, CHIEF

02/03/2023

WW-6B
(04/15)

4705102482
02/23/2023
API NO. 47-051
OPERATOR WELL NO. Hendrickson S-10HU
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 S-10HU 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 11,411' - 11,528', thickness of 117' and anticipated pressure of approx. 7,500 psi.

8) Proposed Total Vertical Depth: 11,678'

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 19,072'

11) Proposed Horizontal Leg Length: 7,063.48'

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: _____

Steph Gannon
STRAPAX 6000
12-1-2022

4705102482

02/23/2023

WW-6B
(04/15)

API NO. 47-051
OPERATOR WELL NO. Hendrickson S-10HU
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#	10,419'	10,419'	3,397ft^3(CTS)
Production	5 1/2"	NEW	P110	23#	19,072'	19,072'	4,546ft^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		11,197'	
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

State Comm
STRADER GOWEN
12-1-2022

02/09/2023

WW-6B
(10/14)

4705102482
02/23/2023
API NO. 47-051 -
OPERATOR WELL NO. Hendrickson S-10HU
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 (10,697'). 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 17,100,000 lb. proppant and 310,000 bbl of water. Max rate = 80bpm; max psi = 9,000#.

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% R-3 + 5% KCl + 1% CD-32 + .4% FL-52 + .2% ASA-301 + .6% Sodium Metasilicate; Kick Plug - Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L; Prod - Lead: 50:50 (Poz:Class H) + .3% R-3 + .3% MPA-250 + .75 gal/100sk FP-13L Tail: 25:75 (Poz:Class H) + .3% R-3 + .3% MPA-250 + .375 gal/100sk FP-13L

25) Proposed borehole conditioning procedures:

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

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*Note: Attach additional sheets as needed.

STRADER
12-1-2022
02/23/2023

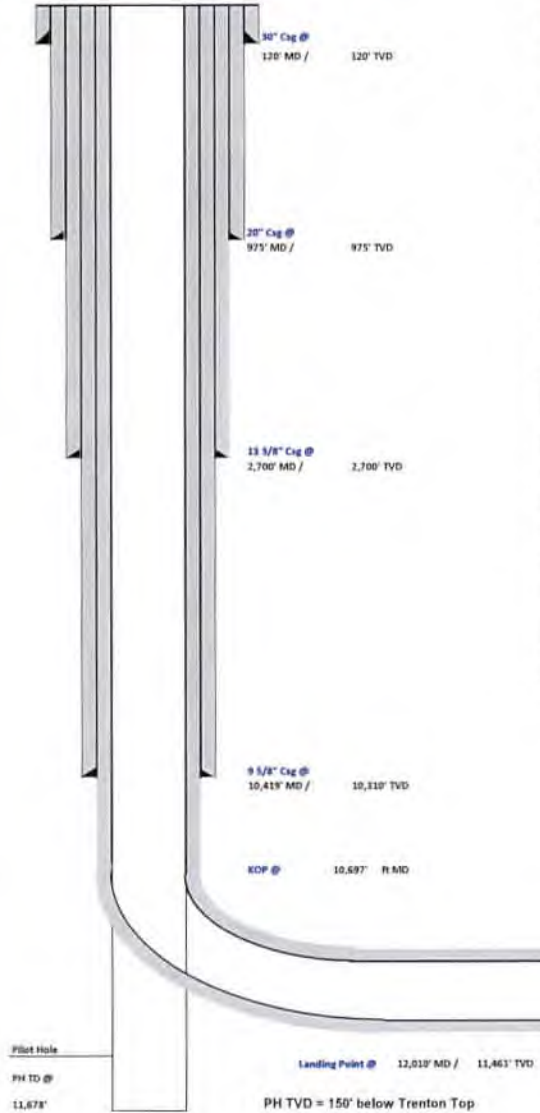


WELL NAME: Hendrickson S-10HU
 STATE: WV COUNTY: Marshall
 DISTRICT: Franklin
 OF Elev: 1,220' GL Elev: 1,220'
 TD: 19,072'
 TH Latitude: 39.74487301
 TH Longitude: -80.74794444
 BH Latitude: 39.724252
 BH Longitude: -80.738554

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	841'
Sewickley Coal	739'
Pittsburgh Coal	835'
Big Lime	2,064'
Berea	2,549'
Tully	6,446'
Marcellus	6,546'
Onondaga	6,596'
Salina	7,304'
Lockport	8,382'
Utica	11,224'
Point Pleasant	11,411'
Landing Depth	11,461'
Trenton	11,528'
Pilot Hole TD	11,678'

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	28	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	10,419'	10,810'	47	HPP110	Surface
Production	8 1/2	5 1/2	19,072'	11,584'	23	HCP110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
Type	Sacks	Class	Density (ppg)	Fluid Type	Centralizer Notes
Conductor	118	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	3,101	A	14.5	Air	1 Centralizer every other joint
Production	4,811	A	14.5	Air / SOBMM	1 every other joint in lateral; 1 per joint in curve; 1 every other joint to surface



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 Office of Oil
 WV State
 Environmental
 DEC 1 2022

Steve Gower
 STRADER GOWER
 12-1-2022

4705102482



Tug Hill Operating, LLC Casing and Cement Program

Hendrickson S-10HU

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"	10,419'	CTS
Production	5 1/2"	HCP110	8 1/2"	19,072'	CTS

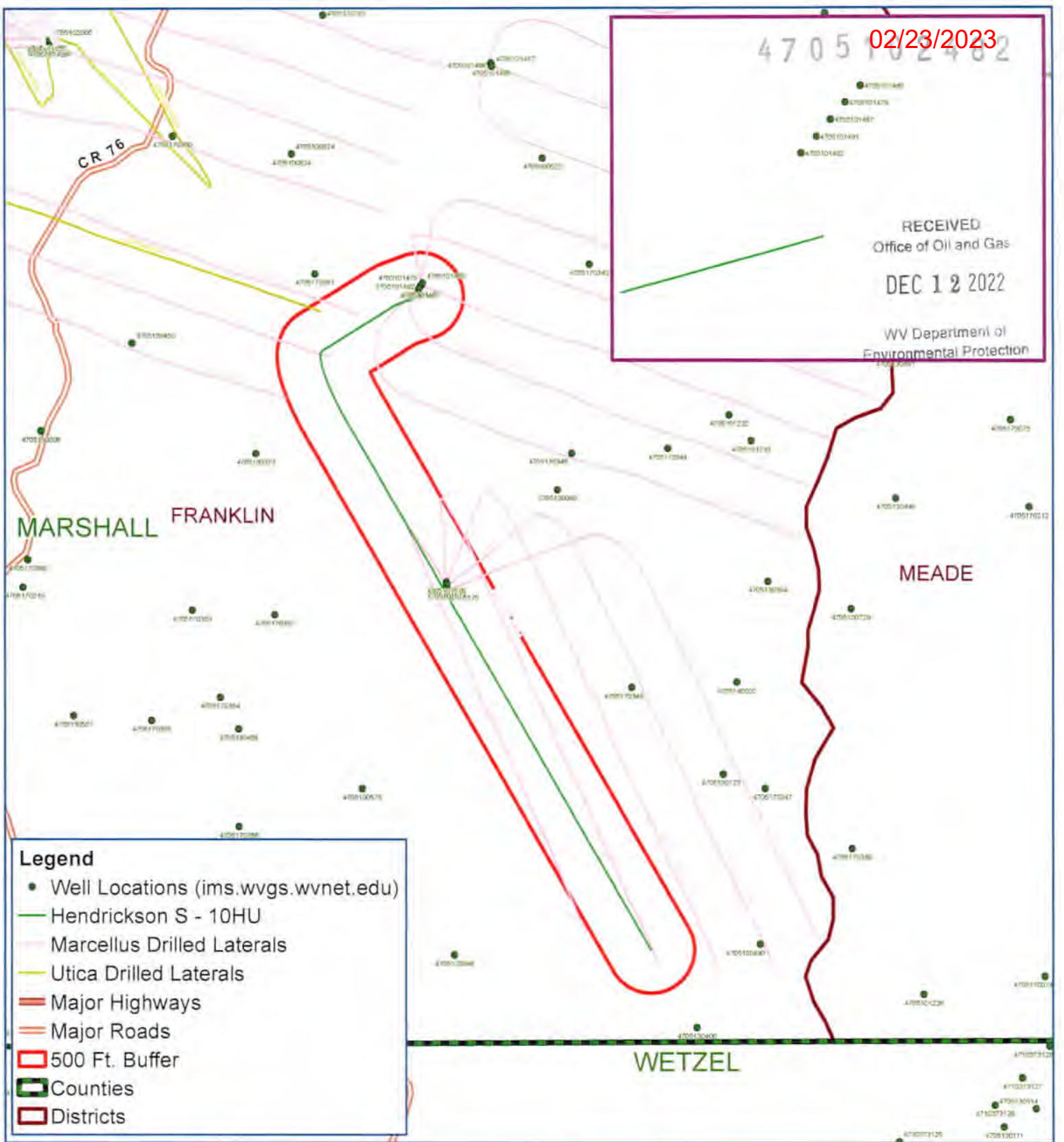
Cement

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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4705102482 02/23/2023

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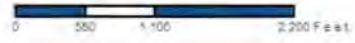


Legend

- Well Locations (ims.wvgs.wvnet.edu)
- Hendrickson S - 10HU
- Marcellus Drilled Laterals
- Utica Drilled Laterals
- Major Highways
- Major Roads
- 500 Ft. Buffer
- Counties
- Districts



Hendrickson S - 10HU
Franklin District
Marshall County, WV



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

Map Created: October 24, 2022
Map Current As Of: October 24, 2022

Map Prepared by:
DPS
LAND SERVICES
02/03/2023

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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WV Department of
Environmental Protection

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.
4705101574	Tug Hill Operating, LLC.	6834' TVD, 12751' 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 an adjacent well pad to the proposed well.
4705101575	Tug Hill Operating, LLC.	6831' TVD, 12253' 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 an adjacent well pad to the proposed well.
4705101576	Tug Hill Operating, LLC.	6804' TVD, 12571' 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 an adjacent well pad to the proposed well.
4705101577	Tug Hill Operating, LLC.	6813' TVD, 12739' 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 an adjacent well pad to the 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
4705101578	Tug Hill Operating, LLC.	6785' TVD, 11576' 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 an adjacent well pad to the proposed well.

4705101578

WV Geological & Economic Survey

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	Litleton	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
4705101467	3/31/2012	Dvtd 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
4705101467	-/-	Dvtd Wrkd Ovr	Permitted	Linda L Hendrickson	1H		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	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	WV16-0065-000/1-288082-001/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 Operatir

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-Garner	Marcellus Fm	Marcellus Fm	Development Well	Development Well	Oil and Gas	Rotary	Fractured	6676	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	22,686	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_15	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	Dvtd 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	-/-	Dvtd 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	13,798	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	13,283
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	12,260	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	Dvld 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	-/-	Dvld Wrkd 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	1228	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	34,605	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_16	LAT_DD	LON_DD	UTME	UTMN
4705101492	Marshall	1492	Franklin	Wileyville	Littleton	39.745096	-80.748004	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	Dvld 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	-/-	Dvld Wrkd Ovr	Permitted	Linda L Hendrickson	5H		Hendrickson		LL 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-Garner	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	27,267	26,999
4705101492	Tug Hill Operating, LLC	2017	274,758	27,055	24,095	25,591	23,443	23,709	22,817	23,374	22,816	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	16,010	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

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WV Geological & Economic Survey

Well: County = 51 Permit = 01574 [Link to all digital records for well](#)

Report Time: Wednesday, October 12, 2022 2:20:18 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705101574	Marshall	1574	Franklin	Wileyville	Littleton	39.735689	-80.746887	521688.7	4398452.6

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101574	1 As Proposed	522844.3	4397115.7	-80.733448	39.723613

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD
4705101574	4/1/2012	Dvtd Orgnl Loc	Completed	Addison	4H		Addison	WV16-0106-000/WV16-0108-000/WV16-0017-001	Carol Vass et al	Gastar Exploration USA, Inc.	6715
4705101574	--	Dvtd Wrkd Ovr	Permitted	T H Exploration II LLC	4H		Addison		T H Exploration II LLC	Tug Hill Operating, LLC	6812

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_J
4705101574	4/1/2012	9/15/2011	1331	Ground Level	Cameron-Garner	Marcellus Fm	Marcellus Fm	Development Well	Development Well	Oil and Gas	Rotary	Fractured	6834	12751	12751		2568	2
4705101574	--	--	1327	Ground Level														

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
4705101574	Gastar Exploration USA, Inc.	2013	518,152	0	0	0	87,237	77,538	50,730	41,353	51,210	62,587	47,851	51,558	48,088
4705101574	Gastar Exploration USA, Inc.	2014	548,235	58,074	47,777	55,869	39,603	49,834	54,014	46,519	44,295	41,050	34,267	36,764	40,169
4705101574	Gastar Exploration Inc.	2015	348,019	37,684	28,547	35,624	27,797	31,268	27,667	26,576	26,680	40,065	27,539	21,455	17,117
4705101574	Tug Hill Operating, LLC	2016	357,421	31,231	33,841	33,154	29,949	30,359	29,929	29,036	27,566	26,236	31,523	29,453	25,138
4705101574	Tug Hill Operating, LLC	2017	256,058	24,557	25,018	27,131	25,691	25,150	24,588	18,326	15,188	14,752	17,860	20,175	17,616
4705101574	Tug Hill Operating, LLC	2018	219,148	16,998	20,235	20,218	18,175	16,743	21,152	21,569	14,579	19,398	17,465	15,006	17,610
4705101574	Tug Hill Operating, LLC	2019	237,165	20,321	18,754	19,600	18,660	20,968	22,285	23,722	22,848	19,963	16,350	16,009	17,663
4705101574	Tug Hill Operating, LLC	2020	165,851	19,182	17,099	17,210	18,927	17,768	24,384	20,975	21,378	8,928	0	0	0
4705101574	Tug Hill Operating, LLC	2021	57,692	10,786	10,373	17,502	0	0	0	0	0	0	0	0	19,031

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Well: County = 51 Permit = 01575 [Link to all digital records for well](#)

Report Time: Wednesday, October 12, 2022 2:20:55 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705101575	Marshall	1575	Franklin	Wileyville	Littleton	39.735634	-80.746883	521689.1	4398446.5

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101575	1	As Proposed	522979.7	4397258.1	-80.731863

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_1
4705101575	4/11/2012	Dvtd Orgnl Loc	Completed	Addison	5H		Addison	WV16-00106-000/WV16-0108-000/WV16-0017-001	Carol Vass et al	Gastar Exploration USA, Inc.	67
4705101575	-/-	Dvtd Wrkd Ovr	Permitted	T H Exploration II LLC	5H		Addison		T H Exploration II LLC	Tug Hill Operating, LLC	68

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
4705101575	4/11/2012	9/15/2011	1331	Ground Level	Cameron-Garner	Marcellus Fm	Marcellus Fm	Development Well	Development Well	Oil and Gas	Rotary	Fractured	6831	12253	12253		2184
4705101575	-/-	-/-	1327	Ground Level													

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
4705101575	Gastar Exploration USA, Inc.	2013	479,384	0	0	0	68,478	68,771	47,715	54,559	54,433	51,662	38,401	46,848	48,517
4705101575	Gastar Exploration USA, Inc.	2014	460,509	47,053	41,766	45,743	34,063	42,710	41,556	40,544	37,710	35,885	29,526	30,484	33,469
4705101575	Gastar Exploration Inc.	2015	338,343	31,960	26,912	32,804	25,951	30,016	25,036	24,496	26,502	35,928	35,289	23,430	20,019
4705101575	Tug Hill Operating, LLC	2016	349,135	31,801	32,058	32,574	31,656	31,098	31,561	28,558	27,897	25,676	26,654	25,254	24,344
4705101575	Tug Hill Operating, LLC	2017	248,233	23,331	21,902	23,815	22,456	22,242	21,287	19,855	19,547	18,601	17,938	18,457	18,799
4705101575	Tug Hill Operating, LLC	2018	195,534	16,953	12,950	14,880	17,516	18,297	17,681	14,983	18,683	14,661	17,535	13,837	17,558
4705101575	Tug Hill Operating, LLC	2019	225,905	18,806	18,903	20,352	19,431	20,040	18,780	18,061	19,659	18,599	18,249	17,324	17,698
4705101575	Tug Hill Operating, LLC	2020	149,022	17,989	16,282	18,302	16,496	16,268	18,960	16,031	16,648	12,046	0	0	0
4705101575	Tug Hill Operating, LLC	2021	36,517	7,240	7,679	5,911	0	0	0	0	0	0	0	0	15,687

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Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705101576	Marshall	1576	Franklin	Wileyville	Littleton	39.735854	-80.7469	521687.6	4398470.9

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101576	1 As Proposed	522434.4	4397130	-80.73823	39.723753

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VI
4705101576	4/11/2012	Dvtd Orgnl Loc	Completed	Addison	1H		Addison	WV16-0007-001/WV16-0106/WV16-0108/WV16-0017-001	Carol Vass et al	Gastar Exploration USA, Inc.	6711

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_A
4705101576	4/11/2012	9/15/2011	1331	Ground Level	Cameron-Gamer	Marcellus Fm	Marcellus Fm	Development Well	Development Well	Oil and Gas	Rotary	Fractured	6804	12571	12571	1224	21

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
4705101576	Gastar Exploration USA, Inc	2013	480,989	0	0	0	68,885	69,062	50,210	51,903	53,180	52,274	42,121	45,761	47,593
4705101576	Gastar Exploration USA, Inc	2014	428,032	44,404	39,883	44,132	34,720	41,455	35,969	36,553	34,749	32,707	27,087	27,544	28,809
4705101576	Gastar Exploration Inc.	2015	303,818	29,557	22,711	28,170	22,545	27,359	21,980	21,538	23,083	28,364	31,709	26,008	20,794
4705101576	Tug Hill Operating, LLC	2016	302,015	27,941	26,437	26,734	25,464	26,000	25,768	24,910	24,987	24,211	24,648	23,115	21,796
4705101576	Tug Hill Operating, LLC	2017	227,612	20,852	19,431	20,821	20,479	20,656	19,461	19,446	18,770	16,652	15,822	17,101	18,117
4705101576	Tug Hill Operating, LLC	2018	179,718	15,653	14,039	14,419	15,032	15,974	18,594	14,636	15,421	13,609	15,327	13,149	13,865
4705101576	Tug Hill Operating, LLC	2019	201,465	15,242	16,639	20,258	18,160	17,915	17,686	16,798	16,300	16,083	16,076	15,586	14,720
4705101576	Tug Hill Operating, LLC	2020	132,751	15,175	13,560	15,240	14,067	14,433	17,290	15,340	15,347	12,299	0	0	0
4705101576	Tug Hill Operating, LLC	2021	34,313	8,835	7,800	6,582	0	0	0	0	0	0	0	0	11,096

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Well: County = 51 Permit = 01577 [Link to all digital records for well](#)

Report Time: Wednesday, October 12, 2022 2:21:29 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705101577	Marshall	1577	Franklin	Wileyville	Littleton	39.735744	-80.746892	521688.3	4398458.7

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101577	1 As Proposed	522642	4397117.2	-80.735808	39.723632

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROF
4705101577	4/11/2012	Dvtd Orgnl Loc	Completed	Addison	3H		Addison	WV16-0106-000/WV16-0108-000/WV16-0017-001	Gastar Exploration USA Inc	Gastar Exploration USA Inc	
4705101577	--	Dvtd Wrkd Ovr	Permitted	T H Exploration II LLC	3H		Addison		T H Exploration II LLC	Tug Hill Operating LLC	

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_A
4705101577	4/11/2012	9/15/2011	1331	Ground Level	Cameron-Gamer	Marcellus Fm	Marcellus Fm	Development Well	Development Well	Oil and Gas	Rotary	Fractured	6813	12739	12739		1824	3
4705101577	--	--	1327	Ground Level														

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
4705101577	Gastar Exploration USA, Inc.	2013	478,743	0	0	0	65,306	73,404	49,685	50,723	52,087	53,806	41,294	45,206	47,232
4705101577	Gastar Exploration USA, Inc.	2014	413,572	43,245	37,151	42,790	35,413	44,722	32,539	36,873	31,145	30,564	24,151	25,501	29,478
4705101577	Gastar Exploration Inc.	2015	314,330	31,774	22,852	26,957	20,582	30,127	21,315	19,397	25,081	25,892	32,949	31,050	26,354
4705101577	Tug Hill Operating, LLC	2016	283,540	28,320	24,191	25,259	26,518	25,248	24,599	24,588	24,421	21,950	18,652	16,721	23,070
4705101577	Tug Hill Operating, LLC	2017	204,409	18,708	16,046	16,211	16,507	16,250	14,233	19,859	20,505	21,961	12,692	15,841	15,590
4705101577	Tug Hill Operating, LLC	2018	157,148	14,420	10,358	11,945	13,609	15,536	14,854	8,681	13,512	11,803	15,145	12,830	14,455
4705101577	Tug Hill Operating, LLC	2019	186,966	15,970	16,653	18,837	16,561	13,682	12,015	11,220	13,820	15,460	18,261	16,571	17,912
4705101577	Tug Hill Operating, LLC	2020	101,096	13,899	12,865	16,189	11,639	11,676	10,115	9,063	10,490	5,160	0	0	0
4705101577	Tug Hill Operating, LLC	2021	29,242	6,447	5,747	8,951	0	0	0	0	0	0	0	0	8,097

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Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705101578	Marshall	1578	Franklin	Wileyville	Littleton	39.735799	-80.746895	521688	4398464.8

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101578	1 As Proposed	522172.1	4397260.3	-80.741286	39.724934

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VI
4705101578	4/11/2012	Dvld Orgnl Loc	Completed	Addison	2H		Addison	WV16-0007-001/WV16-0106/WV16-0108/WV16-0017-001	Carol Vass et al	Gastar Exploration USA, Inc.	671

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_A
4705101578	4/11/2012	9/15/2011	1331	Ground Level	Cameron-Garner	Marcellus Fm	Marcellus Fm	Development Well	Development Well	Oil and Gas	Rotary	Fractured	6785	11576	11576		936	11

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
4705101578	Gastar Exploration USA, Inc.	2013	400.108	0	0	0	57.906	56.405	40.135	42.998	43.172	41.159	36.413	40.097	41.821
4705101578	Gastar Exploration USA, Inc.	2014	399.461	40.561	35.962	39.250	32.135	39.431	35.372	32.551	32.722	30.003	24.991	27.540	28.943
4705101578	Gastar Exploration Inc.	2015	286.976	30.594	22.801	30.434	22.727	25.372	19.449	19.067	22.049	26.656	27.796	21.935	18.096
4705101578	Tug Hill Operating, LLC	2016	272.651	24.727	24.931	22.878	24.100	22.300	22.762	23.441	22.676	21.010	22.944	21.548	19.328
4705101578	Tug Hill Operating, LLC	2017	220.143	18.836	18.442	21.130	19.572	19.791	18.482	19.193	17.792	18.159	15.479	16.703	16.558
4705101578	Tug Hill Operating, LLC	2018	181.894	15.683	13.982	14.972	16.068	13.284	16.649	15.502	14.780	14.173	16.344	14.766	15.769
4705101578	Tug Hill Operating, LLC	2019	162.514	10.544	14.971	8.769	11.125	17.648	15.131	16.655	15.526	12.935	10.845	12.828	15.534
4705101578	Tug Hill Operating, LLC	2020	127.646	17.431	17.121	16.679	13.922	13.132	16.810	11.555	14.933	6.063	0	0	0
4705101578	Tug Hill Operating, LLC	2021	30.109	8.596	7.663	3.054	0	0	0	0	0	0	0	0	10.796

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Well: Hendrickson S-10 HU (slot I)
 Site: Hendrickson
 Project: Marshall County, West Virginia NAD83 UTM 17N
 Design: rev1
 Rig:



Azinuths to Grid North
 True North -0.16°
 Magnetic North -8.79°
 Magnetic Field
 Strength: 51591.3nT
 Dip Angle: 66.38°
 Date: 10/17/2022
 Model: IGRF2020

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: 14433933.120 Easting: 1711267.107 Latitude: 39.744873010 Longitude: -80.747944440

Total Corr (M->G) To convert a Magnetic Direction to a Grid Direction, Subtract 8.79°



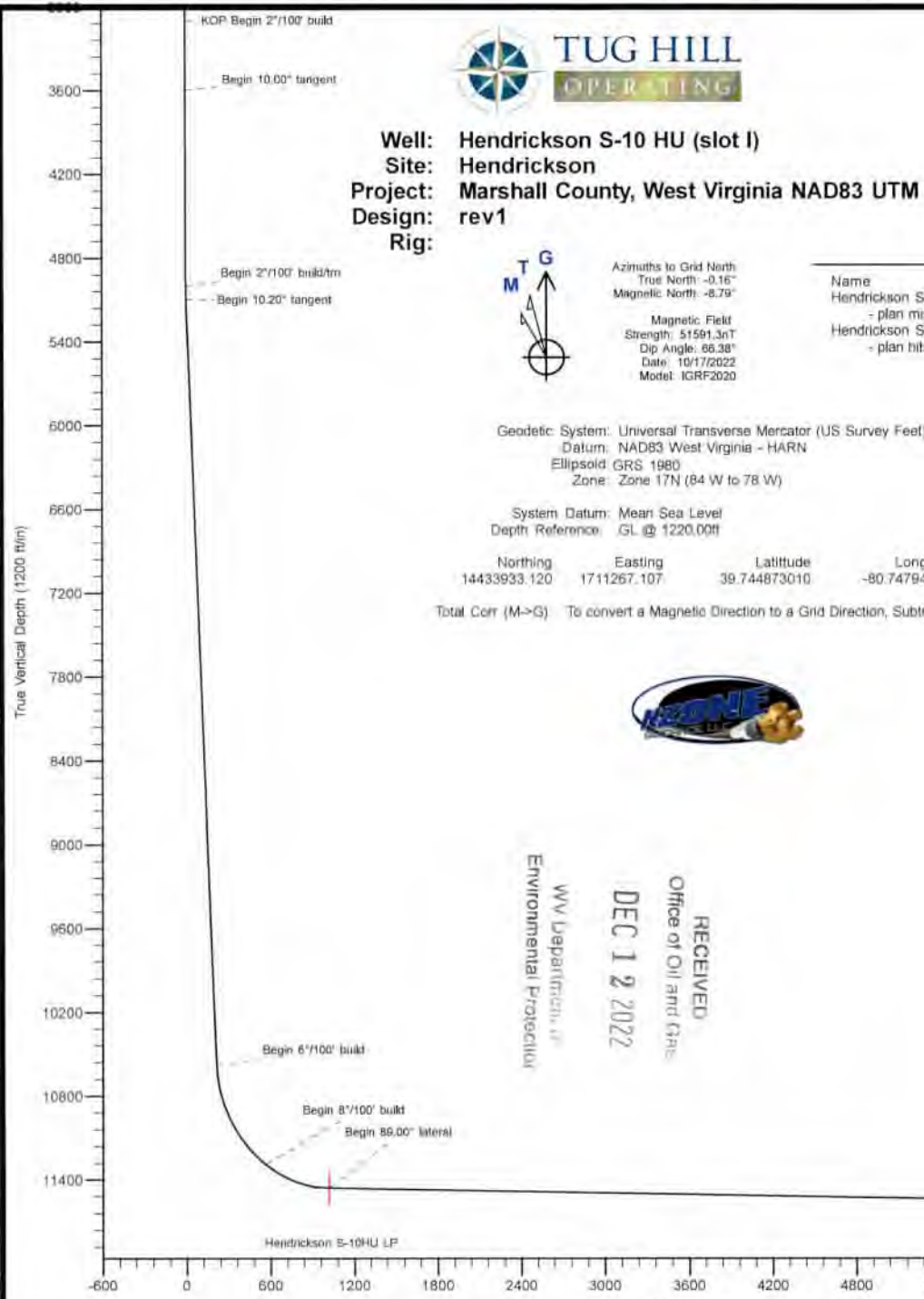
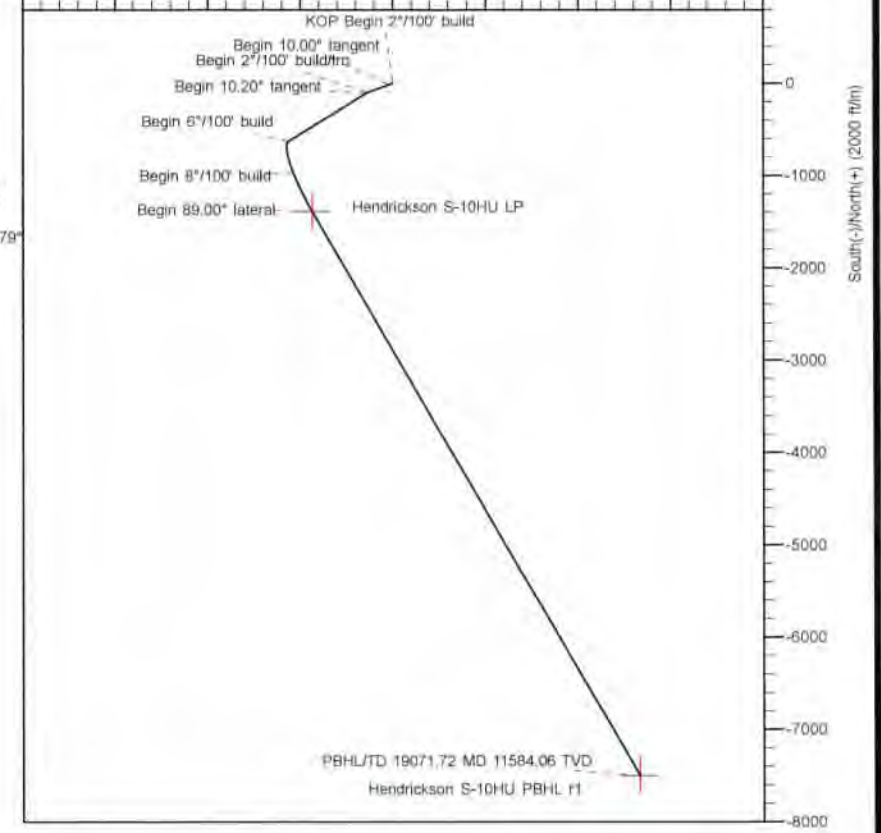
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SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSec	Annotation
1	0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	
2	3100.00	0.00	0.000	3100.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2'/100' build
3	3600.00	10.00	250.000	3597.47	-14.89	-40.90	2.00	250.00	0.35	Begin 10.00' tangent
4	5024.17	10.00	250.000	5000.00	-99.47	-273.29	0.00	0.00	2.36	Begin 2'/100' build/trn
5	5127.83	10.20	238.217	5102.06	-107.38	-289.55	2.00	-90.18	4.38	Begin 10.20' tangent
6	10696.84	10.20	238.217	10582.99	-627.02	-1128.20	0.00	0.00	213.67	Begin 6'/100' build
7	11512.46	50.00	158.520	11289.99	-977.33	-1071.74	8.00	-88.41	562.69	Begin 8'/100' build
8	12009.53	89.00	149.995	11461.00	-1386.24	-869.58	8.00	-13.40	1015.66	Begin 89.00' lateral
9	19071.72	89.00	149.995	11584.06	-7501.07	2661.47	0.00	0.00	7959.24	PBHL/TD

DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
Hendrickson S-10HU LP	11461.00	-1386.24	-869.58	4432546.887	1710397.526	39.741072690	-80.751051710
- plan misses target center by 0.01ft at 12009.52ft MD (11461.00 TVD, -1386.23 N, -869.58 E)							
Hendrickson S-10HU PBHL r1	11584.06	-7501.07	2661.47	4426432.070	1713928.577	39.724252000	-80.738554000
- plan hits target center							



4705102482



Planning Report - Geographic

Database:	DB_Feb2822	Local Co-ordinate Reference:	Well Hendrickson S-10 HU (slot I)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1220.00ft
Project:	Marshall County, West Virginia NAD83 UTM 17N	MD Reference:	GL @ 1220.00ft
Site:	Hendrickson	North Reference:	Grid
Well:	Hendrickson S-10 HU (slot I)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Project	Marshall County, West Virginia NAD83 UTM 17N		
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:	14,433,967.927 usft	Latitude:	39.744868530
From:	Lat/Long	Easting:	1,711,276.257 usft	Longitude:	-80.747911540
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "		

Well	Hendrickson S-10 HU (slot I)					
Well Position	+N/-S	0.00 ft	Northing:	14,433,933.120 usft	Latitude:	39.744873010
	+E/-W	0.00 ft	Easting:	1,711,267.107 usft	Longitude:	-80.747944440
Position Uncertainty	0.00 ft		Wellhead Elevation:	ft	Ground Level:	1,220.00 ft
Grid Convergence:						

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	10/17/2022	-8.63	66.38	51,591.28250627

Design	rev1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	160.465

Plan Survey Tool Program		Date		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	19,071.71	rev1 (Original Hole)	

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Planning Report - Geographic

Database:	DB_Feb2822	Local Co-ordinate Reference:	Well Hendrickson S-10 HU (slot I)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1220.00ft
Project:	Marshall County, West Virginia NAD83 UTM 17N	MD Reference:	GL @ 1220.00ft
Site:	Hendrickson	North Reference:	Grid
Well:	Hendrickson S-10 HU (slot I)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,100.00	0.00	0.000	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,600.00	10.00	250.000	3,597.47	-14.89	-40.90	2.00	2.00	0.00	250.00	
5,024.17	10.00	250.000	5,000.00	-99.47	-273.29	0.00	0.00	0.00	0.00	
5,127.83	10.20	238.217	5,102.06	-107.38	-289.55	2.00	0.20	-11.37	-90.18	
10,696.84	10.20	238.217	10,582.99	-627.02	-1,128.20	0.00	0.00	0.00	0.00	
11,512.46	50.00	158.520	11,289.99	-977.33	-1,071.74	6.00	4.88	-9.77	-88.41	
12,009.53	89.00	149.995	11,461.00	-1,386.24	-869.58	8.00	7.85	-1.71	-13.40	
19,071.72	89.00	149.995	11,584.06	-7,501.07	2,661.47	0.00	0.00	0.00	0.00	Hendrickson S-10HU

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Planning Report - Geographic

WV Department of
Environmental Protection

Database:	DE_Feb2822	Local Co-ordinate Reference:	Well Hendrickson S-10 HU (slot I)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1220.00ft
Project:	Marshall County, West Virginia NAD83 UTM 17N	MD Reference:	GL @ 1220.00ft
Site:	Hendrickson	North Reference:	Grid
Well:	Hendrickson S-10 HU (slot I)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.000	0.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
100.00	0.00	0.000	100.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
200.00	0.00	0.000	200.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
300.00	0.00	0.000	300.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
400.00	0.00	0.000	400.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
500.00	0.00	0.000	500.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
600.00	0.00	0.000	600.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
700.00	0.00	0.000	700.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
800.00	0.00	0.000	800.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
900.00	0.00	0.000	900.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
1,000.00	0.00	0.000	1,000.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
1,100.00	0.00	0.000	1,100.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
1,200.00	0.00	0.000	1,200.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
1,300.00	0.00	0.000	1,300.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
1,400.00	0.00	0.000	1,400.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
1,500.00	0.00	0.000	1,500.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
1,600.00	0.00	0.000	1,600.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
1,700.00	0.00	0.000	1,700.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
1,800.00	0.00	0.000	1,800.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
1,900.00	0.00	0.000	1,900.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
2,000.00	0.00	0.000	2,000.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
2,100.00	0.00	0.000	2,100.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
2,200.00	0.00	0.000	2,200.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
2,300.00	0.00	0.000	2,300.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
2,400.00	0.00	0.000	2,400.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
2,500.00	0.00	0.000	2,500.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
2,600.00	0.00	0.000	2,600.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
2,700.00	0.00	0.000	2,700.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
2,800.00	0.00	0.000	2,800.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
2,900.00	0.00	0.000	2,900.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
3,000.00	0.00	0.000	3,000.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
3,100.00	0.00	0.000	3,100.00	0.00	0.00	14,433,933.120	1,711,267.107	39.744873010	-80.747944440	
KOP Begin 2°/100' build										
3,200.00	2.00	250.000	3,199.96	-0.60	-1.64	14,433,932.523	1,711,265.467	39.744871384	-80.747950280	
3,300.00	4.00	250.000	3,299.84	-2.39	-6.56	14,433,930.733	1,711,260.549	39.744866506	-80.747967793	
3,400.00	6.00	250.000	3,399.45	-5.37	-14.75	14,433,927.753	1,711,252.360	39.744858383	-80.747996957	
3,500.00	8.00	250.000	3,498.70	-8.54	-26.20	14,433,923.585	1,711,240.909	39.744847025	-80.748037737	
3,600.00	10.00	250.000	3,597.47	-14.89	-40.90	14,433,918.235	1,711,226.208	39.744832446	-80.748090084	
Begin 10.00° tangent										
3,700.00	10.00	250.000	3,695.95	-20.62	-57.22	14,433,912.295	1,711,209.892	39.744816261	-80.748148194	
3,800.00	10.00	250.000	3,794.43	-26.76	-73.53	14,433,906.356	1,711,193.574	39.744800077	-80.748208303	
3,900.00	10.00	250.000	3,892.91	-32.70	-89.85	14,433,900.417	1,711,177.257	39.744783892	-80.748264413	
4,000.00	10.00	250.000	3,991.39	-38.64	-106.17	14,433,894.478	1,711,160.939	39.744767708	-80.748322523	
4,100.00	10.00	250.000	4,089.87	-44.58	-122.49	14,433,888.539	1,711,144.621	39.744751523	-80.748380632	
4,200.00	10.00	250.000	4,188.35	-50.52	-138.80	14,433,882.600	1,711,128.304	39.744735338	-80.748438742	
4,300.00	10.00	250.000	4,286.83	-56.46	-155.12	14,433,876.661	1,711,111.986	39.744719153	-80.748496851	
4,400.00	10.00	250.000	4,385.31	-62.40	-171.44	14,433,870.722	1,711,095.669	39.744702969	-80.748554961	
4,500.00	10.00	250.000	4,483.79	-68.34	-187.76	14,433,864.783	1,711,079.351	39.744686784	-80.748613070	
4,600.00	10.00	250.000	4,582.27	-74.28	-204.07	14,433,858.843	1,711,063.034	39.744670599	-80.748671180	
4,700.00	10.00	250.000	4,680.75	-80.22	-220.39	14,433,852.904	1,711,046.716	39.744654414	-80.748729289	
4,800.00	10.00	250.000	4,779.23	-86.16	-236.71	14,433,846.965	1,711,030.399	39.744638229	-80.748787399	
4,900.00	10.00	250.000	4,877.72	-92.09	-253.03	14,433,841.026	1,711,014.081	39.744622045	-80.748845508	
5,000.00	10.00	250.000	4,976.20	-98.03	-269.34	14,433,835.087	1,710,997.763	39.744605860	-80.748903618	

02/03/2023



Planning Report - Geographic

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Database:	DB_Feb2822	Local Co-ordinate Reference:	Well Hendrickson S-10 HU
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1220.00ft
Project:	Marshall County, West Virginia NAD83 UTM 17N	MD Reference:	GL @ 1220.00ft
Site:	Hendrickson	North Reference:	Grid
Well:	Hendrickson S-10 HU (slot I)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

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
5,024.17	10.00	250.000	5,000.00	-99.47	-273.29	14,433,833.651	1,710,993.819	39.744601948	-80.748917663
Begin 2°/100' build/trm									
5,100.00	10.11	241.327	5,074.67	-104.91	-285.31	14,433,828.207	1,710,981.793	39.744587087	-80.748960500
5,127.83	10.20	238.217	5,102.06	-107.38	-289.55	14,433,825.736	1,710,977.558	39.744580335	-80.748975602
Begin 10.20° tangent									
5,200.00	10.20	238.217	5,173.09	-114.12	-300.42	14,433,819.002	1,710,966.687	39.744561925	-80.749014333
5,300.00	10.20	238.217	5,271.51	-123.45	-315.48	14,433,809.671	1,710,951.628	39.744538416	-80.749067999
5,400.00	10.20	238.217	5,369.93	-132.78	-330.54	14,433,800.341	1,710,936.569	39.744510907	-80.749121685
5,500.00	10.20	238.217	5,468.35	-142.11	-345.60	14,433,791.010	1,710,921.510	39.744485397	-80.749175330
5,600.00	10.20	238.217	5,566.76	-151.44	-360.66	14,433,781.679	1,710,906.451	39.744459888	-80.749228996
5,700.00	10.20	238.217	5,665.18	-160.77	-375.72	14,433,772.348	1,710,891.392	39.744434379	-80.749282662
5,800.00	10.20	238.217	5,763.60	-170.10	-390.78	14,433,763.017	1,710,876.333	39.744408869	-80.749336328
5,900.00	10.20	238.217	5,862.02	-179.43	-405.83	14,433,753.687	1,710,861.274	39.744383360	-80.749389993
6,000.00	10.20	238.217	5,960.44	-188.76	-420.89	14,433,744.356	1,710,846.215	39.744357850	-80.749443659
6,100.00	10.20	238.217	6,058.86	-198.10	-435.95	14,433,735.025	1,710,831.156	39.744332341	-80.749497325
6,200.00	10.20	238.217	6,157.27	-207.43	-451.01	14,433,725.694	1,710,816.096	39.744306832	-80.749550990
6,300.00	10.20	238.217	6,255.69	-216.76	-466.07	14,433,716.363	1,710,801.037	39.744281322	-80.749604656
6,400.00	10.20	238.217	6,354.11	-226.09	-481.13	14,433,707.033	1,710,785.978	39.744255812	-80.749658321
6,500.00	10.20	238.217	6,452.53	-235.42	-496.19	14,433,697.702	1,710,770.919	39.744230303	-80.749711987
6,600.00	10.20	238.217	6,550.95	-244.75	-511.25	14,433,688.371	1,710,755.860	39.744204793	-80.749765652
6,700.00	10.20	238.217	6,649.37	-254.08	-526.31	14,433,679.040	1,710,740.801	39.744179284	-80.749819317
6,800.00	10.20	238.217	6,747.78	-263.41	-541.37	14,433,669.709	1,710,725.742	39.744153774	-80.749872983
6,900.00	10.20	238.217	6,846.20	-272.74	-556.43	14,433,660.379	1,710,710.683	39.744128264	-80.749926648
7,000.00	10.20	238.217	6,944.62	-282.07	-571.49	14,433,651.048	1,710,695.624	39.744102755	-80.749980313
7,100.00	10.20	238.217	7,043.04	-291.40	-586.54	14,433,641.717	1,710,680.565	39.744077245	-80.750033979
7,200.00	10.20	238.217	7,141.46	-300.73	-601.60	14,433,632.386	1,710,665.506	39.744051735	-80.750087644
7,300.00	10.20	238.217	7,239.88	-310.07	-616.66	14,433,623.055	1,710,650.447	39.744026225	-80.750141309
7,400.00	10.20	238.217	7,338.29	-319.40	-631.72	14,433,613.725	1,710,635.388	39.744000716	-80.750194974
7,500.00	10.20	238.217	7,436.71	-328.73	-646.78	14,433,604.394	1,710,620.329	39.743975206	-80.750248639
7,600.00	10.20	238.217	7,535.13	-338.06	-661.84	14,433,595.063	1,710,605.270	39.743949696	-80.750302304
7,700.00	10.20	238.217	7,633.55	-347.39	-676.90	14,433,585.732	1,710,590.211	39.743924186	-80.750355969
7,800.00	10.20	238.217	7,731.97	-356.72	-691.96	14,433,576.401	1,710,575.152	39.743898676	-80.750409634
7,900.00	10.20	238.217	7,830.39	-366.05	-707.02	14,433,567.070	1,710,560.092	39.743873166	-80.750463299
8,000.00	10.20	238.217	7,928.80	-375.38	-722.08	14,433,557.740	1,710,545.033	39.743847656	-80.750516964
8,100.00	10.20	238.217	8,027.22	-384.71	-737.13	14,433,548.409	1,710,529.974	39.743822146	-80.750570629
8,200.00	10.20	238.217	8,125.64	-394.04	-752.19	14,433,539.078	1,710,514.915	39.743796636	-80.750624293
8,300.00	10.20	238.217	8,224.06	-403.37	-767.25	14,433,529.747	1,710,499.856	39.743771126	-80.750677958
8,400.00	10.20	238.217	8,322.48	-412.70	-782.31	14,433,520.416	1,710,484.797	39.743745616	-80.750731623
8,500.00	10.20	238.217	8,420.90	-422.04	-797.37	14,433,511.086	1,710,469.738	39.743720106	-80.750785287
8,600.00	10.20	238.217	8,519.31	-431.37	-812.43	14,433,501.755	1,710,454.679	39.743694596	-80.750838952
8,700.00	10.20	238.217	8,617.73	-440.70	-827.49	14,433,492.424	1,710,439.620	39.743669086	-80.750892617
8,800.00	10.20	238.217	8,716.15	-450.03	-842.55	14,433,483.093	1,710,424.561	39.743643576	-80.750946281
8,900.00	10.20	238.217	8,814.57	-459.36	-857.61	14,433,473.762	1,710,409.502	39.743618066	-80.750999946
9,000.00	10.20	238.217	8,912.99	-468.69	-872.67	14,433,464.432	1,710,394.443	39.743592556	-80.751053610
9,100.00	10.20	238.217	9,011.40	-478.02	-887.73	14,433,455.101	1,710,379.384	39.743567045	-80.751107275
9,200.00	10.20	238.217	9,109.82	-487.35	-902.78	14,433,445.770	1,710,364.325	39.743541535	-80.751160939
9,300.00	10.20	238.217	9,208.24	-496.68	-917.84	14,433,436.439	1,710,349.266	39.743516025	-80.751214603
9,400.00	10.20	238.217	9,306.66	-506.01	-932.90	14,433,427.108	1,710,334.207	39.743490514	-80.751268268
9,500.00	10.20	238.217	9,405.08	-515.34	-947.96	14,433,417.778	1,710,319.148	39.743465004	-80.751321932
9,600.00	10.20	238.217	9,503.50	-524.67	-963.02	14,433,408.447	1,710,304.088	39.743439494	-80.751375596
9,700.00	10.20	238.217	9,601.91	-534.01	-978.08	14,433,399.116	1,710,289.029	39.743413983	-80.751429260
9,800.00	10.20	238.217	9,700.33	-543.34	-993.14	14,433,389.785	1,710,273.970	39.743388473	-80.751482924
9,900.00	10.20	238.217	9,798.75	-552.67	-1,008.20	14,433,380.454	1,710,258.911	39.743362962	-80.751536588

02/03/2023

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Planning Report - Geographic

WV Department of
Environmental Protection

Database:	DB_Feb2822	Local Co-ordinate Reference:	Well Hendrickson S-10 HU (slot I)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1220.00ft
Project:	Marshall County, West Virginia NAD83 UTM 17N	MD Reference:	GL @ 1220.00ft
Site:	Hendrickson	North Reference:	Grid
Well:	Hendrickson S-10 HU (slot I)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,000.00	10.20	238.217	9,897.17	-562.00	-1,023.26	14,433,371.124	1,710,243.852	39.743337452	-80.751590253
10,100.00	10.20	238.217	9,995.59	-571.33	-1,038.32	14,433,361.793	1,710,228.793	39.743331942	-80.751643917
10,200.00	10.20	238.217	10,094.01	-580.66	-1,053.38	14,433,352.462	1,710,213.734	39.743286431	-80.751697581
10,300.00	10.20	238.217	10,192.42	-589.99	-1,068.43	14,433,343.131	1,710,198.675	39.743260921	-80.751751244
10,400.00	10.20	238.217	10,290.84	-599.32	-1,083.49	14,433,333.800	1,710,183.616	39.743235410	-80.751804908
10,500.00	10.20	238.217	10,389.26	-608.65	-1,098.55	14,433,324.469	1,710,168.557	39.743209899	-80.751858572
10,600.00	10.20	238.217	10,487.68	-617.98	-1,113.61	14,433,315.139	1,710,153.498	39.743184389	-80.751912236
10,696.84	10.20	238.217	10,582.99	-627.02	-1,128.20	14,433,306.102	1,710,138.914	39.743159663	-80.751964206
Begin 6"/100' build									
10,700.00	10.21	237.149	10,586.10	-627.32	-1,128.67	14,433,305.803	1,710,138.441	39.743158866	-80.751968991
10,750.00	10.77	220.903	10,635.27	-633.25	-1,135.45	14,433,299.867	1,710,131.658	39.743142614	-80.751990082
10,800.00	12.06	207.176	10,684.29	-641.44	-1,140.90	14,433,291.686	1,710,126.211	39.743120188	-80.752009538
10,850.00	13.89	196.530	10,733.02	-651.84	-1,144.99	14,433,281.282	1,710,122.116	39.743091648	-80.752024207
10,900.00	16.08	188.509	10,781.32	-664.44	-1,147.72	14,433,268.665	1,710,119.385	39.743057073	-80.752034048
10,950.00	16.47	182.439	10,829.07	-679.19	-1,149.09	14,433,253.929	1,710,116.024	39.743016558	-80.752039035
11,000.00	21.02	177.759	10,876.13	-696.07	-1,149.07	14,433,237.053	1,710,118.038	39.742970214	-80.752039152
11,050.00	23.67	174.069	10,922.37	-715.02	-1,147.68	14,433,218.106	1,710,119.426	39.742918167	-80.752034401
11,100.00	26.40	171.093	10,967.68	-735.98	-1,144.92	14,433,197.137	1,710,122.184	39.742860561	-80.752024794
11,150.00	29.17	168.641	11,011.91	-758.92	-1,140.80	14,433,174.206	1,710,126.306	39.742797553	-80.752010357
11,200.00	31.98	166.584	11,054.95	-783.75	-1,135.33	14,433,149.374	1,710,131.779	39.742729317	-80.751991131
11,250.00	34.82	164.828	11,096.69	-810.41	-1,128.52	14,433,122.710	1,710,138.599	39.742656038	-80.751967167
11,300.00	37.68	163.306	11,137.01	-838.83	-1,120.39	14,433,094.287	1,710,146.717	39.742577918	-80.751938532
11,350.00	40.56	161.970	11,175.80	-868.94	-1,110.97	14,433,064.163	1,710,156.141	39.742495172	-80.751905304
11,400.00	43.46	160.783	11,212.94	-900.64	-1,100.27	14,433,032.480	1,710,166.835	39.742408025	-80.751867574
11,450.00	46.36	159.716	11,248.35	-933.86	-1,088.34	14,432,999.265	1,710,178.769	39.742316717	-80.751825448
11,500.00	49.27	158.748	11,281.92	-968.49	-1,075.20	14,432,964.630	1,710,191.912	39.742221498	-80.751779035
11,512.46	50.00	158.520	11,289.99	-977.33	-1,071.74	14,432,955.792	1,710,195.369	39.742197200	-80.751766822
Begin 8"/100' build									
11,550.00	52.93	157.848	11,313.38	-1,004.57	-1,060.78	14,432,928.552	1,710,208.333	39.742122307	-80.751728086
11,600.00	56.83	156.586	11,342.14	-1,042.24	-1,044.87	14,432,890.886	1,710,222.241	39.742018745	-80.751671868
11,650.00	60.74	155.614	11,368.05	-1,081.32	-1,027.54	14,432,851.802	1,710,239.569	39.741911277	-80.751610612
11,700.00	64.66	154.715	11,390.97	-1,121.63	-1,008.88	14,432,811.491	1,710,258.232	39.741800428	-80.751544615
11,750.00	68.59	153.871	11,410.81	-1,162.97	-988.97	14,432,770.146	1,710,278.141	39.741686738	-80.751474200
11,800.00	72.51	153.072	11,427.45	-1,205.15	-967.91	14,432,727.976	1,710,299.196	39.741570760	-80.751399710
11,850.00	76.45	152.307	11,440.83	-1,247.94	-945.81	14,432,685.179	1,710,321.300	39.741453059	-80.751321507
11,900.00	80.38	151.567	11,450.87	-1,291.16	-922.77	14,432,641.966	1,710,344.340	39.741334209	-80.751239973
11,950.00	84.32	150.844	11,457.53	-1,334.57	-898.90	14,432,598.548	1,710,368.205	39.741214789	-80.751155504
12,000.00	88.25	150.131	11,460.77	-1,377.99	-874.33	14,432,555.137	1,710,392.780	39.741095381	-80.751068513
12,009.53	89.00	149.995	11,461.00	-1,386.24	-869.58	14,432,546.885	1,710,397.532	39.741072683	-80.751051689
Begin 89.00' lateral									
12,100.00	89.00	149.995	11,462.57	-1,464.58	-824.34	14,432,468.547	1,710,442.768	39.740857189	-80.750891541
12,200.00	89.00	149.995	11,464.32	-1,551.16	-774.34	14,432,381.862	1,710,492.768	39.740619029	-80.750714534
12,300.00	89.00	149.995	11,466.06	-1,637.75	-724.34	14,432,295.376	1,710,542.767	39.740380859	-80.750537528
12,400.00	89.00	149.995	11,467.80	-1,724.33	-674.34	14,432,208.791	1,710,592.766	39.740142689	-80.750360523
12,500.00	89.00	149.995	11,469.54	-1,810.92	-624.34	14,432,122.205	1,710,642.765	39.739904518	-80.750183519
12,600.00	89.00	149.995	11,471.29	-1,897.50	-574.34	14,432,035.620	1,710,692.765	39.739666347	-80.750006517
12,700.00	89.00	149.995	11,473.03	-1,984.09	-524.34	14,431,949.035	1,710,742.764	39.739428176	-80.749829518
12,800.00	89.00	149.995	11,474.77	-2,070.67	-474.34	14,431,862.450	1,710,792.763	39.739190004	-80.749652516
12,900.00	89.00	149.995	11,476.51	-2,157.26	-424.35	14,431,775.865	1,710,842.762	39.738951832	-80.749475517
13,000.00	89.00	149.995	11,478.26	-2,243.84	-374.35	14,431,689.279	1,710,892.762	39.738713660	-80.749298519
13,100.00	89.00	149.995	11,480.00	-2,330.43	-324.35	14,431,602.694	1,710,942.761	39.738475487	-80.749121523
13,200.00	89.00	149.995	11,481.74	-2,417.02	-274.35	14,431,516.109	1,710,992.760	39.738237316	-80.748944528
13,300.00	89.00	149.995	11,483.48	-2,503.60	-224.35	14,431,429.524	1,711,042.759	39.737999142	-80.748767534



Planning Report - Geographic

02/23/2023 RECEIVED Office of Oil and Gas

4705102482

DEC 18 2022 WV Department of Environmental Protection

Database: DB_Feb2822
Company: Tug Hill Operating LLC
Project: Marshall County, West Virginia NAD83 UTM 17N
Site: Hendrickson
Well: Hendrickson S-10 HU (slot I)
Wellbore: Original Hole
Design: rev1

Local Co-ordinate Reference: Well Hendrickson S-10 HU (slot I)
TVD Reference: GL @ 1220.00ft
MD Reference: GL @ 1220.00ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Table with 10 columns: Measured Depth (ft), Inclination (°), Azimuth (°), Vertical Depth (ft), +N-S (ft), +E-W (ft), Map Northing (usft), Map Easting (usft), Latitude, Longitude. Contains 40 rows of survey data.

02/03/2023



Planning Report - Geographic

4705102482 02/23/2023

Database:	DB_Feb2822	Local Co-ordinate Reference:	Well Hendrickson S-10 HU (slot I)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1220.00ft
Project:	Marshall County, West Virginia NAD83 UTM 17N	MD Reference:	GL @ 1220.00ft
Site:	Hendrickson	North Reference:	Grid
Well:	Hendrickson S-10 HU (slot I)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
18,800.00	89.00	149.995	11,579.33	-7,265.80	2,525.62	14,426,867.338	1,713,792.719	39.724899205	-80.739034739
18,900.00	89.00	149.995	11,581.07	-7,352.38	2,575.62	14,426,580.753	1,713,842.718	39.724661016	-80.738857813
19,000.00	89.00	149.995	11,582.81	-7,438.97	2,625.62	14,426,494.167	1,713,892.717	39.724422828	-80.738680889
19,071.72	89.00	149.995	11,584.06	-7,501.07	2,661.47	14,426,432.069	1,713,928.576	39.724252000	-80.738554000
PBHL/TD 19071.72 MD 11584.06 TVD									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Hendrickson S-10HU LP - hit/miss target - Shape	0.00	0.000	11,461.00	-1,386.24	-869.58	14,432,546.888	1,710,397.526	39.741072690	-80.751051710
- plan misses target center by 0.01ft at 12009.52ft MD (11461.00 TVD, -1386.23 N, -869.58 E)									
- Point									
Hendrickson S-10HU PE - plan hits target center - Point	0.00	0.000	11,584.06	-7,501.07	2,661.47	14,426,432.069	1,713,928.576	39.724252000	-80.738554000

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
3,100.00	3,100.00	0.00	0.00	KOP Begin 2°/100' build
3,600.00	3,597.47	-14.89	-40.90	Begin 10.00° tangent
5,024.17	5,000.00	-99.47	-273.29	Begin 2°/100' build/trm
5,127.83	5,102.06	-107.38	-289.55	Begin 10.20° tangent
10,696.84	10,582.99	-627.02	-1,128.20	Begin 6°/100' build
11,512.46	11,289.99	-977.33	-1,071.74	Begin 8°/100' build
12,009.53	11,461.00	-1,386.24	-869.58	Begin 89.00° lateral
19,071.72	11,584.06	-7,501.07	2,661.47	PBHL/TD 19071.72 MD 11584.06 TVD

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WW-9
(4/16)

4705102102 02/23/2023

API Number 47 - 051 -
Operator's Well No. Hendrickson S-10HU

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? Weston County Sanitary Landfill (DWF-1021 | WV010818) and Westwood Sanitary Landfill, LLC (SAF-1021 | PA DEP EOP138426) | Council Valley Landfill (100416)

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

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

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

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

Subscribed and sworn before me this 5th day of December, 2022

Susanne Deliere Notary Public

My commission expires 1/15/2025

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

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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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: [Signature] STRADER GOWER 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

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.

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.

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

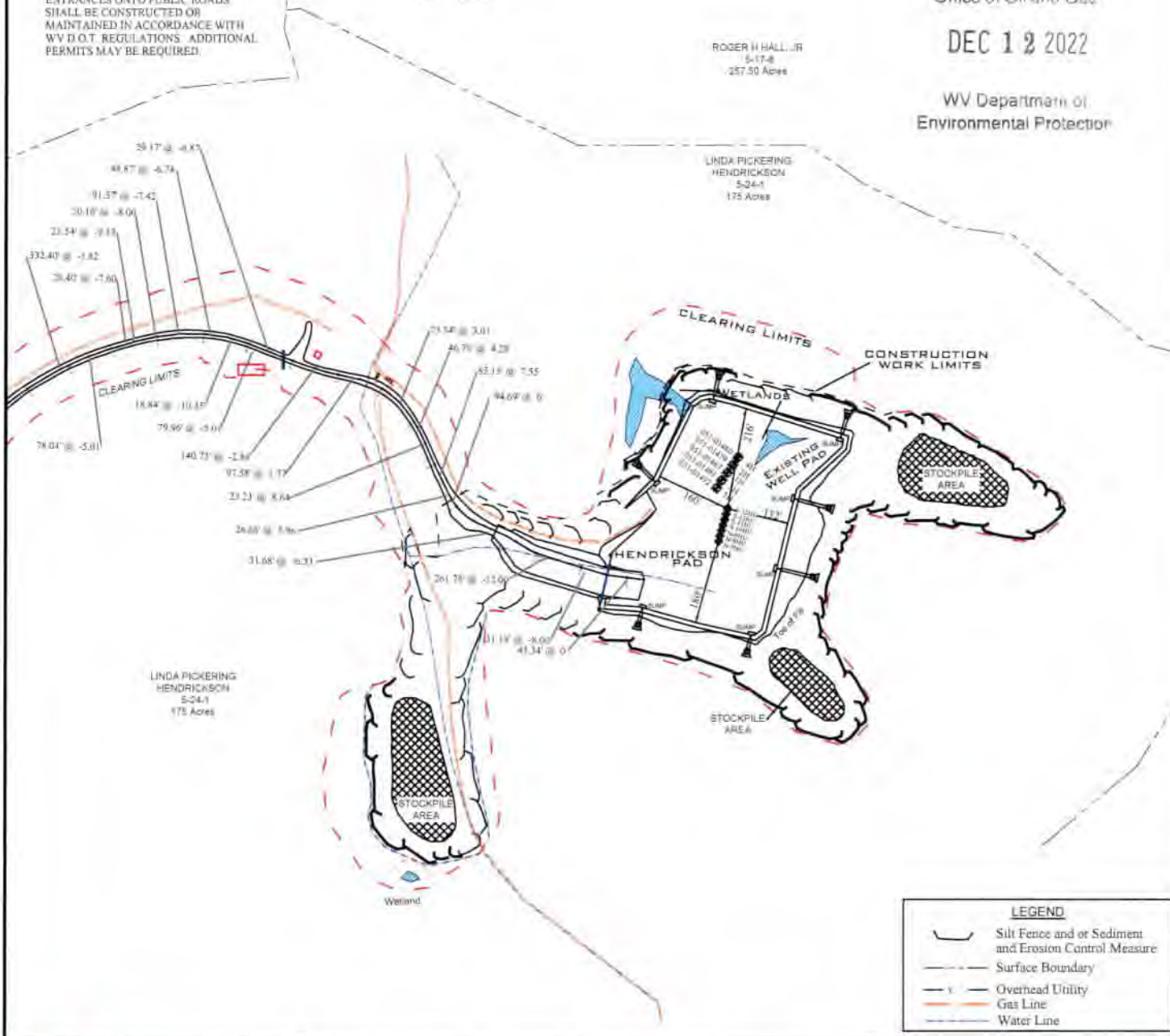
ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED.



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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.
5413 E. Pike St.
Ste. 112
Charleston, WV 25301
Phone: 304-623-6801

TOPO SECTION:	
WILEYVILLE 75	
COUNTY	DISTRICT
MARSHALL	FRANKLIN
DRAWN BY	JOB NO.
J.D.C.	494510851

OPERATOR:	
PREPARED FOR:	
TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANDONSBURG, PA 15311	
DATE	SCALE
11-03-2022	NONE



WW-9

PROPOSED HENDRICKSON PAD

SUPPLEMENT PG 1

Page 2 of 3

REFERENCE IS HEREBY MADE TO THE WV D.E.P. OFFICE OF OIL & GAS, "EROSION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BMPs FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES AND THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION TO THE INSPECTOR AND THE OPERATOR SHOULD THESE CONDITIONS OCCUR.

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

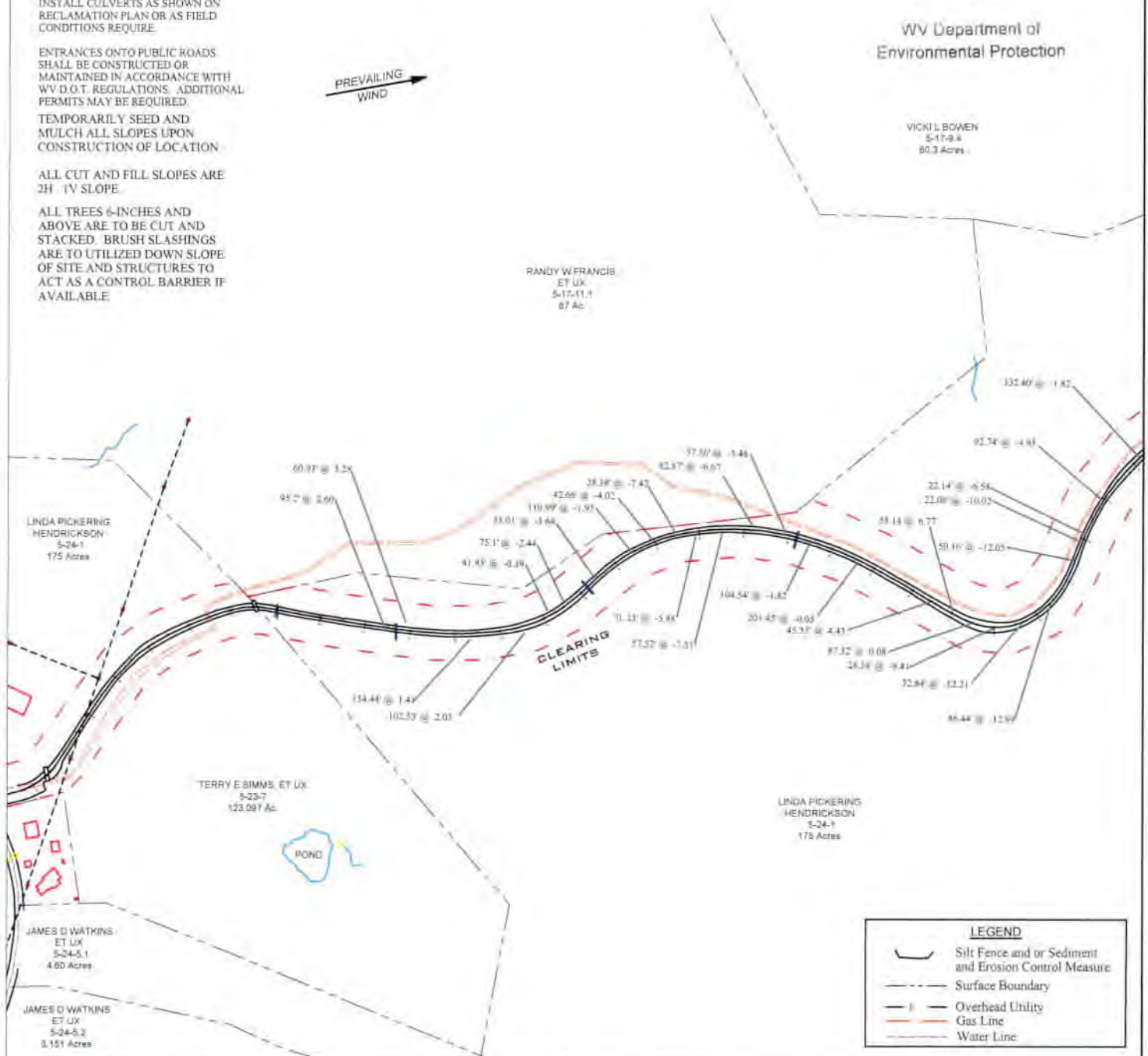
ALL TREES 6-INCHES AND ABOVE ARE TO BE CUT AND STACKED. BRUSH SLASHINGS ARE TO UTILIZED DOWN SLOPE OF SITE AND STRUCTURES TO ACT AS A CONTROL BARRIER IF AVAILABLE.

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VICKI L. BOWEN
5-17-9-4
80.2 Acres

RANDY W. FRANCIS
ET UX
5-17-11.1
87 Ac



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
Charlottesville, VA 22901
Phone: 504-623-6801

TOPO SECTION:		OPERATOR:	
WILEYVILLE 75		TUG HILL OPERATING, L.L.C.	
COUNTY	DISTRICT	PREPARED FOR:	
MARSHALL	FRANKLIN	TUG HILL OPERATING, L.L.C.	
DRAWN BY	JOB NO	DATE	SCALE
J.D.C.	494510851	11-03-2022	NONE

TUG HILL OPERATING

WW-9

PROPOSED HENDRICKSON PAD

SUPPLEMENT PG 1

Page 3 of 3

REFERENCE IS HEREBY MADE TO THE WV D.E.P. OFFICE OF OIL & GAS "EROSION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BMPs FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES AND THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION TO THE INSPECTOR AND THE OPERATOR SHOULD THESE CONDITIONS OCCUR.

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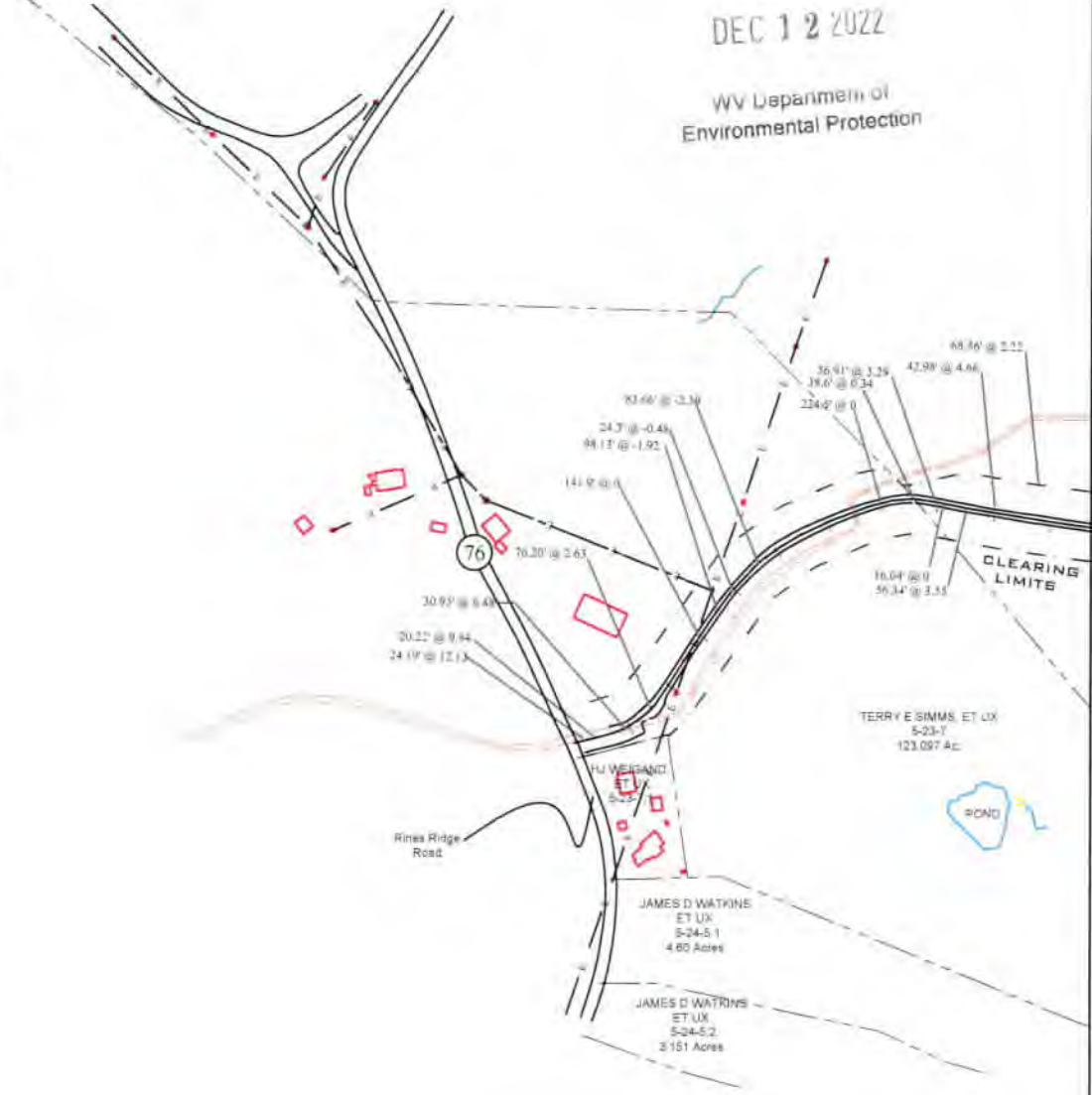
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 DEC 12 2022
 WV Department of Environmental Protection



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

Jackson Surveying Inc.
 3412 E. Pike St.
 Ste. 112
 Clarksburg, WV 26301
 Phone: 304-422-5801

TOPO SECTION	
POWRATAN POINT 75'	
COUNTY	DISTRICT
MARSHALL	FRANKLIN
DRAWN BY	JOB NO.
JDC	494510851

OPERATOR	
PREPARED FOR:	
TUG HILL OPERATING, LLC 380 SOUTHBRIDGE BLVD SUITE 208 CANONSBURG, PA 15317	
DATE	SCALE
11-03-2022	NONE

TUG HILL OPERATING

02/23/2023

4705102402



TUG HILL
OPERATING

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

Well Name: Hendrickson S-10HU

Pad Name: Hendrickson

County: Marshall

UTM (meters), NAD83, Zone 17

Northing: 4,399,471.61

Easting: 521,595.26

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DEC 12 2022

WV Department of
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

4705102492

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02/23/2023

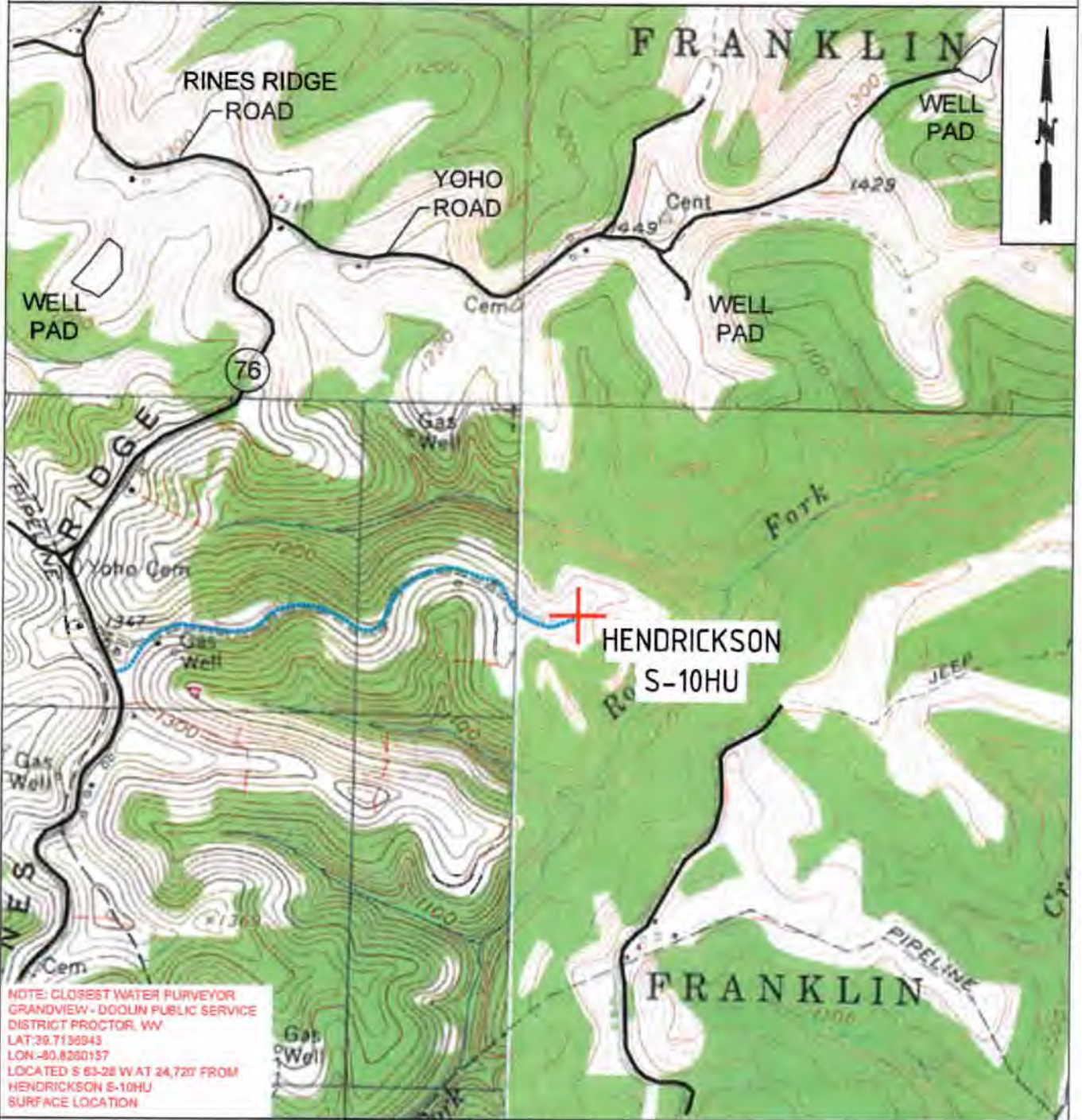
DEC 12 2022

WW-9

PROPOSED HENDRICKSON S-10HU

SUPPLEMENT PG 2

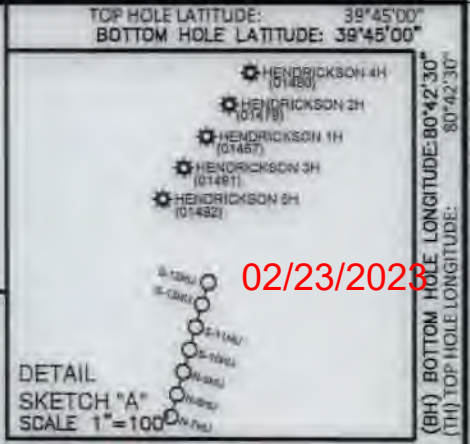
WV Department of
Environmental Protection



 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: 1" = 2000'	DATE: DATE: 11-02-2022

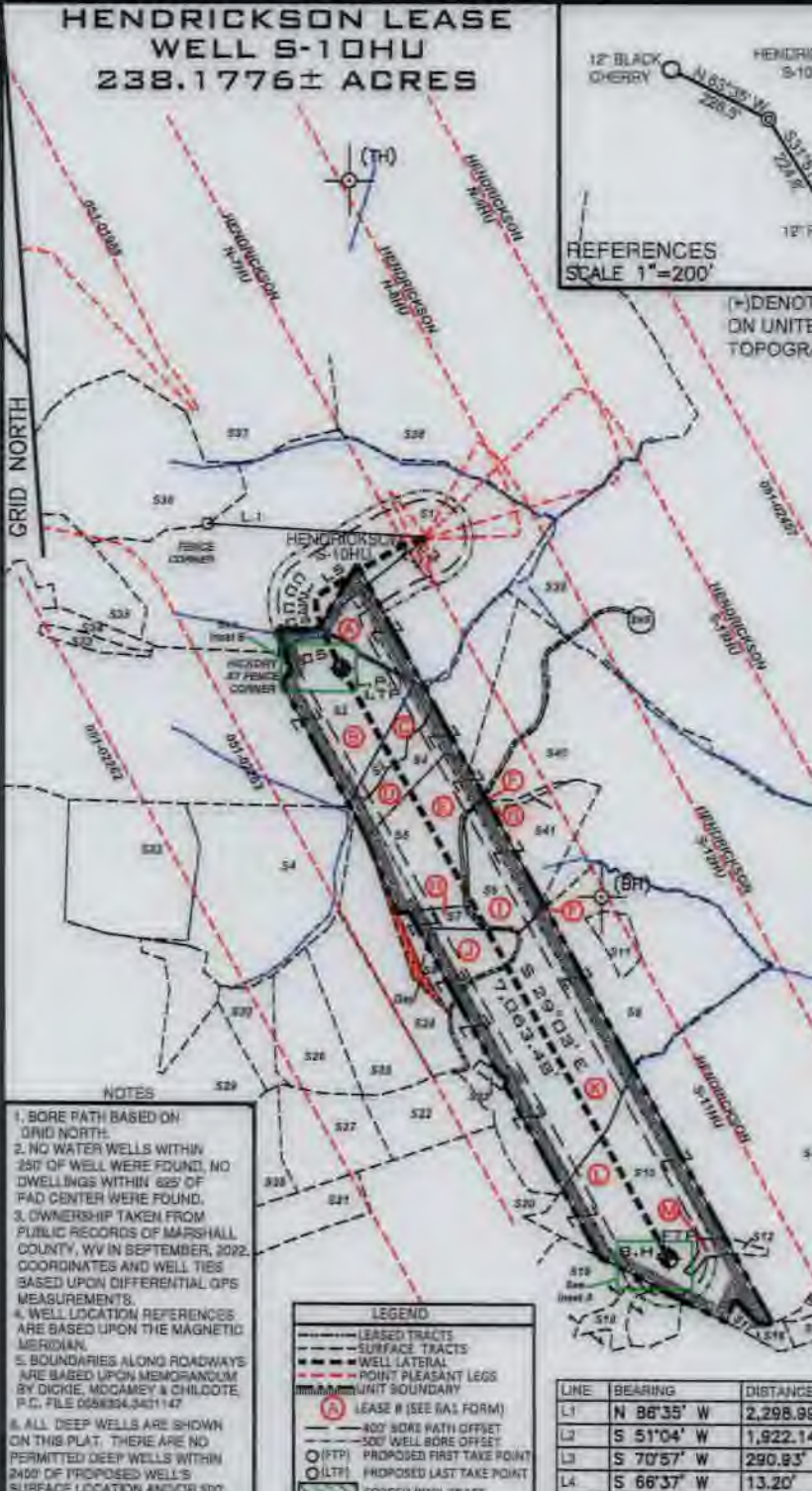
02/03/2023

**HENDRICKSON LEASE
WELL S-10HU
238.1776± ACRES**



REFERENCES
SCALE 1"=200'
(-)-DENOTES LOCATION ON UNITED STATES TOPOGRAPHIC MAPS

02/23/2023



- NOTES**
1. BORE PATH BASED ON GRID NORTH.
 2. NO WATER WELLS WITHIN 250' OF WELL WERE FOUND, NO DWELLINGS WITHIN 625' OF PAD CENTER WERE FOUND.
 3. OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN SEPTEMBER, 2022. COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
 4. WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.
 5. BOUNDARIES ALONG ROADWAYS ARE BASED UPON MEMORANDUM BY DICKIE, MCGAMEY & CHILCOTE, P.C. FILE 0058354.3431147
 6. ALL DEEP WELLS ARE SHOWN ON THIS PLAT. THERE ARE NO PERMITTED DEEP WELLS WITHIN 2400' OF PROPOSED WELLS SURFACE LOCATION AND/OR 300' OF THE WELL LATERAL.

LEGEND

- LEASE TRACTS
- SURFACE TRACTS
- WELL LATERAL
- POINT PLEASANT LEGS
- UNIT BOUNDARY
- (A) LEASE # (SEE RA3 FORM)
- 300' BORE PATH OFFSET
- 500' WELL BORE OFFSET
- (P) PROPOSED FIRST TAKE POINT
- (LTP) PROPOSED LAST TAKE POINT
- FORCED POOL TRACT

LINE	BEARING	DISTANCE	CURVE	CHORD BEARING	CHORD LENGTH	RADIUS	ARC LENGTH
L1	N 86°35' W	2,298.99'	C1	S 35°03' W	29.96'	43.60'	30.60'
L2	S 51°04' W	1,922.14'	C2	S 06°14' W	44.43'	149.23'	44.60'
L3	S 70°57' W	290.93'	C3	S 09°14' E	116.21'	509.39'	116.48'
L4	S 66°37' W	13.20'	C4	S 18°17' E	205.71'	1816.86'	205.85'
L5	S 59°11' W	991.82'	C5	S 29°39' E	427.03'	3066.96'	427.37'

SURFACE HOLE
UTM. NAD83, ZONE 17
IN METERS
N) 4,399,471.61
E) 521,595.26

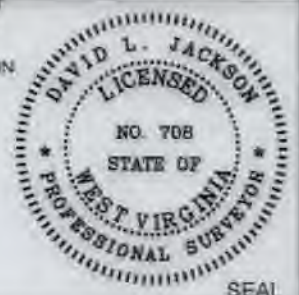
LANDING POINT 1
UTM. NAD83, ZONE 17
IN METERS
N) 4,399,049.09
E) 521,330.21

BOTTOM HOLE
UTM. NAD83, ZONE 17
IN METERS
N) 4,397,185.29
E) 522,406.48

FILE NUMBER _____
DRAWING NUMBER HENDRICKSON_S-10HU_REV1
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



JACKSON SURVEYING INC.
P.O. Box 1460
Clarksburg, WV 26302
304-623-5851

WVDEP
OFFICE OF OIL & GAS
601 5TH STREET, SE
CHARLESTON, WV 25304

DATE: DECEMBER 08, 2022
OPERATORS WELL NO HENDRICKSON S-10HU
API WELL NO. 47-051-02482 Deep
STATE COUNTY PERMIT

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP X SHALLOW ___
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 X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___
PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE (SPECIFY) _____
PLUG & ABANDON ___ CLEAN OUT & REPLUG ___
TARGET FORMATION POINT PLEASANT ESTIMATED DEPTH TVD: 11,678' TMD: 19,072'
WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DARREN BROWN, CT CORP
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5098 WASHINGTON STREET WEST, SUITE 407
FORT WORTH, TX 76107 CHARLESTON, WV 25313-1561

02/03/2023

COUNTY NAME
PERMIT

form wv6

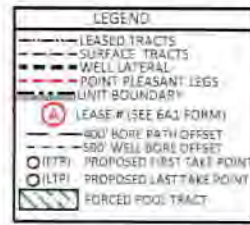
**HENDRICKSON LEASE
WELL S-10HU
238.1776 ACRES**

02/23/2023

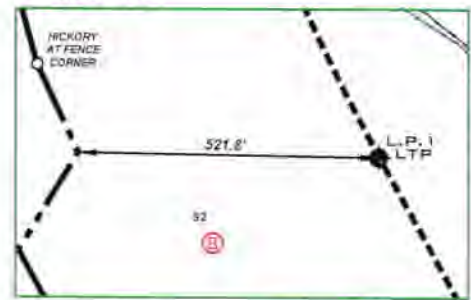
Parcels w/In Unit Boundary				
Tags	Number	Tax Map -Parcel	Surface Owner	Acres
A	S1	05-24-1	LINDA L PICKERING HENDRICKSON	175
B	S2	05-24-5	ROBERT C FRANCIS ET UX (LIFE)	145.78
C	S3	05-25-21	TERRY E SIMMS, ET UX	7
D	S4	05-24-4	TERRY E SIMMS, ET UX	84.05
E	S5	05-24-3.2	TH EXPLORATION II, LLC	49
F	S40	05-24-3.3	CHARLES E & DEBRA K BERTRAND	120.43
G	S41	05-24-3.4	CHARLES E & DEBRA K BERTRAND	1.27
H	S7	05-24-3.1	TH EXPLORATION II, LLC	5.50
I	S6	05-24-3	CHARLES E & DEBRA K BERTRAND	30.914
J	S8	05-25-2.2	JOHN G KLUG, SR	10
K	S9	05-25-2	JAMES W KLUG	122.3
L	S10	05-25-3	SD & SUSAN SMITH FERTITTA	181.548
M	S12	05-25-3.1	SD & SUSAN SMITH FERTITTA	3,022

Adjoining Parcels Ownership Table				
Number	Tax Map -Parcel	Surface Owner	Acres	
S11	05-25-2.3	KELSEY E KLUG	5	
S13	05-25-5	TERRY L & TAMMY J KIRKLAND AS TRUSTEES OF THE TERRY & TAMMY KIRKLAND LIVING TRUST	1.12	
S14	05-25-06	TERRY L & TAMMY J KIRKLAND AS TRUSTEES OF THE TERRY & TAMMY KIRKLAND LIVING TRUST	3	
S15	12-3-41.1	TERRY L & TAMMY J KIRKLAND AS TRUSTEES OF THE TERRY & TAMMY KIRKLAND LIVING TRUST	74.138	
S16	05-25-4	TERRY L & TAMMY J KIRKLAND AS TRUSTEES OF THE TERRY & TAMMY KIRKLAND LIVING TRUST	5	
S17	05-10-18	JOHN & RENEE HART REVOCABLE LIVING TRUST	2	
S18	05-25-10.1	TERRY L & TAMMY I KIRKLAND AS TRUSTEES OF THE TERRY & TAMMY KIRKLAND LIVING TRUST	5,250	
S19	05-25-10	TERRY L & TAMMY J KIRKLAND AS TRUSTEES OF THE TERRY & TAMMY KIRKLAND LIVING TRUST	18.75	
S20	05-25-12	MARION PARSONS JR, ET AL	85.16	
S21	05-25-12.1	KENT & BETTY MASON	15	
S22	05-25-13.3	WILLIAM M SR & CYNTHIA A FERDA	17.21	
S23	05-25-2.1	NANCY JACKSON	1	
S24	05-25-1.4	SAMANTHA J & PHILIP A NAMLIK	24.44	
S25	05-25-1.3	PHILIP A & SAMANTHA J NAMLIK	26.20	
S26	05-25-1.2	WILLIAM JR & ANDREA J DUBIEL	20.10	
S27	05-25-1.5	RYAN J BRATTON	21.35	
S28	05-25-13	WILLIAM M FERDA JR & STEPHANIE L PALICKA	16.014	
S29	05-25-1	MICHAEL L MASON	35.43	
S30	05-25-1.1	RYAN A & JACQUELINE E LAYMAN	9.79	
S32	05-24-6	TERRY E SIMMS, ET UX	42.84	
S33	05-24-5.2	JAMES D WATKINS ET UX	3.151	
S34	05-24-5.1	JAMES D WATKINS ET UX	4.60	
S35	05-23-7	TERRY E SIMMS, ET UX	123.097	
S36	05-17-11.1	RANDY W FRANCIS ET UX	67	
S37	05-17-9.4	VICKI L BOWEN HRS	60.3	
S38	05-17-8	ROGER H HALL, JR	257.50	
S39	05-24-2	ROY FRIEND YOHO	316.80	
S42	09-22-1.1	CNG TRANSMISSION CO	1.43	
S43	09-20-4	SHELLIE J PEKULA, HRS	171	
S44	9-22-1	LOUIS T FOX	124.57	
S45	05-25-3.2	CONSOL ENERGY HOLDINGS, LLC	1.43	
S46	09-22-02	MARK HI MILLER, ET AL	124.80	

INSET A



INSET B



Note: LPT and LTP are the same point.



P.S. 708

David L Jackson

Lease ID	TMP	Tag	Grantor, Lessor, Etc.	Book	Page
10*14138	5-24-1	A	LINDA AND DONALD HENDRICKSON	666	528
10*14797	5-24-5	B	ORVILLE YOUNG, ET AL	800	598
10*19903	5-25-21	C	PAUL F HAMMERS, ET AL	948	236
10*14462	5-24-4	D	JERRY ELDON RICHMOND, ET AL	744	57
10*14068	5-24-3.2	E	ROHN JEAN MARTIN, ET AL	666	552
10*14068	5-24-3.3	F	ROHN JEAN MARTIN, ET AL	666	552
10*14068	5-24-3.4	G	ROHN JEAN MARTIN, ET AL	666	552
10*14068	5-24-3.1	H	ROHN JEAN MARTIN, ET AL	666	552
10*14068	5-24-3	I	ROHN JEAN MARTIN, ET AL	666	552
10*14525	5-25-2.2	J	IMA LEE YOHO	757	192
10*14525	5-25-2	K	IMA LEE YOHO	757	192
10*14524	5-25-3	L	IMA LEE YOHO	757	194
10*14524	5-25-3.1	M	IMA LEE YOHO	757	194

02/03/2023



**TUG HILL
OPERATING**

OPERATOR'S
WELL #: Hendrickson S-10HU
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV
API #: 47-051-02482

WELL PLAT
PAGE 2 OF 2
DATE: 12/08/2022

**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	Book	Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*14138	5-24-1	A	LINDA AND DONALD HENDRICKSON	TRIENERGY, INC.	1/8+	666	528	TriEnergy Inc to AB Resources LLC: 20/348	AB Resources LLC to Chief Expl. & Devt. LLC & Radler 2000 Ltd Partnership: 21/491	Chief Expl & Devt. LLC & Radler 2000 Ltd Partnership to Enerpius Resources (USA) Corp: 685/643	AB Resources, LLC, Chief Expl. & Devt., LLC & Radler 2000 to Gastar Expl. USA, Inc & Atinum Marcellus I LLC: 24/39	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*14797	5-24-5	B	ORVILLE YOUNG, ET AL	GASTAR EXPLORATION USA INC	1/8+	800	598	N/A	N/A	N/A	N/A	Merger - Gastar Exploration USA Inc to Gastar Exploration Inc: 21/41	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 806/1	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
10*14817	5-24-5	B	DONNA V YOHO	GASTAR EXPLORATION INC	1/8+	874	351	N/A	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 35/144	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
10*14818	5-24-5	B	DEWEY A MILICIA	GASTAR EXPLORATION INC	1/8+	875	591	N/A	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 35/144	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
10*14819	5-24-5	B	NICOLETTA MILICIA BLOODWORTH	GASTAR EXPLORATION INC	1/8+	875	593	N/A	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 35/144	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
10*14820	5-24-5	B	DANA MILICIA HUMPHREYS	GASTAR EXPLORATION INC	1/8+	875	595	N/A	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 35/144	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
10*14821	5-24-5	B	JANICE N HAUDENSCHILT	GASTAR EXPLORATION INC	1/8+	875	597	N/A	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 35/144	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
10*14822	5-24-5	B	ONWARD E BURGE TRUST STEPHEN W BURGE AS TRUST	GASTAR EXPLORATION INC	1/8+	876	463	N/A	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 35/144	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
10*14823	5-24-5	B	SARAH I BURGE TRUST STEPHEN W BURGE AS TRUSTEE	GASTAR EXPLORATION INC	1/8+	876	459	N/A	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 35/144	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
10*18275	5-24-5	B	BETTY JEAN NEELY	TH EXPLORATION LLC	1/8+	929	60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18366	5-24-5	B	MARY LOU WILSON AND STANLEY D WILSON MICHAEL	TH EXPLORATION LLC	1/8+	931	311	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18369	5-24-5	B	CRAIG ALAN YOHO AND DONNA M YOHO	TH EXPLORATION LLC	1/8+	931	303	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18370	5-24-5	B	SAMUEL D YOHO	TH EXPLORATION LLC	1/8+	931	300	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

10*18379	5-24-5	B	DAVID N DEVICK TRUSTEE OF THE TONI JO MASON LIVIN	TH EXPLORATION LLC	1/8+	932	439	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19540	5-24-5	B	ERICA M MASON	TH EXPLORATION LLC	1/8+	942	53	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*23325	5-24-5	B	BRADLEY W YOHO	TH EXPLORATION LLC	1/8+	966	482	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*27078	5-24-5	B	CECILIA D NEWLAND	GASTAR EXPLORATION USA INC	1/8+	697	381	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	Gastar Expl. USA Inc & Atinum Marcellus I LLC to Chesapeake Appalachia LLC & Statoil USA Onshore Prop. Inc: 27/311	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 Prop. Inc changes its name to Equinor USA Onshore Prop. Inc: 2/427	SWN Production Company LLC to TH Exolration LLC: 44/141	Equinor USA Onshore Properties Inc to TH Exploration LLC: 44/147
10*27085	5-24-5	B	DAPHNE HUFFMAN AND CHARLES HUFFMAN	GASTAR EXPLORATION USA INC	1/8+	697	383	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	Gastar Expl. USA Inc & Atinum Marcellus I LLC to Chesapeake Appalachia LLC & Statoil USA Onshore Prop. Inc: 27/311	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 Prop. Inc changes its name to Equinor USA Onshore Prop. Inc: 2/427	SWN Production Company LLC to TH Exolration LLC: 44/141	Equinor USA Onshore Properties Inc to TH Exploration LLC: 44/147
10*27086	5-24-5	B	DONALD R NEWLAND AND SUZANNE NEWLAND	GASTAR EXPLORATION USA INC	1/8+	698	639	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	Gastar Expl. USA Inc & Atinum Marcellus I LLC to Chesapeake Appalachia LLC & Statoil USA Onshore Prop. Inc: 27/311	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 Prop. Inc changes its name to Equinor USA Onshore Prop. Inc: 2/427	SWN Production Company LLC to TH Exolration LLC: 44/141	Equinor USA Onshore Properties Inc to TH Exploration LLC: 44/147
10*17181	5-24-5	B	PAUL F HAMMERS	CHESAPEAKE APPALACHIA LLC	1/8+	705	593	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	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 to TH Exploration LLC: 41/238	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17182	5-24-5	B	TWILA ORA WHIPKEY	CHESAPEAKE APPALACHIA LLC	1/8+	715	505	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	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 to TH Exploration LLC: 41/238	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17195	5-24-5	B	PATRICIA HARTMAN	GASTAR EXPLORATION USA INC	1/8+	695	317	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	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 to TH Exploration LLC: 41/238	SWN Production Company LLC to TH Exploration LLC: 41/256	

10*17196	5-24-5	B	DELBERT R. MONTGOMERY	GASTAR EXPLORATION USA INC	1/8+	695	311	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	Gastar Expl. USA Inc & Atinum Marcellus I LLC to Chesapeake Appalachia LLC & Statoil USA Onshore Prop. Inc: 27/311	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 to TH Exploration LLC: 41/238	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17197	5-24-5	B	GLORIA J. SIMMONS HAROLD SIMMONS	GASTAR EXPLORATION USA INC	1/8+	695	313	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	Gastar Expl. USA Inc & Atinum Marcellus I LLC to Chesapeake Appalachia LLC & Statoil USA Onshore Prop. Inc: 27/311	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 to TH Exploration LLC: 41/238	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17199	5-24-5	B	PAMELA L DRAZIC AND JEFFREY DRAZIC	GASTAR EXPLORATION USA INC	1/8+	695	315	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	Gastar Expl. USA Inc & Atinum Marcellus I LLC to Chesapeake Appalachia LLC & Statoil USA Onshore Prop. Inc: 27/311	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 to TH Exploration LLC: 41/238	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17200	5-24-5	B	STEPHANIE L BATES	GASTAR EXPLORATION USA INC	1/8+	697	156	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	Gastar Expl. USA Inc & Atinum Marcellus I LLC to Chesapeake Appalachia LLC & Statoil USA Onshore Prop. Inc: 27/311	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 to TH Exploration LLC: 41/238	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17201	5-24-5	B	DENISE A GALE	GASTAR EXPLORATION USA INC	1/8+	697	395	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	Gastar Expl. USA Inc & Atinum Marcellus I LLC to Chesapeake Appalachia LLC & Statoil USA Onshore Prop. Inc: 27/311	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 to TH Exploration LLC: 41/238	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17202	5-24-5	B	JANE GALE	GASTAR EXPLORATION USA INC	1/8+	697	385	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	Gastar Expl. USA Inc & Atinum Marcellus I LLC to Chesapeake Appalachia LLC & Statoil USA Onshore Prop. Inc: 27/311	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 to TH Exploration LLC: 41/238	SWN Production Company LLC to TH Exploration LLC: 41/256

10*17203	5-24-5	B	BARRY RAY MOORE	GASTAR EXPLORATION USA INC	1/8+	697	387	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	Gastar Expl. USA Inc & Atinum Marcellus I LLC to Chesapeake Appalachia LLC & Statoil USA Onshore Prop. Inc.: 27/311	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 to TH Exploration LLC: 41/238	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17204	5-24-5	B	CLARENCE RICHARD ZESIGER & MARY ZESIGER	GASTAR EXPLORATION USA INC	1/8+	697	391	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	Gastar Expl. USA Inc & Atinum Marcellus I LLC to Chesapeake Appalachia LLC & Statoil USA Onshore Prop. Inc.: 27/311	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 to TH Exploration LLC: 41/238	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17206	5-24-5	B	M VIRGINIA & EDWARD C MARSH	GASTAR EXPLORATION USA INC	1/8+	697	399	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	Gastar Expl. USA Inc & Atinum Marcellus I LLC to Chesapeake Appalachia LLC & Statoil USA Onshore Prop. Inc.: 27/311	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 to TH Exploration LLC: 41/238	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17207	5-24-5	B	DEBORAH K. KLIMASZEWSKI FRANK KLIMASZEWSKI, SR.	GASTAR EXPLORATION USA INC	1/8+	697	389	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	Gastar Expl. USA Inc & Atinum Marcellus I LLC to Chesapeake Appalachia LLC & Statoil USA Onshore Prop. Inc.: 27/311	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 to TH Exploration LLC: 41/238	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17210	5-24-5	B	MARILYN NOEL	GASTAR EXPLORATION USA INC	1/8+	697	393	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	Gastar Expl. USA Inc & Atinum Marcellus I LLC to Chesapeake Appalachia LLC & Statoil USA Onshore Prop. Inc.: 27/311	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 to TH Exploration LLC: 41/238	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17211	5-24-5	B	GARY WAYNE ZESIGER & VITORINA ZESIGER	GASTAR EXPLORATION USA INC	1/8+	697	397	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	Gastar Expl. USA Inc & Atinum Marcellus I LLC to Chesapeake Appalachia LLC & Statoil USA Onshore Prop. Inc.: 27/311	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 to TH Exploration LLC: 41/238	SWN Production Company LLC to TH Exploration LLC: 41/256

10*17212	5-24-5	B	DARRELL NEWLAND LYDIA NEWLAND	GASTAR EXPLORATION USA INC	1/8+	697	158	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	Gastar Expl. USA Inc & Atinum Marcellus I LLC to Chesapeake Appalachia LLC & Statoil USA Onshore Prop. Inc: 27/311	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 to TH Exploration LLC: 41/238	SWN Production Company LLC to TH Exploration LLC: 41/256
10*17213	5-24-5	B	CAROL DEEN GARDNER	GASTAR EXPLORATION USA INC	1/8+	697	154	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	Gastar Expl. USA Inc & Atinum Marcellus I LLC to Chesapeake Appalachia LLC & Statoil USA Onshore Prop. Inc: 27/311	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 to TH Exploration LLC: 41/238	SWN Production Company LLC to TH Exploration LLC: 41/256
10*19652	5-24-5	B	JACK R HAMMERS	TH EXPLORATION LLC	1/8+	944	108	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*25627	5-24-5	B	CHESTNUT HOLDINGS INC	TH EXPLORATION LLC	1/8+	1034	548	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19903	5-25-21	C	PAUL F HAMMERS, ET AL	TH EXPLORATION LLC	1/8+	948	236	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19652	5-25-21	C	JACK R HAMMERS	TH EXPLORATION LLC	1/8+	944	108	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17182	5-25-21	C	TWILA ORA WHIPKEY	CHESAPEAKE APPALACHIA LLC	1/8+	715	505	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	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 to TH Exploration LLC: 41/238	SWN Production Company LLC to TH Exploration LLC: 41/256
10*14822	5-25-21	C	ONWARD E BURGE TRUST	GASTAR EXPLORATION INC	1/8+	876	463	N/A	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 35/144	Gastar Exploration Inc to TH Exploration II, LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
10*14823	5-25-21	C	SARAH L BURGE TRUST	GASTAR EXPLORATION INC	1/8+	876	459	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 35/144	Gastar Exploration Inc to TH Exploration II, LLC: 36/9
10*18369	5-25-21	C	CRAIG ALAN YOHO & DONNA M YOHO	TH EXPLORATION LLC	1/8+	931	303	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18370	5-25-21	C	SAMUEL D YOHO	TH EXPLORATION LLC	1/8+	931	300	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18379	5-25-21	C	TONI JO MASON LIVING TRUST	TH EXPLORATION LLC	1/8+	932	439	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19540	5-25-21	C	ERICA M MASON	TH EXPLORATION LLC	1/8+	942	53	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21382	5-25-21	C	IMA LEE YOHO	TH EXPLORATION LLC	1/8+	957	184	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21384	5-25-21	C	LARRY S AND CAROLYN S RICHMOND	TH EXPLORATION LLC	1/8+	957	186	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21466	5-25-21	C	LAWRENCE E YOHO & DORIS E YOHO	TH EXPLORATION LLC	1/8+	957	180	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21987	5-25-21	C	NIKA J COCHRAN	TH EXPLORATION LLC	1/8+	960	550	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22008	5-25-21	C	COLIN R YOHO	TH EXPLORATION LLC	1/8+	953	304	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22025	5-25-21	C	MARK EUGENE AND MARY YOHO	TH EXPLORATION LLC	1/8+	960	544	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22129	5-25-21	C	JANICE HAUDENSCHILT	TH EXPLORATION LLC	1/8+	961	459	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22167	5-25-21	C	STARIA K RICHMOND	TH EXPLORATION LLC	1/8+	954	618	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22168	5-25-21	C	ROY F YOHO AND DARLENE J YOHO	TH EXPLORATION LLC	1/8+	954	620	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22510	5-25-21	C	DONNA YOHO	TH EXPLORATION LLC	1/8+	964	432	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22561	5-25-21	C	MARY ROSE YOHO	TH EXPLORATION LLC	1/8+	968	200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*23372	5-25-21	C	DEWEY A MILICIA	TH EXPLORATION LLC	1/8+	1008	320	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

10*23373	5-25-21	C	DANA MILICIA HUMPHREYS	TH EXPLORATION LLC	1/8+	988	429	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
10*23446	5-25-21	C	NICOLETTA MILICIA BLOODWORTH	TH EXPLORATION LLC	1/8+	1008	316	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
10*26368	5-25-21	C	CHERYL A COCHRAN	CHEVRON USA INC	1/8+	1025	20	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA, Inc. to TH Exploration, LLC: 43/164		
10*14728	5-25-21	C	IRIS K MOELLENDICK	GASTAR EXPLORATION INC	1/8+	839	509	N/A	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 33/308	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67	
10*14729	5-25-21	C	BONNIE S SHANNON, INDIVIDUALLY	GASTAR EXPLORATION INC	1/8+	839	511	N/A	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 33/308	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67	
10*14730	5-25-21	C	CATHIE K LAKE	GASTAR EXPLORATION INC	1/8+	839	513	N/A	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 33/308	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67	
10*14731	5-25-21	C	RICHARD KLUG	GASTAR EXPLORATION INC	1/8+	839	515	N/A	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 33/308	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67	
10*14734	5-25-21	C	CLARENCE BAXTER BY RODNEY C BAXTER, AGENT AND AIF	GASTAR EXPLORATION INC	1/8+	842	376	N/A	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 33/308	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67	
10*14735	5-25-21	C	GLENNALEE COZART	GASTAR EXPLORATION INC	1/8+	842	378	N/A	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 33/308	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67	
10*14737	5-25-21	C	MARION PARSONS JR	GASTAR EXPLORATION INC	1/8+	844	83	N/A	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 33/308	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67	
10*19914	5-25-21	C	MICHAEL L MASON	TH EXPLORATION, LLC	1/8+	945	436	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
10*14462	5-24-4	D	JERRY ELDON RICHMOND, ET AL	GASTAR EXPLORATION USA INC	1/8+	744	57	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/639	Merger - Gastar Exploration Inc to Atinum Marcellus I LLC: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
10*14463	5-24-4	D	CHERYL ANN COCHRAN	GASTAR EXPLORATION USA INC	1/8+	744	231	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/639	Merger - Gastar Exploration Inc to Atinum Marcellus I LLC: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67

10*14464	5-24-4	D	NIKA JEAN COCHRAN	GASTAR EXPLORATION USA INC	1/8+	744	59	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/639	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
10*14465	5-24-4	D	LARRY RICHMOND	GASTAR EXPLORATION USA INC	1/8+	744	61	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/639	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
10*14466	5-24-4	D	BETTY ROSE YOHO	GASTAR EXPLORATION USA INC	1/8+	749	580	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/639	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
10*14467	5-24-4	D	DANA MILICIA HUMPHREYS	CHESAPEAKE APPALACHIA LLC	1/8+	694	351	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/479	Chesapeake Appalachia LLC to Statoil Onshore Prop. Inc to Gastar Expl. USA Inc and Atinum Marcellus I LLC 27/321	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
10*14468	5-24-4	D	TWILA ORA WHIPKEY	CHESAPEAKE APPALACHIA LLC	1/8+	692	416	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/338	Chesapeake Appalachia LLC to Statoil Onshore Prop. Inc to Gastar Expl. USA Inc and Atinum Marcellus I LLC 27/321	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
10*14469	5-24-4	D	JACK R HAMMERS	CHESAPEAKE APPALACHIA LLC	1/8+	690	547	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil Onshore Prop. Inc to Gastar Expl. USA Inc and Atinum Marcellus I LLC 27/321	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
10*14470	5-24-4	D	DONNA V YOHO	CHESAPEAKE APPALACHIA LLC	1/8+	690	645	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil Onshore Prop. Inc to Gastar Expl. USA Inc and Atinum Marcellus I LLC 27/321	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

10*14471	5-24-4	D	JANICE N HAUDENSCHILT	CHESAPEAKE APPALACHIA LLC	1/8+	691	501	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil Onshore Prop. Inc to Gastar Expl. USA Inc and Atinum Marcellus I LLC 27/321	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
10*14472	5-24-4	D	O E BURGE AND SARAH L BURGE	CHESAPEAKE APPALACHIA LLC	1/8+	692	582	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil Onshore Prop. Inc to Gastar Expl. USA Inc and Atinum Marcellus I LLC 27/321	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
10*14473	5-24-4	D	IMA LEE YOHO	CHESAPEAKE APPALACHIA LLC	1/8+	693	293	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil Onshore Prop. Inc to Gastar Expl. USA Inc and Atinum Marcellus I LLC 27/321	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
10*14474	5-24-4	D	ROY FRIEND YOHO	CHESAPEAKE APPALACHIA LLC	1/8+	693	298	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil Onshore Prop. Inc to Gastar Expl. USA Inc and Atinum Marcellus I LLC 27/321	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
10*14475	5-24-4	D	LAWRENCE E YOHO	CHESAPEAKE APPALACHIA LLC	1/8+	693	303	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil Onshore Prop. Inc to Gastar Expl. USA Inc and Atinum Marcellus I LLC 27/321	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

10*14476	5-24-4	D	MARK W YOHO	CHESAPEAKE APPALACHIA LLC	1/8+	693	308	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil Onshore Prop. Inc to Gastar Expl. USA Inc and Atinum Marcellus I LLC 27/321	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
10*14477	5-24-4	D	NICOLETTA MILICIA BLOODWORTH	CHESAPEAKE APPALACHIA LLC	1/8+	694	117	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/479	Chesapeake Appalachia LLC to Statoil Onshore Prop. Inc to Gastar Expl. USA Inc and Atinum Marcellus I LLC 27/321	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
10*14478	5-24-4	D	DEWEY A MILICIA	CHESAPEAKE APPALACHIA LLC	1/8+	694	347	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/479	Chesapeake Appalachia LLC to Statoil Onshore Prop. Inc to Gastar Expl. USA Inc and Atinum Marcellus I LLC 27/321	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
10*14479	5-24-4	D	PAUL F HAMMERS	CHESAPEAKE APPALACHIA LLC	1/8+	697	148	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/512	Chesapeake Appalachia LLC to Statoil Onshore Prop. Inc to Gastar Expl. USA Inc and Atinum Marcellus I LLC 27/321	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
10*18379	5-24-4	D	DAVID N DEVICK TRUSTEE OF THE TONI JO MASON LIVING TRUST	TH EXPLORATION LLC	1/8+	932	439	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19540	5-24-4	D	ERICA M MASON	TH EXPLORATION LLC	1/8+	942	53	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*14068	5-24-3.2	E	ROHN JEAN MARTIN, ET AL	GASTAR EXPLORATION USA INC	1/8+	666	552	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	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
10*14069	5-24-3.2	E	SHARON E YOHO	GASTAR EXPLORATION USA INC	1/8+	708	193	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	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
10*14070	5-24-3.2	E	CLAUDIA R SCHEEHLE	GASTAR EXPLORATION USA INC	1/8+	708	197	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	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

10*14071	5-24-3.2	E	SHIRLEY M DORSEY AND WILLIAM DORSEY	GASTAR EXPLORATION USA INC	1/8+	708	187	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	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
10*14072	5-24-3.2	E	CHARLES ROBERT MYERS	GASTAR EXPLORATION USA INC	1/8+	708	189	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	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
10*14073	5-24-3.2	E	RICHARD WHITE II & GLORIA J WHITE	GASTAR EXPLORATION USA INC	1/8+	708	195	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	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
10*14074	5-24-3.2	E	JANE N FISHER AND LEX FISHER	GASTAR EXPLORATION USA INC	1/8+	710	604	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 735/263	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
10*14075	5-24-3.2	E	SHIRLEY K WHITE	GASTAR EXPLORATION USA INC	1/8+	708	201	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 24/335	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
10*14076	5-24-3.2	E	PATRICIA CROW AGENT & AIF FOR VERLA SHUTLER	GASTAR EXPLORATION USA INC	1/8+	710	63	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 24/335	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
10*14077	5-24-3.2	E	WILLIAM FRANK TORRES	GASTAR EXPLORATION USA INC	1/8+	710	72	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 24/335	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
10*14078	5-24-3.2	E	CAROL VASS	GASTAR EXPLORATION USA INC	1/8+	710	74	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 24/335	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
10*14079	5-24-3.2	E	JON NEWMAN & SUSAN NEWMAN	GASTAR EXPLORATION USA INC	1/8+	710	76	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 24/335	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
10*14080	5-24-3.2	E	EDITH OBLINGER	GASTAR EXPLORATION USA INC	1/8+	714	133	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 735/263	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

10*14081	5-24-3.2	E	STEVEN I & CAROL J NEWMAN	GASTAR EXPLORATION USA INC	1/8+	724	50	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 735/263	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
10*14082	5-24-3.2	E	PAUL E & LYNN E BARCUS JR	GASTAR EXPLORATION USA INC	1/8+	734	455	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/183	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
10*14083	5-24-3.2	E	JAN L ODONNELL	GASTAR EXPLORATION USA INC	1/8+	739	415	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/183	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
10*14084	5-24-3.2	E	ROGER A & LAURA J MAY	GASTAR EXPLORATION USA INC	1/8+	741	643	N/A	N/A	N/A	N/A	N/A	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
10*14085	5-24-3.2	E	BRAD EYNON	GASTAR EXPLORATION USA INC	1/8+	741	645	N/A	N/A	N/A	N/A	N/A	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
10*14086	5-24-3.2	E	BRUCE BAILEY	GASTAR EXPLORATION USA INC	1/8+	741	647	N/A	N/A	N/A	N/A	N/A	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
10*14090	5-24-3.2	E	CATHERINE R KLUG PAUL FOX - POWER OF ATTORNEY	GASTAR EXPLORATION USA INC	1/8+	762	454	N/A	N/A	N/A	N/A	N/A	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
10*14091	5-24-3.2	E	AGNES C KLUG	GASTAR EXPLORATION USA INC	1/8+	762	456	N/A	N/A	N/A	N/A	N/A	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
10*14094	5-24-3.2	E	GASPARE A INGRASSELLINO	GASTAR EXPLORATION INC	1/8+	839	528	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
10*23467	5-24-3.2	E	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1010	228	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*25630	5-24-3.2	E	CHESTNUT HOLDINGS INC	TH EXPLORATION LLC	1/8+	1034	544	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*28464	5-24-3.2	E	GERALD H COOPER	TH EXPLORATION LLC	1/8+	1073	397	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*28465	5-24-3.2	E	GREGORY T COOPER AND SUSAN COOPER	TH EXPLORATION LLC	1/8+	1073	395	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

10*14068	5-24-3.1	H	ROHN JEAN MARTIN, ET AL	GASTAR EXPLORATION USA INC	1/8+	666	552	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	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
10*14069	5-24-3.1	H	SHARON E YOHO	GASTAR EXPLORATION USA INC	1/8+	708	193	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	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
10*14070	5-24-3.1	H	CLAUDIA R SCHEEHLE	GASTAR EXPLORATION USA INC	1/8+	708	197	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	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
10*14071	5-24-3.1	H	SHIRLEY M DORSEY AND WILLIAM DORSEY	GASTAR EXPLORATION USA INC	1/8+	708	187	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	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
10*14072	5-24-3.1	H	CHARLES ROBERT MYERS	GASTAR EXPLORATION USA INC	1/8+	708	189	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	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
10*14073	5-24-3.1	H	RICHARD WHITE II & GLORIA J WHITE	GASTAR EXPLORATION USA INC	1/8+	708	195	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	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
10*14074	5-24-3.1	H	JANE N FISHER AND LEX FISHER	GASTAR EXPLORATION USA INC	1/8+	710	604	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 735/263	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
10*14075	5-24-3.1	H	SHIRLEY K WHITE	GASTAR EXPLORATION USA INC	1/8+	708	201	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 24/335	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
10*14076	5-24-3.1	H	PATRICIA CROW AGENT & AIF FOR VERLA SHUTLER	GASTAR EXPLORATION USA INC	1/8+	710	63	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 24/335	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
10*14077	5-24-3.1	H	WILLIAM FRANK TORRES	GASTAR EXPLORATION USA INC	1/8+	710	72	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 24/335	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

10*14078	5-24-3.1	H	CAROL VASS	GASTAR EXPLORATION USA INC	1/8+	710	74	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 24/335	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
10*14079	5-24-3.1	H	JON NEWMAN & SUSAN NEWMAN	GASTAR EXPLORATION USA INC	1/8+	710	76	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 24/335	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
10*14080	5-24-3.1	H	EDITH OBLINGER	GASTAR EXPLORATION USA INC	1/8+	714	133	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 735/263	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
10*14081	5-24-3.1	H	STEVEN L & CAROL J NEWMAN	GASTAR EXPLORATION USA INC	1/8+	724	50	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 735/263	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
10*14082	5-24-3.1	H	PAUL E & LYNN E BARCUS JR	GASTAR EXPLORATION USA INC	1/8+	734	455	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/183	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
10*14083	5-24-3.1	H	JAN L O'DONNELL	GASTAR EXPLORATION USA INC	1/8+	739	415	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/183	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
10*14084	5-24-3.1	H	ROGER A & LAURA J MAY	GASTAR EXPLORATION USA INC	1/8+	741	643	N/A	N/A	N/A	N/A	N/A	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
10*14085	5-24-3.1	H	BRAD EYNON	GASTAR EXPLORATION USA INC	1/8+	741	645	N/A	N/A	N/A	N/A	N/A	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
10*14086	5-24-3.1	H	BRUCE BAILEY	GASTAR EXPLORATION USA INC	1/8+	741	647	N/A	N/A	N/A	N/A	N/A	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
10*14090	5-24-3.1	H	CATHERINE R KLUG PAUL FOX - POWER OF ATTORNEY	GASTAR EXPLORATION USA INC	1/8+	762	454	N/A	N/A	N/A	N/A	N/A	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

10*14091	5-24-3.1	H	AGNES C KLUG	GASTAR EXPLORATION USA INC	1/8+	762	456	N/A	N/A	N/A	N/A	N/A	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
10*14094	5-24-3.1	H	GASPARE A INGRASSELLINO	GASTAR EXPLORATION INC	1/8+	839	528	N/A	N/A	N/A	N/A	N/A	N/A	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
10*23467	5-24-3.1	H	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1010	228	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*25630	5-24-3.1	H	CHESTNUT HOLDINGS INC	TH EXPLORATION LLC	1/8+	1034	544	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*28464	5-24-3.1	H	GERALD H COOPER	TH EXPLORATION LLC	1/8+	1073	397	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*28465	5-24-3.1	H	GREGORY T COOPER AND SUSAN COOPER	TH EXPLORATION LLC	1/8+	1073	395	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*14068	5-24-3	I	ROHN JEAN MARTIN, ET AL	GASTAR EXPLORATION USA INC	1/8+	666	552	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	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
10*14069	5-24-3	I	SHARON E YOHO	GASTAR EXPLORATION USA INC	1/8+	708	193	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	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
10*14070	5-24-3	I	CLAUDIA R SCHEEHLE	GASTAR EXPLORATION USA INC	1/8+	708	197	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	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
10*14071	5-24-3	I	SHIRLEY M DORSEY AND WILLIAM DORSEY	GASTAR EXPLORATION USA INC	1/8+	708	187	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	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
10*14072	5-24-3	I	CHARLES ROBERT MYERS	GASTAR EXPLORATION USA INC	1/8+	708	189	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	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
10*14073	5-24-3	I	RICHARD WHITE II & GLORIA J WHITE	GASTAR EXPLORATION USA INC	1/8+	708	195	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	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
10*14074	5-24-3	I	JANE N FISHER AND LEX FISHER	GASTAR EXPLORATION USA INC	1/8+	710	604	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 735/263	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

10*14075	5-24-3	I	SHIRLEY K WHITE	GASTAR EXPLORATION USA INC	1/8+	708	201	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 24/335	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
10*14076	5-24-3	I	PATRICIA CROW AGENT & AIF FOR VERLA SHUTLER	GASTAR EXPLORATION USA INC	1/8+	710	63	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 24/335	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
10*14077	5-24-3	I	WILLIAM FRANK TORRES	GASTAR EXPLORATION USA INC	1/8+	710	72	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 24/335	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
10*14078	5-24-3	I	CAROL VASS	GASTAR EXPLORATION USA INC	1/8+	710	74	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 24/335	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
10*14079	5-24-3	I	JON NEWMAN & SUSAN NEWMAN	GASTAR EXPLORATION USA INC	1/8+	710	76	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 24/335	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
10*14080	5-24-3	I	EDITH OBLINGER	GASTAR EXPLORATION USA INC	1/8+	714	133	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 735/263	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
10*14081	5-24-3	I	STEVEN L & CAROL J NEWMAN	GASTAR EXPLORATION USA INC	1/8+	724	50	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 735/263	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
10*14082	5-24-3	I	PAUL E & LYNN E BARCUS JR	GASTAR EXPLORATION USA INC	1/8+	734	455	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/183	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
10*14083	5-24-3	I	JAN L O'DONNELL	GASTAR EXPLORATION USA INC	1/8+	739	415	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/183	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
10*14084	5-24-3	I	ROGER A & LAURA J MAY	GASTAR EXPLORATION USA INC	1/8+	741	643	N/A	N/A	N/A	N/A	N/A	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

10*14085	5-24-3	I	BRAD EYNON	GASTAR EXPLORATION USA INC	1/8+	741	645	N/A	N/A	N/A	N/A	N/A	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	
10*14086	5-24-3	I	BRUCE BAILEY	GASTAR EXPLORATION USA INC	1/8+	741	647	N/A	N/A	N/A	N/A	N/A	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	
10*14090	5-24-3	I	CATHERINE R KLUG PAUL FOX - POWER OF ATTORNEY	GASTAR EXPLORATION USA INC	1/8+	762	454	N/A	N/A	N/A	N/A	N/A	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	
10*14091	5-24-3	I	AGNES C KLUG	GASTAR EXPLORATION USA INC	1/8+	762	456	N/A	N/A	N/A	N/A	N/A	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	
10*14094	5-24-3	I	GASPARE A INGRASSELLINO	GASTAR EXPLORATION INC	1/8+	839	528	N/A	N/A	N/A	N/A	N/A		Gastar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67	
10*23467	5-24-3	I	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1010	228	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*25630	5-24-3	I	CHESTNUT HOLDINGS INC	TH EXPLORATION LLC	1/8+	1034	544	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*28464	5-24-3	I	GERALD H COOPER	TH EXPLORATION LLC	1/8+	1073	397	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*28465	5-24-3	I	GREGORY T COOPER AND SUSAN COOPER	TH EXPLORATION LLC	1/8+	1073	395	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*14525	5-25-2.2	J	IMA LEE YOHO	GASTAR EXPLORATION USA INC	1/8+	757	192	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/639	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
10*14525	5-25-2	K	IMA LEE YOHO	GASTAR EXPLORATION USA INC	1/8+	757	192	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/639	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
10*14524	5-25-3	L	IMA LEE YOHO	GASTAR EXPLORATION USA INC	1/8+	757	194	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 26/639	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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STATE OF WEST VIRGINIA §
 §
COUNTY OF MARSHALL §

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WV Department of
Environmental Protection

ASSIGNMENT, BILL OF SALE AND CONVEYANCE

THIS ASSIGNMENT, BILL OF SALE AND CONVEYANCE (this "*Assignment*"), dated effective as of 7:00 A.M., local time, where the respective Assets are located, on July 1, 2020 (the "*Effective Time*"), is between Atinum Marcellus I, LLC, a Delaware limited liability company ("*Assignor*"), whose mailing address is One Riverway, Suite 710, Houston, TX 77056-1988, and TH Exploration II, LLC, a Texas limited liability company, whose mailing address is 1320 S. University Drive, Suite 500, Fort Worth, Texas 76107 ("*Assignee*"). Assignor and Assignee are each, individually, referred to herein as a "*Party*" and, collectively, as the "*Parties*."

Capitalized terms used but not defined herein shall have the respective meanings set forth in that certain Asset Purchase Agreement dated as of November 13, 2020, by and among Assignor and Assignee (the "*Purchase Agreement*").

Section 1. Assignment. The conveyance and assignment herein shall be deemed effective as of the Effective Time.

For Ten Dollars (\$10.00) and other good and valuable consideration (the receipt and sufficiency of which are hereby acknowledged), Assignor does hereby forever GRANT, BARGAIN, SELL, CONVEY, ASSIGN, TRANSFER, SET OVER AND DELIVER unto Assignee, and Assignee does hereby acquire, the undivided interests in the Leases (as defined below) set forth on Exhibit A-1, and all other of Assignor's right, title and interest in and to the interests and properties described in subsections (a) through (k) of this Section 1 (without duplication) (such right, title and interest, less and except the Excluded Assets, collectively, the "*Assets*");

(a) The oil and gas leases, mineral leases and Royalties located in the Covered Counties (which Covered Counties include, for the avoidance of doubt, the county in which this Assignment is filed of record), including those described on Exhibit A-1 together with any and all other right, title and interest in and to the leasehold estates created thereby, subject to the terms, conditions, covenants and obligations set forth in such leases or other instrument creating such rights or interests or on Exhibit A-1 (such leases, Royalties, and mineral interests, collectively, the "*Leases*"), together with any related interest in the lands covered by the Leases or lands unitized, pooled, communitized or consolidated therewith (the "*Lands*");

(b) All of the oil and/or gas wells identified on Exhibit A-2 hereto (the "*Wells*"), and any other oil, gas, or other wells located on any of the Leases or the Lands, in each case, whether producing, non-producing, shut-in, temporarily or permanently abandoned or otherwise;

(c) All rights, titles and interests arising under any unitization, pooling and/or communitization agreements, declarations or designations for drilling, spacing and/or production units related to any of the Leases, Wells or Lands, including the units described on Exhibit A-4;

ASSIGNMENT AND CONVEYANCE

This Assignment and Conveyance (this "Assignment") is from EQUINOR USA ONSHORE PROPERTIES, INC., a Delaware corporation ("Assignor"), to TH Exploration, LLC, a Texas limited liability company ("Assignee"), and is executed on June 1~~8~~², 2019 (the "Effective Date"). Assignor and Assignee may be referred to herein collectively as the "Parties," or individually as a "Party." Capitalized terms used herein but not otherwise defined herein (including in Section 3.7) shall have the meanings given such terms in that certain Acreage Trade Agreement between the Assignor and the Assignee dated December 1, 2018 (the "Acreage Trade Agreement").

ARTICLE 1
ASSIGNMENT OF ASSETS

Section 1.1 Assignment. For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Assignor hereby GRANTS, BARGAINS, ASSIGNS, CONVEYS AND TRANSFERS unto Assignee all of Assignor's right, title and interest in and to (i) the oil and gas leases described in more detail on Exhibit A attached hereto (the "Leases") INsofar AND ONLY INsofar as they cover those lands described on Exhibit A (the "Leasehold Rights") and (ii) any surface use agreements that relate to such Leasehold Rights (collectively with the Leasehold Rights, the "Conveyed Assets").

TO HAVE AND TO HOLD the Conveyed Assets, together with all and singular the rights, privileges, contracts and appurtenances, in any way appertaining or belonging thereto, unto Assignee, its successors and assigns, forever, subject, to the terms and conditions of this Assignment.

Section 1.2 Assignment Subject to Acreage Trade Agreement. This Assignment is made in accordance with and is subject to the terms, covenants and conditions contained in that certain Acreage Trade Agreement. In the event of a conflict between the provisions of the Acreage Trade Agreement and this Assignment, the provisions of the Acreage Trade Agreement shall control. The execution and delivery of this Assignment by Assignor, and the execution and acceptance of this Assignment by Assignee, shall not operate to release or impair any surviving rights or obligations of either Party with respect to the other under the Acreage Trade Agreement.

ARTICLE 2
SPECIAL WARRANTY OF TITLE AND DISCLAIMERS

Section 2.1 Special Warranty of Title. Assignor hereby agrees to warrant and defend Defensible Title to the Leases unto Assignee, its successors and assigns, against every Person whomsoever lawfully claiming or to claim the same or any part thereof by, through or under Assignor or any of its Affiliates, but not otherwise.

Section 2.2 Disclaimers of Warranties and Representations.

(a) EXCEPT AS EXPRESSLY REPRESENTED OTHERWISE IN SECTION VI OF THE ACREAGE TRADE AGREEMENT OR THIS ASSIGNMENT, ASSIGNOR MAKES NO, AND HEREBY EXPRESSLY DISCLAIMS, ANY REPRESENTATION OR WARRANTY, EXPRESS, IMPLIED OR STATUTORY, INCLUDING AS TO (I) TITLE TO THE LEASEHOLD RIGHTS, (II) THE CONTENTS, CHARACTER OR NATURE OF ANY DESCRIPTIVE MEMORANDUM, OR ANY REPORT OF ANY OF ITS PETROLEUM ENGINEERING CONSULTANTS, OR ANY GEOLOGICAL OR SEISMIC DATA OR INTERPRETATION, RELATING TO THE LEASEHOLD RIGHTS, (III) THE QUANTITY, QUALITY OR RECOVERABILITY OF PETROLEUM SUBSTANCES IN OR FROM THE LEASEHOLD RIGHTS, (IV) THE EXISTENCE OF ANY PROSPECT, OR ANY RECOMPLETION, INFILL OR STEP-OUT DRILLING OPPORTUNITIES, (V) ANY ESTIMATES OF THE VALUE OF THE LEASEHOLD RIGHTS, (VI) THE PRODUCTION OF PETROLEUM SUBSTANCES FROM THE LEASEHOLD RIGHTS, OR ANY PRODUCTION OR DECLINE RATES, (VII) THE MAINTENANCE, REPAIR, CONDITION, QUALITY, SUITABILITY, DESIGN OR MARKETABILITY OF THE LEASEHOLD RIGHTS, (VIII) INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHT, AND (IX) ANY OTHER MATERIALS OR INFORMATION THAT MAY HAVE BEEN MADE AVAILABLE OR COMMUNICATED TO ASSIGNEE OR ITS AFFILIATES, OR ITS OR THEIR RESPECTIVE

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WV DEPARTMENT OF
Environmental Protection

ASSIGNMENT AND CONVEYANCE

This Assignment and Conveyance (this "Assignment") is from SWN PRODUCTION COMPANY, LLC, a Texas limited liability company ("Assignor"), to TH Exploration, LLC, a Texas limited liability company ("Assignee"), and is executed on December 18, 2017 (the "Effective Date"). Assignor and Assignee may be referred to herein collectively as the "Parties," or individually as a "Party." Capitalized terms used herein but not otherwise defined herein (including in Section 3.7) shall have the meanings given such terms in that certain Acreage Trade Agreement between the Assignor and the Assignee dated August 24, 2017 (the "Acreage Trade Agreement").

ARTICLE I
ASSIGNMENT OF ASSETS

Section 1.1 Assignment. For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Assignor hereby GRANTS, BARGAINS, ASSIGNS, CONVEYS AND TRANSFERS unto Assignee all of Assignor's right, title and interest in and to (i) the oil and gas leases described in more detail on Exhibit A attached hereto (the "Leases") INSOFAR AND ONLY INSOFAR as they cover those lands described on Exhibit A (the "Leasehold Rights") and (ii) any surface use agreements that relate to such Leasehold Rights (collectively with the Leasehold Rights, the "Conveyed Assets").

TO HAVE AND TO HOLD the Conveyed Assets, together with all and singular the rights, privileges, contracts and appurtenances, in any way appertaining or belonging thereto, unto Assignee, its successors and assigns, forever, subject, to the terms and conditions of this Assignment.

Section 1.2 Assignment Subject to Acreage Trade Agreement. This Assignment is made in accordance with and is subject to the terms, covenants and conditions contained in that certain Acreage Trade Agreement. In the event of a conflict between the provisions of the Acreage Trade Agreement and this Assignment, the provisions of the Acreage Trade Agreement shall control. The execution and delivery of this Assignment by Assignor, and the execution and acceptance of this Assignment by Assignee, shall not operate to release or impair any surviving rights or obligations of either Party with respect to the other under the Acreage Trade Agreement.

ARTICLE 2
SPECIAL WARRANTY OF TITLE AND DISCLAIMERS

Section 2.1 Special Warranty of Title. Assignor hereby agrees to warrant and defend Defensible Title to the Leases unto Assignee, its successors and assigns, against every Person whomsoever lawfully claiming or to claim the same or any part thereof by, through or under Assignor or any of its Affiliates, but not otherwise.

Section 2.2 Disclaimers of Warranties and Representations.

(a) EXCEPT AS EXPRESSLY REPRESENTED OTHERWISE IN SECTION VI OF THE ACREAGE TRADE AGREEMENT OR THIS ASSIGNMENT, ASSIGNOR MAKES NO, AND HEREBY EXPRESSLY DISCLAIMS, ANY REPRESENTATION OR

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Environmental Protection



TUG HILL

02/23/2023
4705102482

December 8, 2022

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

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Office of Oil and Gas

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WV Department of
Environmental Protection

RE: Hendrickson S-10HU

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

CERTIFICATE OF CONSENT AND EASEMENT

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: [Signature]
Name/Notary Public (print): Micah Feather



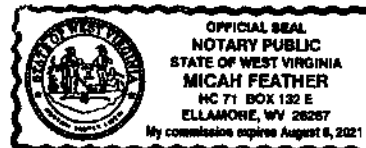
ACKNOWLEDGMENT

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

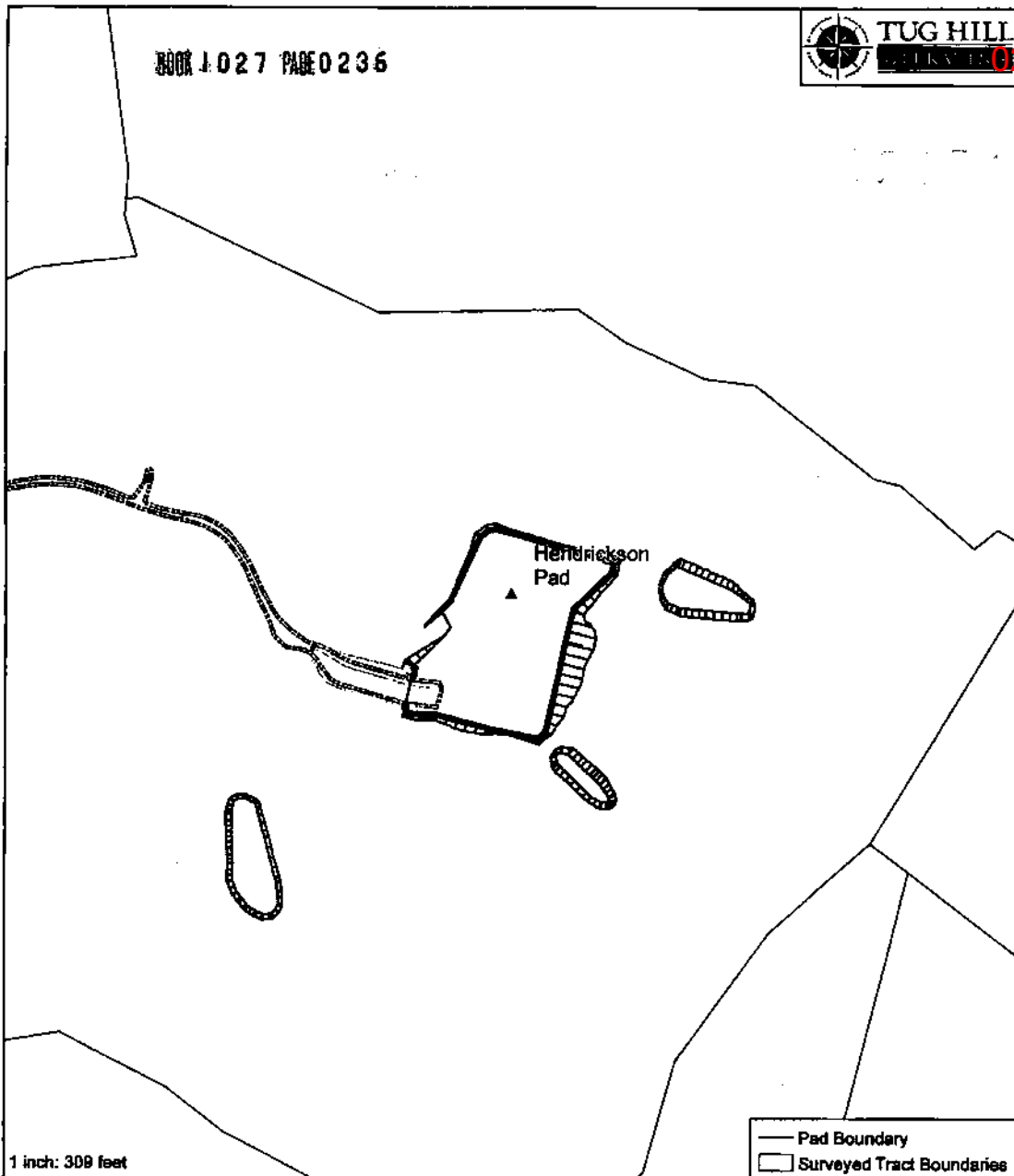
On this the 28 day of December 2018, before me, a notary public, the undersigned authority, personally appeared Donald R. Hendrickson, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that he/she executed the same for the purposes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

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

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



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



0 90 180 300 Feet
N

THIS SURVEY WAS CONDUCTED IN ACCORDANCE WITH THE SURVEYING ACT OF 1962 AND THE SURVEYING REGULATIONS OF THE BOARD OF SURVEYING ENGINEERS AND LAND SURVEYORS OF THE STATE OF WEST VIRGINIA. THE SURVEY WAS CONDUCTED USING THE FOLLOWING INSTRUMENTS: A TOTAL STATION (TRIMBLE 5600) AND A DISTANCE MEASURING DEVICE (DMT-1000). THE SURVEY WAS CONDUCTED ON THE 28th DAY OF DECEMBER, 2018. THE SURVEY WAS CONDUCTED BY TUG HILL SURVEYING, INC., A PROFESSIONAL SURVEYING FIRM LICENSED UNDER THE SURVEYING ACT OF 1962 AND THE SURVEYING REGULATIONS OF THE BOARD OF SURVEYING ENGINEERS AND LAND SURVEYORS OF THE STATE OF WEST VIRGINIA. THE SURVEY WAS CONDUCTED IN ACCORDANCE WITH THE SURVEYING ACT OF 1962 AND THE SURVEYING REGULATIONS OF THE BOARD OF SURVEYING ENGINEERS AND LAND SURVEYORS OF THE STATE OF WEST VIRGINIA.

"Plat"
Hendrickson
Marshall County, WV

Date: December 28, 2018
Name: Nonald H. Hendrickson
Name: Jude Hendrickson



Scale: 1:300
PC: NAD 1983 UTM Zone 17N Feet US

Marshall County
Jan Pest, Clerk
Instrument 144943B
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

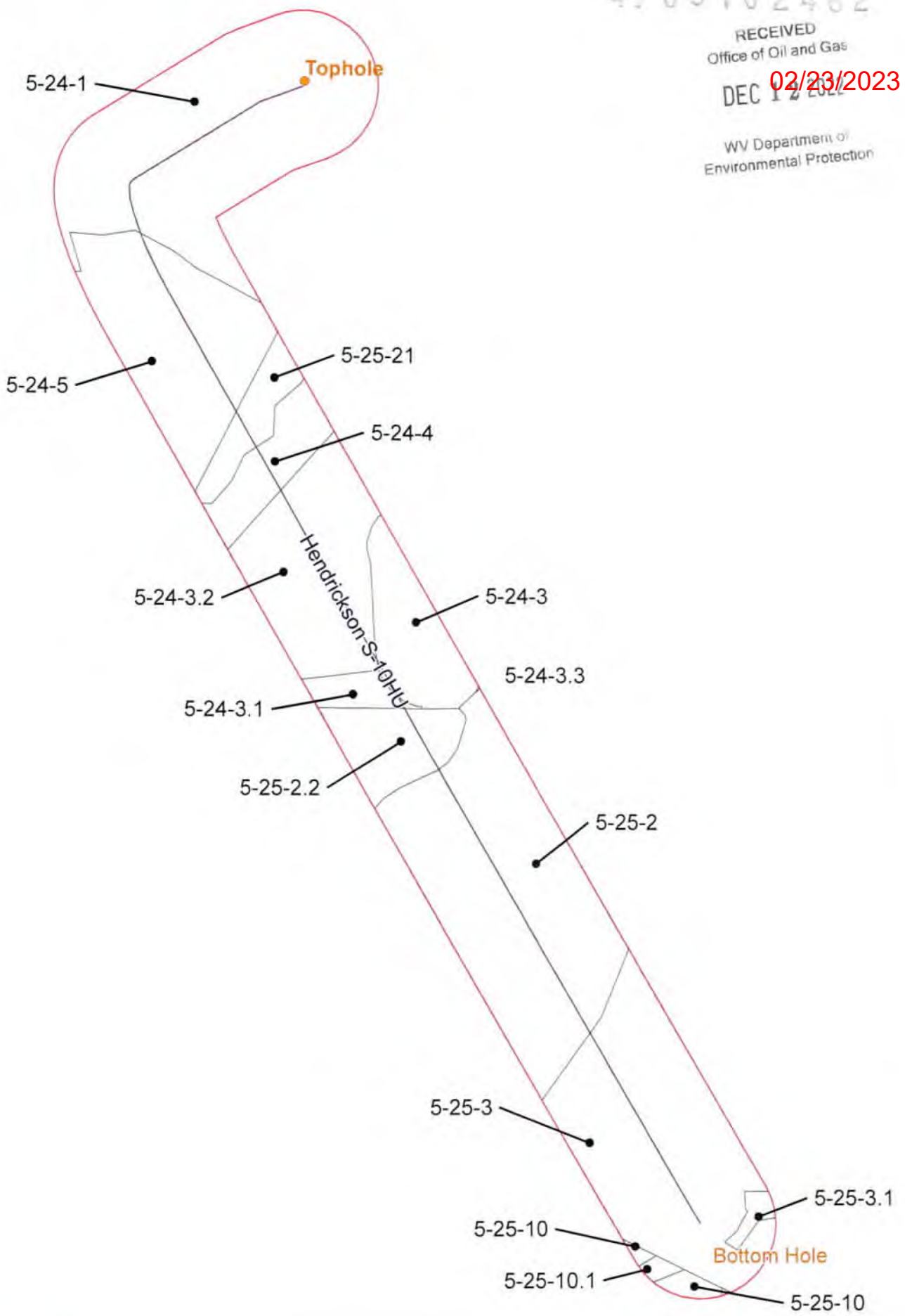
Hendrickson S-10HU

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WV Department of
Environmental Protection



Coordinate System: NAD 1983 UTM Zone 17N
Regular: Transverse Mercator
Datum: North American 1983
False Easting: 160000.0000
False Northing: 0.0000
Central Meridian: 47.0000
Scale Factor: 0.9999
Latitude of Origin: 0.0000
Units: Feet US

CONFIDENTIAL



- Utica Well
- Force Pool
- 500' Buffer

Hendrickson S-10HU
Operators within 500 Feet of Well Borehole



02/03/2023

**Offset Operators within 500'
Hendrickson S - 10HU**

4010001100

COUNTY	DISTRICT	TMP	OWNER	ADDRESS
Marshall	Franklin	5-24-1	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107 02/23/2023
Marshall	Franklin	5-24-1	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-24-3	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-24-3	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-24-3.1	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-24-3.1	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-24-3.2	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-24-3.2	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-24-3.3	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-24-3.3	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-24-4	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-24-4	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-24-5	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-24-5	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-25-2	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-25-2.2	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-25-3	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 02/03/2023
Marshall	Franklin	5-25-3.1	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-25-10	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107

COUNTY	DISTRICT	TMP	OWNER	ADDRESS
Marshall	Franklin	5-25-10.1	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-25-21	TH EXPLORATION II, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-25-21	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107

02/03/2023



TUG HILL

02/23/2023

4705102482

December 8, 2022

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

RE: Hendrickson S-10HU

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 29/5 in the area reflected on the Hendrickson S-10HU 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

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

02/03/2023

47 05 00 0 100

**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 S-10HU
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>521,595.26</u>
County: <u>Marshall</u>	UTM NAD 83 Northing: <u>4,399,471.61</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		OOG OFFICE USE ONLY
<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"/> RECEIVED/ NOT REQUIRED
<input type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input checked="" type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED		<input type="checkbox"/> RECEIVED
<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"/> RECEIVED/ NOT REQUIRED
<input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION	RECEIVED Office of Oil and Gas DEC 12 2022 WV Department of Environmental Protection	<input checked="" type="checkbox"/> RECEIVED
<input checked="" type="checkbox"/> 5. PUBLIC NOTICE		<input checked="" type="checkbox"/> RECEIVED
<input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION		<input checked="" type="checkbox"/> RECEIVED

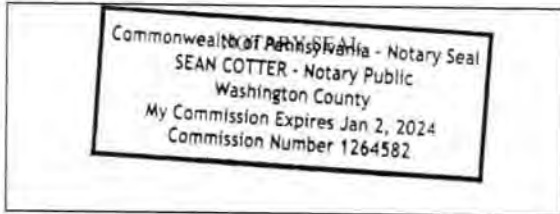
Required Attachments:

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:	<u>Tug Hill Operating, LLC</u>	Address:	<u>380 Southpointe Boulevard, Plaza II, Suite 200</u>
By:	<u>Amy L. Morris <i>Amy L. Morris</i></u>		<u>Canonsburg, PA 15317</u>
Its:	<u>Permitting Specialist - Appalachia</u>	Facsimile:	<u></u>
Telephone:	<u>304-376-0111</u>	Email:	<u>amorris@tug-hilop.com</u>



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.

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Environmental Protection

WW-6A
(9-13)

API NO. 47-051 **02/23/2023**
OPERATOR WELL NO. Hendrickson S-10HU
Well Pad Name: Hendrickson

**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.**

RECEIVED
Office of Oil and Gas

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

DEC 12 2022

Notice of:

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

WV Department of
Environmental Protection

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

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

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

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

SURFACE OWNER(s)

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

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

Name: none within 2000'
Address: _____

SURFACE OWNER(s) (Impoundments or Pits)

Name: _____
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: _____
Address: _____

*Please attach additional forms if necessary

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(8-13)

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API NO. 47-051 - 02/23/2023

OPERATOR WELL NO. Hendrickson S-10HU

Well Pad Name: Hendrickson

WV Department of
Environmental Protection

Notice is hereby given:

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

This Notice Shall Include:

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

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

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

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

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

Well Location Restrictions

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

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API NO. 47-051 **02/23/2023**
OPERATOR WELL NO. Hendrickson S-10HU
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 their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

Water Testing Laboratories:

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

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

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

Written Comment:

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

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

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DEC 12 2022

WV Department of
Environmental Protection

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

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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WV DEPARTMENT OF
Environmental Protection

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API NO. 47-051 - 02/23/2023
OPERATOR WELL NO. Hendrickson S-10HU
Well Pad Name: Hendrickson

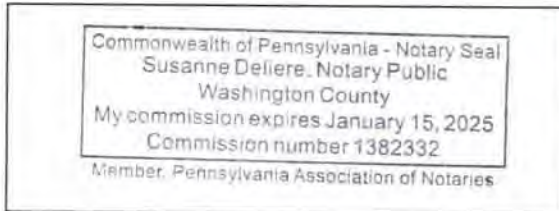
Notice is hereby given by:

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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WV Department of
Environmental Protection

02/03/2023

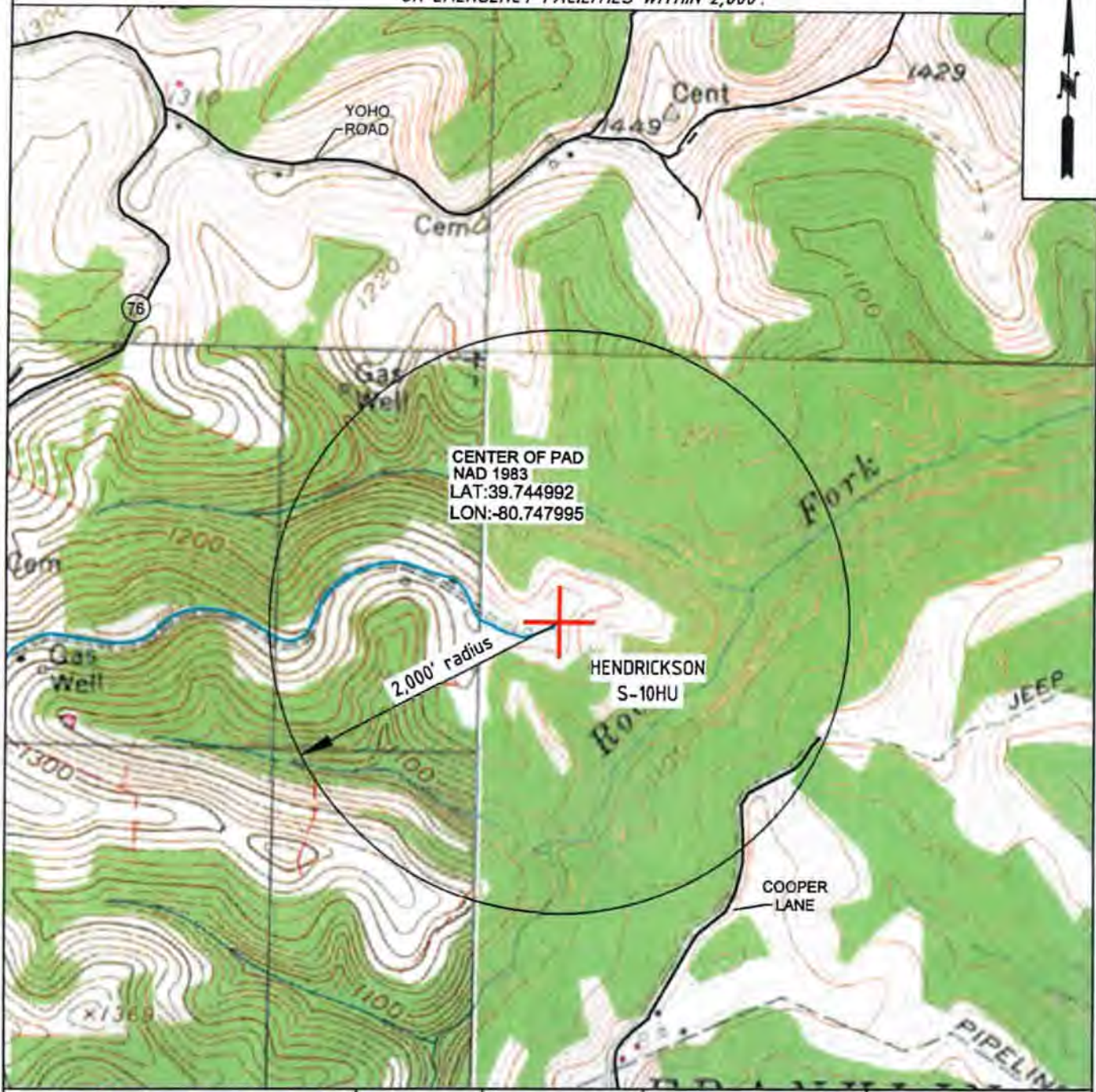
WW-6A

PROPOSED HENDRICKSON S-10HU

SUPPLEMENT PG 1
Office of Oil and Gas

DEC 12 2022

THERE APPEAR TO BE NO (0) RESIDENCES, BUSINESSES, CHURCHES, SCHOOLS, OR EMERGENCY FACILITIES WITHIN 2,000'.
West Virginia Department of Environmental Protection



CENTER OF PAD
NAD 1983
LAT:39.744992
LON:-80.747995

HENDRICKSON
S-10HU

2,000' radius



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

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

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

HAND DELIVERY CERTIFIED MAIL
RETURN RECEIPT REQUESTED

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)
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(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: West Virginia UTM NAD 83 Easting: 521,595.26
County: Marshall Northing: 4,399,471.61
District: Franklin Public Road Access: Co. Rt. 76
Quadrangle: Wileyville 7.5' Generally used farm name: Linda L. Hendrickson
Watershed: Rocky Fork of Fish Creek

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: ct-statecommunications@walterskiuwer.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.

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

RECEIVED
Office of Oil and Gas

DEC 12 2022

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

- CERTIFIED MAIL
RETURN RECEIPT REQUESTED
- HAND
DELIVERY

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>521,595.26</u>
County:	<u>Marshall</u>	UTM NAD 83 Northing:	<u>4,399,471.61</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 or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.



4705 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 S-10HU 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



TUG HILL

4705102432

02/23/2023

DEC 12 2022

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

02/03/2023

OPERATOR: Tug Hill Operating, LLC WELL NO: Hendrickson S-10HU

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

